The International Fragrance Association

The complete **IFRA Standards**

Up to and including the 51th Amendment

January 2024

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51st Amendment

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Santolina oil	84961-58-0	Prohibition	2008	469
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Verbena oil and absolute (Lippia citriodora Kunth.)	8024-12-2 85116-63-8	Restriction Prohibition	2020	250
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Ylang ylang extracts	8006-81-3 68606-83-7 83863-30-3	Restriction	2020	253

Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

CAS-No.:	144020-22-4 28371-99-5 This substance was previously erroneously identified as CAS 28371-99-5, however this CAS number is still used on certain commercial qualities today and as such this Standard is also applicable to that CAS number, which is an isomer of CAS 144020-22-4. The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl trimethylcyclododecatrienyl ketone (mixture of isomers) Trimofix O (commercial name) Fixamber (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.00016 %	Category 7A	0.87 %
Category 2	0.13 %	Category 7B	0.87 %
Category 3	0.40 %	Category 8	0.17 %
Category 4	2.4 %	Category 9	2.2 %
Category 5A	0.60 %	Category 10A	2.2 %
Category 5B	0.52 %	Category 10B	4.4 %
Category 5C	0.60 %	Category 11A	0.17 %
Category 5D	0.17 %	Category 11B	0.17 %

Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

Category 6	0.00016 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene in the various product categories.

REFERENCES:

The IFRA Standard on Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetylated Vetiver oil

CAS-No.:	84082-84-8 68917-34-0 73246-97-6 62563-80-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Vetiveria zizanioides, extract, acetylated Oils, vetiver, acetylated Acetic acid, esters with vetiver oil alcohols Vetiverol, acetate Vetivert acetate (commercial name) Vetivert acetate (Haiti) (commercial name) Vetyveryl acetate (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.050 %	Category 7A	0.10 %
Category 2	0.050 %	Category 7B	0.10 %
Category 3	0.050 %	Category 8	0.033 %
Category 4	0.90 %	Category 9	0.20 %
Category 5A	0.10 %	Category 10A	0.20 %
Category 5B	0.10 %	Category 10B	3.8 %
Category 5C	0.10 %	Category 11A	0.033 %

Acetylated Vetiver oil

Category 5D	0.033 %	Category 11B	0.033 %
Category 6	0.098 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Acetylated Vetiver oil, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetylated Vetiver oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Acetylated Vetiver oil in the various product categories.

REFERENCES:

The IFRA Standard on Acetylated Vetiver oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetylated Vetiver oil if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

Acetylated Vetiver oil

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Scientific Committee on Consumer Safety (SCCS) Final Opinion on fragrance ingredient Acetylated Vetiver Oil - AVO (Vetiveria zizanioides root extract acetylated) Adopted on February 26, 2019 - Submission III (SCCS/1599/18). (https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_221.pdf) .

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available in www.ifraorg.org.

Allyl phenoxyacetate

CAS-No.:	7493-74-5 863306-60-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Acetic acid, phenoxy-, 2-propenyl ester 2-Propenyl phenoxyacetate Prop-2-enyl 2-phenoxyacetate Acetate PA

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.054 %	Category 7A	0.41 %
Category 2	0.016 %	Category 7B	0.41 %
Category 3	0.21 %	Category 8	0.025 %
Category 4	0.30 %	Category 9	0.59 %
Category 5A	0.076 %	Category 10A	0.59 %
Category 5B	0.076 %	Category 10B	1.7 %
Category 5C	0.076 %	Category 11A	0.025 %
Category 5D	0.025 %	Category 11B	0.025 %
Category 6	0.18 %	Category 12	52 %

Allyl phenoxyacetate

FRAGRANCE INGREDIENT SPECIFICATION:	According to the IFRA Specification Standard of Allyl esters, Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol. Please also refer to the IFRA Specification Standard Allyl esters.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Allyl phenoxyacetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl phenoxyacetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Allyl phenoxyacetate in the various product categories.
In addition, they recommend to use Allyl phenoxyacetate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Allyl phenoxyacetate is based on at least one of the following publications:

Allyl phenoxyacetate

• The RIFM Safety Assessment on Allyl phenoxyacetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Amyl cinnamic alcohol

CAS-No.:	101-85-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Amylcinnamyl alcohol α-Amylcinnamyl alcohol 2-Amyl-3-phenyl-2-propen-1-ol 2-Benzylideneheptanol 1-Heptanol, 2-(phenylmethylene)- α-Pentylcinnamyl alcohol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	0.64 %
Category 2	0.080 %	Category 7B	0.64 %
Category 3	0.64 %	Category 8	0.11 %
Category 4	1.5 %	Category 9	1.6 %
Category 5A	0.38 %	Category 10A	1.6 %
Category 5B	0.32 %	Category 10B	3.5 %
Category 5C	0.38 %	Category 11A	0.11 %
Category 5D	0.11 %	Category 11B	0.11 %
Category 6	0.32 %	Category 12	79 %

alpha-Amyl cinnamic alcohol

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amyl cinnamic alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amyl cinnamic alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amyl cinnamic alcohol in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Amyl cinnamic alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Amyl cinnamic alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

alpha-Amyl cinnamic alcohol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Amyl cinnamic aldehyde

CAS-No.:	122-40-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Amyl cinnamal Amyl cinnamic aldehyde α-Amylcinnamaldehyde α-Amyl ß-phenylacrolein Heptanal, 2-(phenylmethylene) α-Pentylcinnamaldehyde α-Pentyl-ß-phenylacrolein 2-(Phenylmethylene)heptanal Flomine (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.58 %	Category 7A	0.26 %
Category 2	0.53 %	Category 7B	0.26 %
Category 3	0.26 %	Category 8	0.11 %
Category 4	7.0 %	Category 9	1.5 %
Category 5A	2.5 %	Category 10A	1.5 %
Category 5B	0.32 %	Category 10B	3.5 %
Category 5C	0.45 %	Category 11A	0.11 %
Category 5D	0.11 %	Category 11B	0.11 %

alpha-Amyl cinnamic aldehyde

Category 6	0.064 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amyl cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amyl cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amyl cinnamic aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Amyl cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Amyl cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

alpha-Amyl cinnamic aldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Anisyl alcohol

CAS-No.:	105-13-5 1331-81-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Anisalcohol Anise alcohol Anisic alcohol Benzyl alcohol, p-methoxy p-Methoxybenzyl alcohol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0028 %	Category 7A	0.033 %
Category 2	0.039 %	Category 7B	0.033 %
Category 3	0.025 %	Category 8	0.0020 %
Category 4	0.21 %	Category 9	0.099 %
Category 5A	0.041 %	Category 10A	0.099 %
Category 5B	0.0055 %	Category 10B	0.17 %
Category 5C	0.033 %	Category 11A	0.0020 %
Category 5D	0.0020 %	Category 11B	0.0020 %
Category 6	0.091 %	Category 12	14 %

Anisyl alcohol

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Anisyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Anisyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Anisyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on Anisyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Anisyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Anisyl alcohol

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzaldehyde

CAS-No.:	100-52-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenecarbonal Benzene carboxaldehyde Benzenecarboxaldehyde Benzenemethylal Benzoic aldehyde Bitter almond oil, synthetic Phenylformaldehyde Phenylmethanol aldehyde

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %
Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %

Benzaldehyde

Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Benzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Benzaldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl alcohol

CAS-No.:	100-51-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenemethanol Benzylic alcohol α-Hydroxytoluene Phenylcarbinol Phenyl carbinol Phenylmethanol Phenylmethyl alcohol α-Toluenol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	0.68 %
Category 2	0.14 %	Category 7B	0.68 %
Category 3	0.34 %	Category 8	0.057 %
Category 4	2.5 %	Category 9	2.2 %
Category 5A	0.64 %	Category 10A	2.2 %
Category 5B	0.17 %	Category 10B	8.5 %
Category 5C	0.34 %	Category 11A	0.057 %
Category 5D	0.057 %	Category 11B	0.057 %

Benzyl alcohol

Category 6	1.5 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Benzyl alcohol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl benzoate

CAS-No.:	120-51-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benylate Benzoic acid, benzyl ester Benzoic acid, phenylmethyl ester Benzyl phenylformate Phenylmethyl benzoate

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	1.7 %	Category 7A	0.41 %
Category 2	1.4 %	Category 7B	0.41 %
Category 3	0.41 %	Category 8	0.070 %
Category 4	4.8 %	Category 9	1.9 %
Category 5A	4.3 %	Category 10A	1.9 %
Category 5B	0.21 %	Category 10B	12 %
Category 5C	0.83 %	Category 11A	0.070 %
Category 5D	0.070 %	Category 11B	0.070 %
Category 6	0.41 %	Category 12	No Restriction

Benzyl benzoate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl benzoate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl benzoate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl benzoate in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl benzoate is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl benzoate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Benzyl benzoate

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl cinnamate

CAS-No.:	103-41-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzyl γ-phenylacrylate Benzyl 3-phenylpropenoate Cinnamein Cinnamic acid, benzyl ester Phenylmethyl 3-phenyl-2-propenoate 2-Propenoic acid, 3-phenyl-phenylmethyl ester

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.36 %	Category 7A	2.4 %
Category 2	0.11 %	Category 7B	2.4 %
Category 3	1.2 %	Category 8	0.17 %
Category 4	2.0 %	Category 9	3.9 %
Category 5A	0.51 %	Category 10A	3.9 %
Category 5B	0.51 %	Category 10B	14 %
Category 5C	0.51 %	Category 11A	0.17 %
Category 5D	0.17 %	Category 11B	0.17 %
Category 6	1.2 %	Category 12	No Restriction

Benzyl cinnamate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl cinnamate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl cinnamate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl cinnamate in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl cinnamate is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl cinnamate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Benzyl cinnamate

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl salicylate

CAS-No.:	118-58-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzoic acid, 2-hydroxy-, phenylmethyl ester Benzyl 2-hydroxybenzoate Benzyl o-hydroxybenzoate 2-Hydroxybenzoic acid, benzyl ester Phenylmethyl 2-hydroxybenzoate Salicylic acid, benzyl ester

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	1.3 %	Category 7A	15 %
Category 2	0.39 %	Category 7B	15 %
Category 3	7.8 %	Category 8	0.77 %
Category 4	7.3 %	Category 9	14 %
Category 5A	1.9 %	Category 10A	51 %
Category 5B	1.9 %	Category 10B	51 %
Category 5C	1.9 %	Category 11A	28 %
Category 5D	1.9 %	Category 11B	28 %
Category 6	4.3 %	Category 12	No Restriction

Benzyl salicylate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl salicylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl salicylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl salicylate in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl salicylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl salicylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Benzyl salicylate

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Butylcinnamaldehyde

CAS-No.:	7492-44-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Benzylidenehexanal Butyl cinnamic aldehyde α-Butyl-β-phenylacrolein Hexanal, 2-(phenylmethylene)- alpha-butylcinnamaldehyde

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.036 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	0.84 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	0.036 %
Category 5D	0.036 %	Category 11B	0.036 %
Category 6	0.25 %	Category 12	No Restriction

alpha-Butylcinnamaldehyde

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Butylcinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Butylcinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Butylcinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Butylcinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Butylcinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

alpha-Butylcinnamaldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

CAS-No.:	62518-65-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenepropanal, 3-(1,1-dimethylethyl)-α-methyl- 3-(3-tert-Butylphenyl)-2-methylpropanal m-BMHCA

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0086 %	Category 7A	0.37 %
Category 2	0.094 %	Category 7B	0.37 %
Category 3	0.21 %	Category 8	0.094 %
Category 4	1.8 %	Category 9	0.96 %
Category 5A	0.45 %	Category 10A	0.96 %
Category 5B	0.28 %	Category 10B	3.1 %
Category 5C	0.42 %	Category 11A	0.094 %
Category 5D	0.094 %	Category 11B	0.094 %
Category 6	0.0086 %	Category 12	64 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) in the various product categories.

REFERENCES:

The IFRA Standard on 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-tert-Butyldihydrocinnamaldehyde

CAS-No.:	18127-01-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenepropanal, 4-(1,1-dimethylethyl)- 3-(4-tert-Butylphenyl)propionaldehyde Bourgeonal (commercial name) Liliphenal (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 1994 2007 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0041 %	Category 7A	0.029 %
Category 2	0.025 %	Category 7B	0.029 %
Category 3	0.025 %	Category 8	0.0096 %
Category 4	0.47 %	Category 9	0.099 %
Category 5A	0.12 %	Category 10A	0.099 %
Category 5B	0.029 %	Category 10B	0.24 %
Category 5C	0.037 %	Category 11A	0.0096 %
Category 5D	0.0096 %	Category 11B	0.0096 %
Category 6	0.087 %	Category 12	6.9 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

p-tert-Butyldihydrocinnamaldehyde

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-tert-Butyldihydrocinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butyldihydrocinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-tert-Butyldihydrocinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-tert-Butyldihydrocinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-tert-Butyldihydrocinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

p-tert-Butyldihydrocinnamaldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

CAS-No.:	80-54-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenepropanal, 4-(1,1-dimethylethyl)-alpha-methyl- p-t-Bucinal 2-(4-tert-Butylbenzyl)propionaldehyde p-t-Butyl-alpha-methylhydrocinnamaldehyde Butylphenyl methylpropional alpha-Methyl-ß-(p-t-butylphenyl)propionaldehyde Lilestralis (commercial name) Lilial (commercial name) Lysmeral (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2003 2007 2008 2013 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) should not be used for any finished product application included under IFRA Categories 1 and 6 (lipsticks and oral care products).

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0 % (Prohibited)	Category 7A	0.040 %
Category 2	0.090 %	Category 7B	0.040 %
Category 3	0.040 %	Category 8	0.017 %
Category 4	1.4 %	Category 9	0.10 %
Category 5A	0.060 %	Category 10A	0.10 %

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

Category 5B	0.050 %	Category 10B	0.63 %
Category 5C	0.050 %	Category 11A	0.017 %
Category 5D	0.017 %	Category 11B	0.017 %
Category 6	0.0 % (Prohibited)	Category 12	16 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.
Additional information is available in the RIFM safety assessment for p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) and recommends the limits for the 12 different product categories, which provide the acceptable use levels of p-tert-Butyl-α- methylhydrocinnamic aldehyde (p-BMHCA) in the various product categories.
In addition, they recommend not to use p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) in any finished product application included in Categories 1 and 6.

REFERENCES:

The IFRA Standard p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) is based in at least one of the following publications:

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

• The RIFM Safety Assessment on p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• SCCS (Scientific Committee on Consumer Safety), Opinion on the safety of Butylphenyl methylpropional (p-BMHCA) in cosmetic products - Submission II, preliminary version of 14 December 2017, final version of 10 May 2019, SCCS/1591/2017 (https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_213.pdf) .

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available in www.ifraorg.org.

Carvone

CAS-No.:	99-49-0 2244-16-8 6485-40-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	99-49-0 Carvone p-Mentha-6,8-dien-2-one 1-Methyl-4-isopropenyl-6-cyclohexen-2-one 2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)- 5-Isopropenyl-2-methylcyclohex-2-en-1-one 6,8(9)-p-Menthadien-2-one 2244-16-8 d-Carvone dextro-Carvone (S)-2-Methyl-5-(1-methylvinyl)cyclohex-2-en-1-one (S)-2-Methyl-5-(prop-1-en-2-yl)cyclohex-2-en-1-one d-p-Mentha-6,8(9)-dien-2-one d-1-Methyl-4-isopropenyl-6-cyclohexen-2-one 2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-, (5S)- 5-Isopropenyl-2-methylcyclohex-2-en-1-one 6485-40-1 l-Carvone laevo-Carvone l-p-Mentha-1(6),8-dien-2-one l-p-Mentha-6,8(9)-dien-2-one l-1-Methyl-4-isopropenyl-6-cyclohexen-2-one 2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-, (5R)- 5-Isopropenyl-2-methylcyclohex-2-en-1-one

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

Carvone

Category 1	0.20 %	Category 7A	0.039 %
Category 2	0.060 %	Category 7B	0.039 %
Category 3	0.020 %	Category 8	0.013 %
Category 4	0.59 %	Category 9	0.18 %
Category 5A	0.20 %	Category 10A	0.18 %
Category 5B	0.039 %	Category 10B	0.43 %
Category 5C	0.059 %	Category 11A	0.013 %
Category 5D	0.013 %	Category 11B	0.013 %
Category 6	0.66 %	Category 12	17 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

The natural contribution of Carvone is determined by the sum of the natural contributions of each of its isomers.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Carvone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center:

Carvone

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Carvone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Carvone in the various product categories.

REFERENCES:

The IFRA Standard on Carvone is based on at least one of the following publications:

• The RIFM Safety Assessment on Carvone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamic alcohol

CAS-No.:	104-54-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cinnamyl alcohol 3-Phenylallyl alcohol 3-Phenyl-2-propen-1-ol 2-Propen-1-ol, 3-phenyl- Styrone Styryl alcohol Zimtalcohol Styryl carbinol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1987 1992 2002 2007 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.22 %	Category 7A	0.25 %
Category 2	0.067 %	Category 7B	0.25 %
Category 3	0.25 %	Category 8	0.085 %
Category 4	1.2 %	Category 9	0.76 %
Category 5A	0.32 %	Category 10A	0.76 %
Category 5B	0.25 %	Category 10B	2.0 %
Category 5C	0.25 %	Category 11A	0.085 %
Category 5D	0.085 %	Category 11B	0.085 %

Cinnamic alcohol

Category 6	0.13 %	Category 12	51 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamic alcohol in the various product categories.

REFERENCES:

The IFRA Standard on Cinnamic alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamic alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Cinnamic alcohol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamic aldehyde

CAS-No.:	104-55-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cinnamal Cinnamaldehyde Phenylacrolein 3-Phenyl-2-propena 3-Phenyl-2-propen-1-a Cassia aldehyde

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 2004 2006 2007 2008 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.17 %
Category 2	0.014 %	Category 7B	0.17 %
Category 3	0.021 %	Category 8	0.014 %
Category 4	0.25 %	Category 9	0.49 %
Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.042 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.014 %
Category 5D	0.014 %	Category 11B	0.014 %

Cinnamic aldehyde

Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamic aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Cinnamic aldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamic aldehyde dimethyl acetal

CAS-No.:	4364-06-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzene, (3,3-dimethoxy-1-propenyl)- (3,3-Dimethoxypropen-1-yl)benzene (3,3-Dimethoxyprop-1-en-1-yl)benzene 3-Phenyl-2-propenal dimethyl acetal

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.063 %	Category 7A	0.72 %
Category 2	0.019 %	Category 7B	0.72 %
Category 3	0.38 %	Category 8	0.037 %
Category 4	0.35 %	Category 9	0.69 %
Category 5A	0.089 %	Category 10A	2.5 %
Category 5B	0.089 %	Category 10B	2.5 %
Category 5C	0.089 %	Category 11A	1.4 %
Category 5D	0.089 %	Category 11B	1.4 %
Category 6	0.21 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

Cinnamic aldehyde dimethyl acetal

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic aldehyde dimethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic aldehyde dimethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamic aldehyde dimethyl acetal in the various product categories.

REFERENCES:

The IFRA Standard on Cinnamic aldehyde dimethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamic aldehyde dimethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Cinnamic aldehyde dimethyl acetal

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamyl nitrile

CAS-No.:	1885-38-7 4360-47-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cinnamonitrile (E) trans-.β.-Phenylacrylonitrile 2-Propenenitrile, 3-phenyl-, (E)-

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2002 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

Cinnamyl nitrile

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamyl nitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamyl nitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamyl nitrile in the various product categories.

REFERENCES:

The IFRA Standard on Cinnamyl nitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamyl nitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

Cinnamyl nitrile

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citral

CAS-No.:	5392-40-5 141-27-5 106-26-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3,7-Dimethyl-2,6-octadienal Geranial (trans-citral) Neral Geranial Lemarome (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2002 2008 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.20 %
Category 2	0.032 %	Category 7B	0.20 %
Category 3	0.10 %	Category 8	0.051 %
Category 4	0.60 %	Category 9	1.2 %
Category 5A	0.15 %	Category 10A	1.2 %
Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	0.051 %
Category 5D	0.051 %	Category 11B	0.051 %
Category 6	0.35 %	Category 12	No Restriction

Citral

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citral, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citral and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citral in the various product categories.

REFERENCES:

The IFRA Standard on Citral is based on at least one of the following publications:

• The RIFM Safety Assessment on Citral if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

Citral

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citronellol

CAS-No.:	106-22-9 1117-61-9 26489-01-0 6812-78-8 141-25-3 7540-51-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	106-22-9: 3,7-Dimethyl-6-octen-1-ol 6-Octen-1-ol, 3,7-dimethyl- Citronellol dl-Citronellol Rhodinol pure (commercial name) 1117-61-9: 3,7-Dimethyloct-6-en-1-ol 6-Octen-1-ol, 3,7-dimethyl-, (R)- (R)-3,7-Dimethyloct-6-en-1-ol (+)-ß-Citronellol (+)-(R)-Citronellol 26489-01-0: 6-Octen-1-ol, 3,7-dimethyl-,(+/-)- 6812-78-8: 3,7-Dimethyloct-7-en-1-ol 7-Octen-1-ol, 3,7-dimethyl-,(S)- 3,7-Dimethyl-(6-or 7-)octen-1-ol 3,7-Dimethyl-7-octen-1-ol 141-25-3: 3,7-Dimethyloct-7-en-1-ol 7-Octen-1-ol, 3,7-dimethyl- (isomer unspecified) α-Citronellol Rhodinol (commercial name) 7540-51-4: 3,7-Dimethyloct-6-en-1-ol (-)-3,7-Dimethyloct-6-en-1-ol (S)-3,7-Dimethyl-6-octen-1-ol 6-Octen-1-ol, 3,7-dimethyl-, (S)- l-Citronellol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Citronellol

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	2.2 %	Category 7A	25 %
Category 2	0.67 %	Category 7B	25 %
Category 3	13 %	Category 8	1.3 %
Category 4	12 %	Category 9	24 %
Category 5A	3.2 %	Category 10A	87 %
Category 5B	3.2 %	Category 10B	87 %
Category 5C	3.2 %	Category 11A	48 %
Category 5D	3.2 %	Category 11B	48 %
Category 6	7.3 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Citronellol

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citronellol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citronellol in the various product categories.

REFERENCES:

The IFRA Standard on Citronellol is based on at least one of the following publications:

• The RIFM Safety Assessment on Citronellol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Coumarin

CAS-No.:	91-64-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2H-1-Benzopyran-2-one 1,2-Benzopyrone cis-o-Coumaric acid lactone Coumarinic anhydride 2-Oxo-1,2-benzopyran 2H-chromen-2-one Tonka bean camphor

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.089 %	Category 7A	0.18 %
Category 2	0.080 %	Category 7B	0.18 %
Category 3	0.089 %	Category 8	0.035 %
Category 4	1.5 %	Category 9	0.52 %
Category 5A	0.38 %	Category 10A	0.52 %
Category 5B	0.11 %	Category 10B	1.6 %
Category 5C	0.16 %	Category 11A	0.035 %
Category 5D	0.035 %	Category 11B	0.035 %
Category 6	0.0024 %	Category 12	33 %

Coumarin

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Coumarin, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Coumarin and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Coumarin in the various product categories.

REFERENCES:

The IFRA Standard on Coumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on Coumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

Coumarin

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cuminaldehyde

CAS-No.:	122-03-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzaldehyde, 4-(1-methylethyl)- Cumaldehyde Cuminal Cuminic aldehyde 4-Isopropylbenzaldehyde p-Isopropylbenzaldehyde 4-Isopropylbenzenecarboxaldehyde

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.050 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	3.3 %
Category 5B	0.12 %	Category 10B	3.3 %
Category 5C	0.12 %	Category 11A	1.8 %
Category 5D	0.12 %	Category 11B	1.8 %
Category 6	0.28 %	Category 12	No Restriction

Cuminaldehyde

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cuminaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cuminaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cuminaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Cuminaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Cuminaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

Cuminaldehyde

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclamen aldehyde

CAS-No.:	103-95-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenepropanal, α-methyl-4-(1-methylethyl)- Benzenepropanol, .α.-methyl-4-(1-methylethyl)- 3-p-Cumenyl-2-methylpropionaldehyde p-Isopropyl-α-methylhydrocinnamaldehyde 3-(4-Isopropylphenyl)-2-methylpropanal 2-Methyl-3-(p-isopropylphenyl)propionaldehyde α-Methyl-p-isopropylphenylpropylaldehyde α-Methyl-4-(1-methylethyl)benzenepropanal Cyclamal (commercial name) Cyclaviol (commercial name) Cyclosal (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.076 %
Category 2	0.14 %	Category 7B	0.076 %
Category 3	0.038 %	Category 8	0.025 %
Category 4	0.95 %	Category 9	0.23 %
Category 5A	0.45 %	Category 10A	0.23 %
Category 5B	0.076 %	Category 10B	0.72 %
Category 5C	0.076 %	Category 11A	0.025 %

Cyclamen aldehyde

Category 5D	0.025 %	Category 11B	0.025 %
Category 6	0.076 %	Category 12	16 %

FRAGRANCE INGREDIENT SPECIFICATION:	Cyclamen aldehyde should not contain more than 1.5% of Cyclamen alcohol.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Cyclamen aldehyde has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclamen aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclamen aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclamen aldehyde in the various product categories.
In addition, they recommend to use Cyclamen aldehyde according to the specification above mentioned.

REFERENCES:

Cyclamen aldehyde

The IFRA Standard on Cyclamen aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclamen aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclopentadecanolide

CAS-No.:	106-02-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Angelica lactone Cyclopentadecanolide 15-Hydroxypentadecanoic acid, ω-lactone Oxacyclohexadecan-2-one Pentadecalactone ω-Pentadecalactone Pentadecanolide Cyclopentadecanolid Supra (commercial name) Exaltex (commercial name) Exaltolide (commercial name) Macrolide (commercial name) Muskalactone (commercial name) Pentalide (commercial name) Thibetolide (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.42 %	Category 7A	4.8 %
Category 2	0.13 %	Category 7B	4.8 %
Category 3	2.5 %	Category 8	0.20 %
Category 4	2.4 %	Category 9	4.6 %
Category 5A	0.60 %	Category 10A	4.6 %
Category 5B	0.60 %	Category 10B	17 %

Cyclopentadecanolide

Category 5C	0.60 %	Category 11A	0.20 %
Category 5D	0.20 %	Category 11B	0.20 %
Category 6	1.4 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclopentadecanolide, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclopentadecanolide and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclopentadecanolide in the various product categories.

REFERENCES:

The IFRA Standard on Cyclopentadecanolide is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclopentadecanolide if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Cyclopentadecanolide

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dibenzyl ether

CAS-No.:	103-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Phenylmethoxymethylbenzene Benzene, 1,1'-[oxybis(methylene)]bis- Benzyl ether Benzyl oxide Dibenzyl oxide 1,1'-[Oxybis(methylene)]dibenzene

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.000040 %	Category 7A	0.00093 %
Category 2	0.0028 %	Category 7B	0.00093 %
Category 3	0.00020 %	Category 8	0.000081 %
Category 4	0.012 %	Category 9	0.0037 %
Category 5A	0.0023 %	Category 10A	0.0037 %
Category 5B	0.00024 %	Category 10B	0.0037 %
Category 5C	0.00032 %	Category 11A	0.000081 %
Category 5D	0.000081 %	Category 11B	0.000081 %
Category 6	0.0023 %	Category 12	0.24 %

Dibenzyl ether

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dibenzyl ether, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dibenzyl ether and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dibenzyl ether in the various product categories.

REFERENCES:

The IFRA Standard on Dibenzyl ether is based on at least one of the following publications:

• The RIFM Safety Assessment on Dibenzyl ether if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Dibenzyl ether

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)

CAS-No.:	33704-61-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1,2,3,5,6,7-Hexahydro-1,1,2,3,3-pentamethyl-4H-inden-4-one 4H-Inden-4-one, 1,2,3,5,6,7-hexahydro-1,1,2,3,3-pentamethyl- 1,1,2,3,3-Pentamethyl-1,2,3,5,6,7-hexahydro-4H-inden-4-one Cashmeran (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0063 %	Category 7A	0.031 %
Category 2	0.26 %	Category 7B	0.031 %
Category 3	0.019 %	Category 8	0.0084 %
Category 4	3.8 %	Category 9	0.13 %
Category 5A	0.31 %	Category 10A	0.13 %
Category 5B	0.025 %	Category 10B	0.28 %
Category 5C	0.038 %	Category 11A	0.0084 %
Category 5D	0.0084 %	Category 11B	0.0084 %
Category 6	0.0063 %	Category 12	9.4 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) in the various product categories.

REFERENCES:

The IFRA Standard on 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) is based on at least one of the following publications:

• The RIFM Safety Assessment on 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dihydrocoumarin

CAS-No.:	119-84-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Dihydrocoumarin 1,2-Benzodihydropyrone 2H-1-Benzopyran-2-one, 3,4-dihydro- Chroman-2-one 2-Chromanone 3,4-Dihydro-2H-1-benzopyran-2-one o-Hydroxydihydrocinnamic acid lactone Melilotic acid lactone Melilotic lactone (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	1974 2013 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.038 %	Category 7A	0.43 %
Category 2	0.011 %	Category 7B	0.43 %
Category 3	0.23 %	Category 8	0.018 %
Category 4	0.21 %	Category 9	0.41 %
Category 5A	0.053 %	Category 10A	1.5 %
Category 5B	0.053 %	Category 10B	1.5 %
Category 5C	0.053 %	Category 11A	0.018 %
Category 5D	0.018 %	Category 11B	0.018 %

Dihydrocoumarin

Category 6	0.12 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dihydrocoumarin, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dihydrocoumarin and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dihydrocoumarin in the various product categories.

REFERENCES:

The IFRA Standard on Dihydrocoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on Dihydrocoumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Dihydrocoumarin

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

CAS-No.:	68737-61-1 (mixed isomers) 68039-49-6 68039-48-5 27939-60-2 67801-65-4 36635-35-5 68084-52-6 35145-02-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Dimethylcyclohex-3-ene-1-carbaldehyde (isomer mixture) (68737-61-1) 2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (68039-49-6) 3,5-Dimethylcyclohex-3-ene-1-carbaldehyde (68039-48-5) Dimethylcyclohex-3-ene-1-carbaldehyde (isomer unspecified) (27939-60-2) 3,6-Dimethyl-3-cyclohexene-1-carboxaldehyde (67801-65-4) 3-Cyclohexene-1-carboxaldehyde, dimethyl- (isomer mixture) 2,4-Dimethyltetrahydrobenzaldehyde Dimethyltetrahydrobenzaldehyde (isomer mixture) Triplal (commercial name) Vertocitral (commercial name) Vertoliff (commercial name) Tricyclal (commercial name) Hivertal (commercial name) Agrumen Aldehyde (commercial name) Cyclovertal (commercial name) Ligustral (commercial name) Aldehyde AA (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2010 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	5.2 %

Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

Category 2	0.14 %	Category 7B	5.2 %
Category 3	2.7 %	Category 8	0.27 %
Category 4	2.5 %	Category 9	4.9 %
Category 5A	0.64 %	Category 10A	18 %
Category 5B	0.64 %	Category 10B	18 %
Category 5C	0.64 %	Category 11A	9.8 %
Category 5D	0.64 %	Category 11B	9.8 %
Category 6	1.5 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The above limits apply to Dimethylcyclohexen-3-ene-1-carbaldehyde (mixed isomers) used individually or in combination. The sum of concentrations of Dimethylcyclohexen-3-ene-1-carbaldehyde isomers should not exceed the maximum concentration levels established by this Standard.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) in the various product categories.

REFERENCES:

The IFRA Standard on Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) is based on at least one of the following publications:

• The RIFM Safety Assessment on Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one

CAS-No.:	56973-85-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	α-Dynascone 4-Penten-1-one, 1-(5,5-dimethyl-1-cyclohexen-1-yl)- Dynascone (commercial name) Galbanone (commercial name) Galbascone (commercial name) Neobutenone (commercial name) Neogal (commercial name) Neogalbenum (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.19 %	Category 7A	0.54 %
Category 2	0.057 %	Category 7B	0.54 %
Category 3	0.18 %	Category 8	0.091 %
Category 4	1.1 %	Category 9	1.4 %
Category 5A	0.27 %	Category 10A	1.4 %
Category 5B	0.27 %	Category 10B	3.4 %
Category 5C	0.27 %	Category 11A	0.091 %
Category 5D	0.091 %	Category 11B	0.091 %

1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one

Category 6	0.54 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,2-Dimethyl-3-(3-tolyl)propan-1-ol

CAS-No.:	103694-68-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenepropanol,.ß.,. ß.,3-trimethyl 2,2-Dimethyl-3-(3-methylphenyl)propanol Benzene propanol Majantol (commercial name) Linlan alcohol (commercial name) Muguetol B (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008 2010

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.034 %	Category 7A	0.052 %
Category 2	0.20 %	Category 7B	0.052 %
Category 3	0.025 %	Category 8	0.013 %
Category 4	1.7 %	Category 9	0.14 %
Category 5A	0.43 %	Category 10A	0.14 %
Category 5B	0.061 %	Category 10B	0.30 %
Category 5C	0.039 %	Category 11A	0.013 %
Category 5D	0.013 %	Category 11B	0.013 %
Category 6	0.0025 %	Category 12	8.6 %

2,2-Dimethyl-3-(3-tolyl)propan-1-ol

FRAGRANCE INGREDIENT SPECIFICATION:	2,2-Dimethyl-3-(3-tolyl)propan-1-ol should only be used as a fragrance ingredient if traces of organochlorine compounds are restricted. Total Chlorine, which can be measured by Atomic Absorption Spectroscopy, must not exceed 25 ppm in the raw material.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,2-Dimethyl-3-(3-tolyl)propan-1-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,2-Dimethyl-3-(3-tolyl)propan-1-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,2-Dimethyl-3-(3-tolyl)propan-1-ol in the various product categories.
In addition, they recommend to use 2,2-Dimethyl-3-(3-tolyl)propan-1-ol according to the specification above mentioned.

REFERENCES:

The IFRA Standard on 2,2-Dimethyl-3-(3-tolyl)propan-1-ol is based on at least one of the following publications:

2,2-Dimethyl-3-(3-tolyl)propan-1-ol

• The RIFM Safety Assessment on 2,2-Dimethyl-3-(3-tolyl)propan-1-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Ethoxy-4-methylphenol

CAS-No.:	2563-07-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Ethoxy-p-cresol 2-Ethoxy-4-methylphenol 4-Methyl-2-ethoxyphenol Phenol, 2-ethoxy-4-methyl- Ultravanil (commercial name) Supravanil (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0087 %	Category 7A	0.044 %
Category 2	0.0053 %	Category 7B	0.044 %
Category 3	0.017 %	Category 8	0.0058 %
Category 4	0.099 %	Category 9	0.052 %
Category 5A	0.025 %	Category 10A	0.052 %
Category 5B	0.017 %	Category 10B	0.052 %
Category 5C	0.025 %	Category 11A	0.0058 %
Category 5D	0.0058 %	Category 11B	0.0058 %
Category 6	0.0087 %	Category 12	4.2 %

2-Ethoxy-4-methylphenol

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Ethoxy-4-methylphenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Ethoxy-4-methylphenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Ethoxy-4-methylphenol in the various product categories.

REFERENCES:

The IFRA Standard on 2-Ethoxy-4-methylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Ethoxy-4-methylphenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

2-Ethoxy-4-methylphenol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Ethylbenzaldehyde

CAS-No.:	4748-78-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-Ethylbenzaldehyde Benzaldehyde, 4-ethyl

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.040 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	0.92 %
Category 5B	0.12 %	Category 10B	3.3 %
Category 5C	0.12 %	Category 11A	0.040 %
Category 5D	0.040 %	Category 11B	0.040 %
Category 6	0.28 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

p-Ethylbenzaldehyde

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Ethylbenzaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Ethylbenzaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Ethylbenzaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-Ethylbenzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Ethylbenzaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

p-Ethylbenzaldehyde

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Eugenol

CAS-No.:	97-53-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Eugenol 4-Allylcatechol-2-methyl ether 1-Allyl-4-hydroxy-3-methoxybenzene 4-Allyl-2-methoxyphenol Caryophyllic acid 2-Hydroxy-5-allylanisole 1-Hydroxy-2-methoxy-4-allylbenzene 4-Hydroxy-3-methoxy-1-allylbenzene 1-Hydroxy-2-methoxy-4-propenylbenzene 2-Methoxy-4-allylphenol 2-Methoxy-4-(2-propenyl)phenol Phenol, 2-methoxy-4-(2-propenyl)- Eugenic acid Allylguaiacol 4-Allylguaiacol

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	2004 2006 2007 2008 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	2.0 %
Category 2	0.14 %	Category 7B	2.0 %
Category 3	1.0 %	Category 8	0.21 %
Category 4	2.5 %	Category 9	4.9 %
Category 5A	0.64 %	Category 10A	4.0 %

Eugenol

Category 5B	0.64 %	Category 10B	18 %
Category 5C	0.64 %	Category 11A	0.21 %
Category 5D	0.21 %	Category 11B	0.21 %
Category 6	1.5 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Eugenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Eugenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Eugenol in the various product categories.

REFERENCES:

The IFRA Standard on Eugenol is based on at least one of the following publications:

• The RIFM Safety Assessment on Eugenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Eugenol

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Farnesol

CAS-No.:	4602-84-0 106-28-5 3790-71-4 16106-95-9 3879-60-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Farnesol 2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl- Farnesyl alcohol Trimethyl dodecatrienol 3,7,11-Trimethyl-2,6,10-dodecatrien-1-ol trans-trans-Farnesol cis-trans-Farnesol 2Z,6Z-Farnesol cis-cis-Farnesol 2-trans,6-cis-Farnesol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1979 1980 2002 2006

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.21 %	Category 7A	2.4 %
Category 2	0.062 %	Category 7B	2.4 %
Category 3	1.2 %	Category 8	0.12 %
Category 4	1.2 %	Category 9	2.3 %
Category 5A	0.29 %	Category 10A	8.1 %

Farnesol

Category 5B	0.29 %	Category 10B	8.1 %
Category 5C	0.29 %	Category 11A	4.5 %
Category 5D	0.29 %	Category 11B	4.5 %
Category 6	0.68 %	Category 12	No Restriction

FRAGRANCE INGREDIENT SPECIFICATION:	Farnesol should only be used as a fragrance ingredient if it contains a minimum of 96% of farnesol isomers as determined by GLC.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Farnesol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Farnesol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Farnesol in the various product categories.
In addition, they recommend to use Farnesol according to the specification above mentioned.

REFERENCES:

Farnesol

The IFRA Standard on Farnesol is based on at least one of the following publications:

• The RIFM Safety Assessment on Farnesol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Geraniol

CAS-No.:	106-24-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Geraniol 3,7-Dimethylocta-2,6-dien-1-ol 2,6-Octadien-1-ol, 3,7-dimethyl-, (e)- 2,6-Dimethyl-2,6-octadien-8-ol trans-3,7-Dimethyl-2,6-octadien-1-ol Geraniol 60 (commercial name) Geraniol Coeur (commercial name) Geraniol extra (commercial name) Geraniol SP (commercial name) Geraniol Supra (commercial name) Meranol (commercial name) Rhodinol pure (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	2007 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.78 %	Category 7A	0.78 %
Category 2	0.25 %	Category 7B	0.78 %
Category 3	1.1 %	Category 8	0.26 %
Category 4	4.7 %	Category 9	2.8 %
Category 5A	1.2 %	Category 10A	1.1 %
Category 5B	0.78 %	Category 10B	5.3 %

Geraniol

Category 5C	0.94 %	Category 11A	0.26 %
Category 5D	0.26 %	Category 11B	0.26 %
Category 6	0.16 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Geraniol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Geraniol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Geraniol in the various product categories.

REFERENCES:

The IFRA Standard on Geraniol is based on at least one of the following publications:

• The RIFM Safety Assessment on Geraniol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Geraniol

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Heptylidene cyclopentan-1-one

CAS-No.:	39189-74-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Heptylidenecyclopentanone 2-Heptylidenecyclopentan-1-one Cyclopentanone, 2-heptylidene-

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

2-Heptylidene cyclopentan-1-one

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Heptylidene cyclopentan-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Heptylidene cyclopentan-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Heptylidene cyclopentan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 2-Heptylidene cyclopentan-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Heptylidene cyclopentan-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

2-Heptylidene cyclopentan-1-one

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Hexenal

CAS-No.:	505-57-7 6728-26-3 16635-54-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Hexenal Hex-2-enal trans-2-Hexenal 2-Hexenal, (E)- Hexen-2-al Leaf aldehyde beta-Propyl acrolein cis-2-Hexenal 2-Hexenal, (Z)-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	1989 1992 2006 2007 2008 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0014 %	Category 7A	0.016 %
Category 2	0.00041 %	Category 7B	0.016 %
Category 3	0.0083 %	Category 8	0.00067 %
Category 4	0.0077 %	Category 9	0.015 %
Category 5A	0.0020 %	Category 10A	0.054 %
Category 5B	0.0020 %	Category 10B	0.054 %

2-Hexenal

Category 5C	0.0020 %	Category 11A	0.00067 %
Category 5D	0.00067 %	Category 11B	0.00067 %
Category 6	0.0045 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Hexenal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Hexenal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Hexenal in the various product categories.

REFERENCES:

The IFRA Standard on 2-Hexenal is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Hexenal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

2-Hexenal

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Hexyl cinnamic aldehyde

CAS-No.:	101-86-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Benzylideneoctanal Hexyl cinnamal α-Hexyl cinnamaldehyde Hexyl cinnamic aldehyde α-n-Hexylcinnamic aldehyde Hexyl cinnamyl α-n-Hexyl-β-phenylacrolein Octanal, 2-(phenylmethylene)- Jasmonal H (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	1.8 %	Category 7A	20 %
Category 2	0.53 %	Category 7B	20 %
Category 3	11 %	Category 8	1.0 %
Category 4	9.9 %	Category 9	19 %
Category 5A	2.5 %	Category 10A	69 %
Category 5B	2.5 %	Category 10B	69 %
Category 5C	2.5 %	Category 11A	38 %
Category 5D	2.5 %	Category 11B	38 %

alpha-Hexyl cinnamic aldehyde

Category 6	5.8 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Hexyl cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Hexyl cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Hexyl cinnamic aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Hexyl cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Hexyl cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

alpha-Hexyl cinnamic aldehyde

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Hexylidene cyclopentanone

CAS-No.:	17373-89-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Hexylidene cyclopentanone Cyclopentanone, 2-hexylidene- 2-Hexylidene cyclopentanone Jasmalone (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1983 1994 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.023 %	Category 7A	0.26 %
Category 2	0.0069 %	Category 7B	0.26 %
Category 3	0.14 %	Category 8	0.014 %
Category 4	0.13 %	Category 9	0.25 %
Category 5A	0.033 %	Category 10A	0.90 %
Category 5B	0.033 %	Category 10B	0.90 %
Category 5C	0.033 %	Category 11A	0.50 %
Category 5D	0.033 %	Category 11B	0.50 %
Category 6	0.076 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

alpha-Hexylidene cyclopentanone

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Hexylidene cyclopentanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Hexylidene cyclopentanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Hexylidene cyclopentanone in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Hexylidene cyclopentanone is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Hexylidene cyclopentanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

alpha-Hexylidene cyclopentanone

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hexyl salicylate

CAS-No.:	6259-76-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Hexyl 2-hydroxybenzoate Benzoic acid, 2-hydroxy-, hexyl ester Hexyl o-hydroxybenzoate

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.092 %	Category 7A	0.38 %
Category 2	0.80 %	Category 7B	0.38 %
Category 3	0.25 %	Category 8	0.10 %
Category 4	6.5 %	Category 9	1.2 %
Category 5A	2.7 %	Category 10A	1.2 %
Category 5B	0.30 %	Category 10B	2.2 %
Category 5C	0.46 %	Category 11A	0.10 %
Category 5D	0.10 %	Category 11B	0.10 %
Category 6	0.0092 %	Category 12	64 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

Hexyl salicylate

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Hexyl salicylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hexyl salicylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Hexyl salicylate in the various product categories.

REFERENCES:

The IFRA Standard on Hexyl salicylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Hexyl salicylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Hexyl salicylate

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroxycitronellal

CAS-No.:	107-75-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Hydroxycitronellal Citronellalhydrate 7-Hydroxy-3,7-dimethyloctanal 3,7-Dimethyl-7-hydroxyoctanal Octanal, 7-hydroxy-3,7-dimethyl- Oxydihydrocitronellal Laurinal (commercial name) Laurine (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	1987 2000 2005 2007 2008 2013 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.38 %	Category 7A	1.6 %
Category 2	0.11 %	Category 7B	1.6 %
Category 3	2.3 %	Category 8	0.18 %
Category 4	2.1 %	Category 9	4.1 %
Category 5A	0.53 %	Category 10A	0.78 %
Category 5B	0.53 %	Category 10B	7.8 %
Category 5C	0.53 %	Category 11A	0.18 %

Hydroxycitronellal

Category 5D	0.18 %	Category 11B	0.18 %
Category 6	1.2 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Hydroxycitronellal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroxycitronellal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Hydroxycitronellal in the various product categories.

REFERENCES:

The IFRA Standard on Hydroxycitronellal is based on at least one of the following publications:

• The RIFM Safety Assessment on Hydroxycitronellal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients.

Hydroxycitronellal

Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

CAS-No.:	31906-04-4 51414-25-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Cyclohexen-1-carboxaldehyde, 4-(4-hydroxy-4-methylpentyl)- 3-Cyclohexen-1-carboxaldehyde, 3-(4-hydroxy-4-methylpentyl)- Hydroxyisohexyl 3-cyclohexene carboxaldehyde 4-(4-Hydroxy-4-methylpenyl) cyclohex-3-enecarbaldehyde 3-(4-Hydroxy-4-methylpentyl) cyclohex-3-ene-1-carbaldehyde HICC Lyral (commercial name) Kovanol (commercial name) Mugonal (commercial name) Landolal (commercial name) Cyclohexal (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2003 2008 2009 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.020 %	Category 7A	0.020 %
Category 2	0.020 %	Category 7B	0.020 %
Category 3	0.10 %	Category 8	0.067 %
Category 4	0.20 %	Category 9	0.20 %
Category 5A	0.20 %	Category 10A	0.20 %
Category 5B	0.20 %	Category 10B	0.20 %

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

Category 5C	0.20 %	Category 11A	0.067 %
Category 5D	0.067 %	Category 11B	0.067 %
Category 6	0.20 %	Category 12	91 %

Fragrance ingredient restriction - Note box
The restrictions as given for the individual categories are not based on the Quantitative Risk Assessment (QRA) methodology but solely represent a pragmatic approach to address the specific situation for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) in the various product categories.

REFERENCES:

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

The IFRA Standard on 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) is based on at least one of the following publications:

• The RIFM Safety Assessment on 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Isobutyl-alpha-methyl hydrocinnamaldehyde

CAS-No.:	6658-48-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	p-Isobutyl-α-methyl hydro cinnamic aldehyde Benzenepropanal, α-methyl-4-(2-methylpropyl)- 3-(4-Isobutyl-phenyl)-2-methyl-propionaldehyde 2-Methyl-3-[4-(2-methylpropyl)phenyl]propanal 3-(p-Cumenyl)-2-methylpropionaldehyde Cyclamen homoaldehyde Rhodial (commercial name) Silvial (commercial name) Suzaral (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.080 %	Category 7A	0.72 %
Category 2	0.053 %	Category 7B	0.72 %
Category 3	0.80 %	Category 8	0.083 %
Category 4	0.99 %	Category 9	1.9 %
Category 5A	0.25 %	Category 10A	1.9 %
Category 5B	0.25 %	Category 10B	5.4 %
Category 5C	0.25 %	Category 11A	0.083 %
Category 5D	0.083 %	Category 11B	0.083 %

p-Isobutyl-alpha-methyl hydrocinnamaldehyde

Category 6	0.080 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Isobutyl-alpha-methyl hydrocinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Isobutyl-alpha-methyl hydrocinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Isobutyl-alpha-methyl hydrocinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-Isobutyl-alpha-methyl hydrocinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Isobutyl-alpha-methyl hydrocinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

p-Isobutyl-alpha-methyl hydrocinnamaldehyde

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isocyclocitral

CAS-No.:	1335-66-6 1423-46-7 67634-07-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	1335-66-6: 1-Formyl-[2,4,6-]&[3,5,6-]trimethyl-3-cyclohexene [2,4,6-]&[3,5,6-]Trimethyl-3-cyclohexene-1-carboxaldehyde 1423-46-7: 3-Cyclohexene-1-carboxaldehyde, 2,4,6-trimethyl- Neocyclocitral 2,4,6-Trimethylcyclohex-3-enecarbaldehyde 2,4,6-Trimethyl-3-cyclohexenylcarboxaldehyde 2,4,6-Trimethyl-3-cyclohexene-1-carbaldehyde 67634-07-5: 3-Cyclohexene-1-carboxaldehyde, 3,5,6-trimethyl- 3,5,6-Trimethylcyclohex-3-ene-1-carbaldehyde

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.54 %	Category 7A	6.1 %
Category 2	0.16 %	Category 7B	6.1 %
Category 3	3.2 %	Category 8	0.32 %
Category 4	3.0 %	Category 9	5.9 %
Category 5A	0.76 %	Category 10A	21 %

Isocyclocitral

Category 5B	0.76 %	Category 10B	21 %
Category 5C	0.76 %	Category 11A	12 %
Category 5D	0.76 %	Category 11B	12 %
Category 6	1.8 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isocyclocitral, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isocyclocitral and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isocyclocitral in the various product categories.

REFERENCES:

Isocyclocitral

The IFRA Standard on Isocyclocitral is based on at least one of the following publications:

• The RIFM Safety Assessment on Isocyclocitral if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isocyclogeraniol

CAS-No.:	68527-77-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Cyclohexene-1-methanol, 2,4,6-trimethyl- 2,4,6-Trimethyl-3-cyclohexene-1-methanol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1995 2005 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.29 %	Category 7A	3.3 %
Category 2	0.087 %	Category 7B	3.3 %
Category 3	1.8 %	Category 8	0.17 %
Category 4	1.6 %	Category 9	3.2 %
Category 5A	0.41 %	Category 10A	11 %
Category 5B	0.41 %	Category 10B	11 %
Category 5C	0.41 %	Category 11A	6.3 %
Category 5D	0.41 %	Category 11B	6.3 %
Category 6	0.96 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

Isocyclogeraniol

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isocyclogeraniol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isocyclogeraniol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isocyclogeraniol in the various product categories.

REFERENCES:

The IFRA Standard on Isocyclogeraniol is based on at least one of the following publications:

• The RIFM Safety Assessment on Isocyclogeraniol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Isocyclogeraniol

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isoeugenol

CAS-No.:	97-54-1 5932-68-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-Hydroxy-2-methoxy-4-propen-1-ylbenzene 4-Hydroxy-3-methoxy-1-propen-1-ylbenzene 4-Hydroxy-3-methoxy-1-propenylbenzene iso-Eugenol 3-Methoxy-4-hydroxy-1-propen-1-ylbenzene 2-Methoxy-4-propenylphenol 2-Methoxy-4-(1-propenyl)phenol Phenol, 2-methoxy-4-(1-propenyl)- 4-Propenylguaiacol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1980 1998 2001 2004 2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.019 %	Category 7A	0.22 %
Category 2	0.0057 %	Category 7B	0.22 %
Category 3	0.12 %	Category 8	0.0090 %
Category 4	0.11 %	Category 9	0.21 %
Category 5A	0.027 %	Category 10A	0.21 %
Category 5B	0.027 %	Category 10B	0.75 %
Category 5C	0.027 %	Category 11A	0.0090 %

Isoeugenol

Category 5D	0.0090 %	Category 11B	0.0090 %
Category 6	0.063 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isoeugenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isoeugenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isoeugenol in the various product categories.

REFERENCES:

The IFRA Standard on Isoeugenol is based on at least one of the following publications:

• The RIFM Safety Assessment on Isoeugenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients.

Isoeugenol

Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Jasmine absolute (grandiflorum)

CAS-No.:	8022-96-6 8024-43-9 90045-94-6 84776-64-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Jasmine absolute (Jasminum grandiflorum L.) Jasminum grandiflorum absolute Jasmin officinale var. grandiflorum

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	1.2 %
Category 2	0.032 %	Category 7B	1.2 %
Category 3	0.65 %	Category 8	0.063 %
Category 4	0.60 %	Category 9	1.2 %
Category 5A	0.15 %	Category 10A	4.2 %
Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	2.3 %
Category 5D	0.15 %	Category 11B	2.3 %
Category 6	0.35 %	Category 12	No Restriction

Jasmine absolute (grandiflorum)

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Jasmine absolute (grandiflorum), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Jasmine absolute (grandiflorum) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Jasmine absolute (grandiflorum) in the various product categories.

REFERENCES:

The IFRA Standard on Jasmine absolute (grandiflorum) is based on at least one of the following publications:

• The RIFM Safety Assessment on Jasmine absolute (grandiflorum) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

Jasmine absolute (grandiflorum)

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Jasmine absolute (sambac)

CAS-No.:	91770-14-8 1034798-23-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Jasmin sambac extract Jasminum sambac (L.) Aiton

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.68 %	Category 7A	7.7 %
Category 2	0.20 %	Category 7B	7.7 %
Category 3	4.1 %	Category 8	0.40%
Category 4	3.8 %	Category 9	7.4 %
Category 5A	0.96 %	Category 10A	26 %
Category 5B	0.96 %	Category 10B	26 %
Category 5C	0.96 %	Category 11A	15 %
Category 5D	0.96 %	Category 11B	15 %
Category 6	2.2 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

Jasmine absolute (sambac)

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Jasmine absolute (sambac), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Jasmine absolute (sambac) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Jasmine absolute (sambac) in the various product categories.

REFERENCES:

The IFRA Standard on Jasmine absolute (sambac) is based on at least one of the following publications:

• The RIFM Safety Assessment on Jasmine absolute (sambac) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Jasmine absolute (sambac)

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Melissa oil (genuine Melissa officinalis L.)

CAS-No.:	8014-71-9 84082-61-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Balm oil (Melissa officinalis L.) Lemon balm oil Melissa officinalis leaf oil Melissa oil (Melissa officinalis L.) Oil of balm

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008 2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	1.2 %
Category 2	0.032 %	Category 7B	1.2 %
Category 3	0.65 %	Category 8	0.063 %
Category 4	0.60 %	Category 9	1.2 %
Category 5A	0.15 %	Category 10A	4.2 %
Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	2.3 %
Category 5D	0.15 %	Category 11B	2.3 %
Category 6	0.35 %	Category 12	No Restriction

Melissa oil (genuine Melissa officinalis L.)

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Melissa oil (genuine Melissa officinalis L.), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Melissa oil (genuine Melissa officinalis L.) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Melissa oil (genuine Melissa officinalis L.) in the various product categories.

REFERENCES:

The IFRA Standard on Melissa oil (genuine Melissa officinalis L.) is based on at least one of the following publications:

• The RIFM Safety Assessment on Melissa oil (genuine Melissa officinalis L.) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients.

Melissa oil (genuine Melissa officinalis L.)

Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Perilla aldehyde

CAS-No.:	2111-75-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-Cyclohexene-1-carboxaldehyde, 4-(1-methylethenyl)- 4-Isopropenylcyclohex-1-ene-1-carbaldehyde 4-Isopropenyl-1-cyclohexene-1-carboxaldehyde Dihydrocuminic aldehyde p-Mentha-1,8-dien-7-al Perillaldehyde

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1979 1994 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.054 %	Category 7A	0.61 %
Category 2	0.016 %	Category 7B	0.61 %
Category 3	0.32 %	Category 8	0.032 %
Category 4	0.30 %	Category 9	0.59 %
Category 5A	0.076 %	Category 10A	2.1 %
Category 5B	0.076 %	Category 10B	2.1 %
Category 5C	0.076 %	Category 11A	1.2 %
Category 5D	0.076 %	Category 11B	1.2 %
Category 6	0.18 %	Category 12	No Restriction

Perilla aldehyde

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Perilla aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Perilla aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Perilla aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Perilla aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Perilla aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Perilla aldehyde

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Menthadiene-7-methyl formate

CAS-No.:	68683-20-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cyclohexadiene-1-ethanol, 4-(1-methylethyl)-, formate Isobergamate 4-(Isopropyl)cyclohexadiene-1-ethyl formate 2-(4-Isopropylcyclohexadienyl)ethyl formate Menthadienyl formate 4-(1-Methylethyl)cyclohexadiene-1-ethyl formate

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1986 1994 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

Menthadiene-7-methyl formate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Menthadiene-7-methyl formate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Menthadiene-7-methyl formate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Menthadiene-7-methyl formate in the various product categories.

REFERENCES:

The IFRA Standard on Menthadiene-7-methyl formate is based on at least one of the following publications:

• The RIFM Safety Assessment on Menthadiene-7-methyl formate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

Menthadiene-7-methyl formate

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Methoxybenzaldehyde

CAS-No.:	123-11-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	p-Methoxybenzaldehyde Anisaldehyde p-Anisaldehyde Anisic aldehyde Anisyl aldehyde Benzaldehyde, 4-methoxy 4-Methoxybenzaldehyde Aubepine P Cresol (commercial name) Aubepine liquid (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	2013 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.23 %	Category 7A	0.14 %
Category 2	0.080 %	Category 7B	0.14 %
Category 3	0.14 %	Category 8	0.031 %
Category 4	1.4 %	Category 9	0.42 %
Category 5A	0.38 %	Category 10A	0.19 %
Category 5B	0.093 %	Category 10B	1.1 %
Category 5C	0.14 %	Category 11A	0.031 %
Category 5D	0.031 %	Category 11B	0.031 %

p-Methoxybenzaldehyde

Category 6	0.047 %	Category 12	31 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Methoxybenzaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Methoxybenzaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Methoxybenzaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-Methoxybenzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Methoxybenzaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

p-Methoxybenzaldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

o-Methoxycinnamaldehyde

CAS-No.:	1504-74-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2'-Methoxycinnamaldehyde ortho-Methoxycinnamic aldehyde β-(o-Methoxyphenyl)acrolein 3-(2-Methoxyphenyl)acrylaldehyde 3-(o-Methoxyphenyl)-2-propenal 2-Propenal, 3-(2-methoxyphenyl)-

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

o-Methoxycinnamaldehyde

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for o-Methoxycinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for o-Methoxycinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of o-Methoxycinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on o-Methoxycinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on o-Methoxycinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

o-Methoxycinnamaldehyde

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methoxy dicyclopentadiene carboxaldehyde

CAS-No.:	86803-90-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4,7-Methano-1H-indene-2-carboxaldehyde, octahydro-5-methoxy 8-Methoxytricyclo[5.2.2.1]decane-4-carboxaldehyde Scentenal (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1998 2007 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.19 %	Category 7A	2.2 %
Category 2	0.057 %	Category 7B	2.2 %
Category 3	1.2 %	Category 8	0.091 %
Category 4	1.1 %	Category 9	2.1 %
Category 5A	0.27 %	Category 10A	2.1 %
Category 5B	0.27 %	Category 10B	7.5 %
Category 5C	0.27 %	Category 11A	0.091 %
Category 5D	0.091 %	Category 11B	0.091 %
Category 6	0.63 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

Methoxy dicyclopentadiene carboxaldehyde

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methoxy dicyclopentadiene carboxaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methoxy dicyclopentadiene carboxaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methoxy dicyclopentadiene carboxaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Methoxy dicyclopentadiene carboxaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Methoxy dicyclopentadiene carboxaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Methoxy dicyclopentadiene carboxaldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Methoxy-alpha-methylbenzenepropanal

CAS-No.:	5462-06-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-Methoxy-alpha-methylbenzenepropanal 4-Methoxy-α-methylbenzenepropanal 2-Anisylpropional 2-(p-Anisyl)propanal Benzenepropanal, 4-methoxy-α-methyl- Benzenepropanal, 4-methoxy-alpha-methyl- Hydrocinnamaldehyde, p-methoxy-a-methyl p-Methoxyhydratropaldehyde 4-Methoxy-α-methylbenzenepropanal p-Methoxy-α-methylhydrocinnamaldehyde p-Methoxy-alpha-methylhydrocinnamaldehyde 3-(4-Methoxyphenyl)-2-methylpropanal 3-(p-Methoxyphenyl)-2-methylpropionaldehyde 2-Methyl-3-(p-methoxyphenyl)propanal 2-Methyl-3-(4-methoxyphenyl)propionaldehyde Canthoxal (commercial name) Fennaldehyde (commercial name) Foliaver (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	2009 2013 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.86 %
Category 2	0.14 %	Category 7B	0.86 %
Category 3	0.75 %	Category 8	0.21 %
Category 4	2.5 %	Category 9	2.7 %

4-Methoxy-alpha-methylbenzenepropanal

Category 5A	0.64 %	Category 10A	0.75 %
Category 5B	0.64 %	Category 10B	4.1 %
Category 5C	0.64 %	Category 11A	0.21 %
Category 5D	0.21 %	Category 11B	0.21 %
Category 6	0.11 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Methoxy-alpha-methylbenzenepropanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methoxy-alpha-methylbenzenepropanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Methoxy-alpha-methylbenzenepropanal in the various product categories.

REFERENCES:

4-Methoxy-alpha-methylbenzenepropanal

The IFRA Standard on 4-Methoxy-alpha-methylbenzenepropanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Methoxy-alpha-methylbenzenepropanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Methoxy-4-methylphenol

CAS-No.:	93-51-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Creosol p-Creosol p-Cresol, 2-methoxy- Homoguaiacol 1-Hydroxy-2-methoxy-4-methylbenzene 4-Hydroxy-3-methoxytoluene 2-Methoxy-p-cresol 3-Methoxy-4-hydroxytoluene 4-Methylguaiacol p-Methylguaiacol 4-Methyl-2-methoxyphenol Phenol, 2-methoxy-4-methyl- Valspice (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1999 2005 2007 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %
Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %
Category 5B	0.012 %	Category 10B	0.33 %

2-Methoxy-4-methylphenol

Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methoxy-4-methylphenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methoxy-4-methylphenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Methoxy-4-methylphenol in the various product categories.

REFERENCES:

The IFRA Standard on 2-Methoxy-4-methylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Methoxy-4-methylphenol if available at the RIFM Fragrance Material

2-Methoxy-4-methylphenol

Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

CAS-No.:	1205-17-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1,3-Benzodioxole-5-propanal, α-methyl- 3-(1,3-Benzodioxol-5-yl)-2-methylpropanal 2-Methyl-3-(3,4-methylenedioxyphenyl)- propionaldehyde 2-Methyl-3-(3,4-methylenedioxyphenyl)propanal α-Methyl-3,4-(methylenedioxy)-hydrocinnamaldehyde α-Methyl-1,3-benzodioxole-5-propanal α-Methyl-1,3-benzodioxole-5-propionaldehyde 3-(3,4-Methylenedioxyphenyl)-2-methylpropanal α-Methyl-3,4-methylene-dioxyhydrocinnamic aldehyde Heliofolal (commercial name) Heliogan (commercial name) Helional (commercial name) Tropional (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2012 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.12 %	Category 7A	0.077 %
Category 2	0.25 %	Category 7B	0.077 %
Category 3	0.039 %	Category 8	0.026 %
Category 4	2.6 %	Category 9	0.15 %
Category 5A	0.39 %	Category 10A	0.15 %
Category 5B	0.077 %	Category 10B	0.62 %

alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

Category 5C	0.077 %	Category 11A	0.026 %
Category 5D	0.026 %	Category 11B	0.026 %
Category 6	0.62 %	Category 12	12 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) if available at the RIFM Fragrance Material Safety Assessment Center:

alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Methyl cinnamic aldehyde

CAS-No.:	101-39-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	α-Methylcinnamaldehyde α-Methylcinnamyl aldehyde α-Methylcinnamic aldehyde 2-Methyl-3-phenyl-2-propenal 3-Phenyl-2-methylacrolein 2-Propenyl, 2-methyl-3-phenyl-

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %
Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %
Category 6	0.88 %	Category 12	No Restriction

alpha-Methyl cinnamic aldehyde

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Methyl cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Methyl cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Methyl cinnamic aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Methyl cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Methyl cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

alpha-Methyl cinnamic aldehyde

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6-Methyl-3,5-heptadien-2-one

CAS-No.:	1604-28-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3,5-Heptadien-2-one, 6-methyl- Methylheptadienone 2-Methylhepta-2,4-dien-6-one 6-Methylhepta-3,5-dien-2-one

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1989 1999 2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %
Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %
Category 5B	0.012 %	Category 10B	0.33 %
Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

6-Methyl-3,5-heptadien-2-one

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 6-Methyl-3,5-heptadien-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6-Methyl-3,5-heptadien-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 6-Methyl-3,5-heptadien-2-one in the various product categories.

REFERENCES:

The IFRA Standard on 6-Methyl-3,5-heptadien-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Methyl-3,5-heptadien-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

6-Methyl-3,5-heptadien-2-one

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl heptine carbonate

CAS-No.:	111-12-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl heptyne carbonate Methyl 2-octynoate Methyl oct-2-ynoate MHC 2-Octynoic acid, methyl ester Folione (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1976 2000 2005

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %
Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %
Category 5B	0.012 %	Category 10B	0.33 %
Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No Restriction

Methyl heptine carbonate

Fragrance ingredient restriction - Note box
When used in the same fragrance compound within a specific QRA category, the sum total of Methyl heptine carbonate (MHC, CAS number 111-12-6) and Methyl octine carbonate (MOC, CAS number 111-80-8) contributions must not exceed the maximum permitted level for MHC. At the same time, the contribution from MOC should always respect the maximum levels permitted in the respective categories as listed in the Standard for MOC.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl heptine carbonate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl heptine carbonate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl heptine carbonate in the various product categories.

REFERENCES:

The IFRA Standard on Methyl heptine carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl heptine carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Methyl heptine carbonate

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl ionone, mixed isomers

CAS-No.:	1335-46-2 127-42-4 127-43-5 127-51-5 7779-30-8 79-89-0 1335-94-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	1335-46-2: Methyl ionone, mixture of isomers 127-42-4: Methyl-α-ionone α-Cetone α-Cyclocitrylidenebutanone α-Cyclocitrylidenemethyl ethyl ketone Methyl-α-ionone α-Methylionone 1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, [R-(E)]- (R-(E))-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)pent-1-en-3-one 127-43-5: Methyl-beta-ionone Methyl-ß-ionone β-Methylionone β-Cetone β-Cyclocitrylidenebutanone β-Iraldeine 1-Penten-3-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)- 5-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-4-penten-3-one 1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)pent -1-en-3-one 127-51-5: α-Isomethylionone 3-Buten-2-one, 3-methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)- 3-Methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-3-buten-2-one α-Isomethyl ionone Iraldeine gamma Isoraldeine 95 (commercial name) 7779-30-8: 1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)pent-1-en-3-one 1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)- 79-89-0: iso-Methyl-β-ionone 3-Buten-2-one, 3-methyl-4-(2,6,6-trimethyl-1-cyclohexen-1-yl)- 3-Methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)but-3-en-2-one

Methyl ionone, mixed isomers

	δ-Iraldeine 1335-94-0: Irone

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	5.4 %	Category 7A	61 %
Category 2	1.6 %	Category 7B	61 %
Category 3	32 %	Category 8	3.2 %
Category 4	30 %	Category 9	59 %
Category 5A	7.6 %	Category 10A	100 %
Category 5B	7.6 %	Category 10B	100 %
Category 5C	7.6 %	Category 11A	100 %
Category 5D	7.6 %	Category 11B	100 %
Category 6	18 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The above limits apply to Methyl ionone isomers used individually or in combination.

FRAGRANCE INGREDIENT SPECIFICATION:	Pseudo methyl ionones (CAS numbers 26651-96-7, 72968-25-3, 1117-41-5) should not be used as fragrance ingredient as such. A level of up to 2% of Pseudo methyl ionones as an impurity in Methyl ionones is accepted.

Methyl ionone, mixed isomers

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl ionone, mixed isomers, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl ionone, mixed isomers and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl ionone, mixed isomers in the various product categories.
In addition, they recommend to use Methyl ionone, mixed isomers according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Methyl ionone, mixed isomers is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl ionone, mixed isomers if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the

Methyl ionone, mixed isomers

Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl octine carbonate

CAS-No.:	111-80-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl octyne carbonate Methyl 2-nonynoate 2-Nonynoic acid, methyl ester MOC

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1988 2000 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0018 %	Category 7A	0.021 %
Category 2	0.00055 %	Category 7B	0.021 %
Category 3	0.011 %	Category 8	0.0011 %
Category 4	0.010 %	Category 9	0.020 %
Category 5A	0.0026 %	Category 10A	0.072 %
Category 5B	0.0026 %	Category 10B	0.072 %
Category 5C	0.0026 %	Category 11A	0.040 %
Category 5D	0.0026 %	Category 11B	0.040 %
Category 6	0.0061 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
When used in the same fragrance compound within a specific QRA category, the sum total of and Methyl

Methyl octine carbonate

heptine carbonate (MHC, CAS number 111-12-6) and Methyl octine carbonate (MOC, CAS number 111-80-8) contributions must not exceed the maximum permitted level for MHC. At the same time, the contribution from MOC should always respect the maximum levels permitted as listed in the table above.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl octine carbonate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl octine carbonate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl octine carbonate in the various product categories.

REFERENCES:

The IFRA Standard on Methyl octine carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl octine carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers

Methyl octine carbonate

K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

CAS-No.:	68922-13-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Cyclopenten-1-one, 2-(pentyloxy)-3-methyl- Pentyloxy cyclopentenone (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.050 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	3.3 %
Category 5B	0.12 %	Category 10B	3.3 %
Category 5C	0.12 %	Category 11A	1.8 %
Category 5D	0.12 %	Category 11B	1.8 %
Category 6	0.28 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Nonyn-1-al dimethyl acetal

CAS-No.:	13257-44-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1,1-Dimethoxynon-2-yne 2-Nonyn-1-al-Dimeth-Acetyl 2-Nonyne, 1,1-dimethoxy- Parmavert (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	1.8 %	Category 7A	20 %
Category 2	0.53 %	Category 7B	20 %
Category 3	11 %	Category 8	1.0 %
Category 4	9.9 %	Category 9	19 %
Category 5A	2.5 %	Category 10A	69 %
Category 5B	2.5 %	Category 10B	69 %
Category 5C	2.5 %	Category 11A	38 %
Category 5D	2.5 %	Category 11B	38 %
Category 6	5.8 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

2-Nonyn-1-al dimethyl acetal

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Nonyn-1-al dimethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Nonyn-1-al dimethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Nonyn-1-al dimethyl acetal in the various product categories.

REFERENCES:

The IFRA Standard on 2-Nonyn-1-al dimethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Nonyn-1-al dimethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

2-Nonyn-1-al dimethyl acetal

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Oakmoss extracts

CAS-No.:	90028-68-5 68917-10-2 9000-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Oakmoss absolute Evernia absolute Evernia prunastri, ext. Mousse de Chêne absolute Oakmoss absolute (Evernia prunastri) Evernia prunastri (Oakmoss) extract

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 2001 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.020 %	Category 7A	0.10 %
Category 2	0.016 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.032 %
Category 4	0.10 %	Category 9	0.10 %
Category 5A	0.076 %	Category 10A	0.10 %
Category 5B	0.076 %	Category 10B	0.10 %
Category 5C	0.076 %	Category 11A	0.10 %
Category 5D	0.076 %	Category 11B	0.10 %

Oakmoss extracts

Category 6	0.18 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

For Oakmoss and Treemoss extracts, the restrictions in the Standards are directly linked to the presence of Atranol and Chloroatranol in the finished products. To ensure that those remain below trace levels, the upper concentration levels have not been increased (compared its last publication in the Amendment 43 (2008)).

In the presence of Treemoss extracts, the level of Oakmoss in the respective category has to be reduced accordingly, such that the total amount of both extracts does not exceed the maximum permitted level in each category as listed in the table above.
If the same fragrance mixture is intended to be used in more than one IFRA Category, then the most restrictive limitation (based on foreseen use concentrations and maximum permitted level) will apply.

FRAGRANCE INGREDIENT SPECIFICATION:	Oakmoss extracts must not contain added Treemoss, which is a source of resin acids. Traces of resin acids may be carried over to commercial qualities of Oakmoss in the manufacturing process. These traces must not exceed 0.1% (1000 ppm) of Dehydroabietic acid (DHA) in the extract. The concentration of resin acids in Oakmoss can be measured with an High Performance Liquid Chromatography (HPLC) Reverse Phase – Spectrofluorometry method. Further, levels of Atranol and Chloroatranol should each be below 100 ppm in Oakmoss extracts.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of

Oakmoss extracts

relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Oakmoss extracts, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Oakmoss extracts and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Oakmoss extracts in the various product categories.
In addition, they recommend to use Oakmoss extracts according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Oakmoss extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Oakmoss extracts if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

CAS-No.:	54464-57-2 54464-59-4 68155-66-8 68155-67-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	54464-57-2: 1-(1,2,3,4,5,6,7,8-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)ethanone 1',2',3',4',5',6',7',8'-Octahydro-2',3',8',8'-tetramethyl-2'-acetonaphthone 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one 1-(2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethanone 2-acetoxy-2,3,8,8-tetramethyloctahydronaphthalene 7-Acetyl-1,2,3,4,5,6,7,8-octahydro-1,1,6,7-tetramethylnaphthalene Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)- Naphthalene, 1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-aceto Ambergris Ketone (commercial name) Amberonne (commercial name) Ambralux (commercial name) Boisvelone (commercial name) Iso Ambois Super (commercial name) Iso-E Super (commercial name) Iso Gamma Super (commercial name) Isocyclemone E (commercial name) Orbitone (commercial name) Orbitone T (commercial name) 54464-59-4: 1- (1,2,3,4,5,6,7,8- octahydro-2,3,5,5- tetramethyl-2- naphthalenyl)ethan-1-one 1-(2,3,5,5-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethanone Ethanone, 1- (1,2,3,4,5,6,7,8- octahydro-2,3,5,5- tetramethyl-2- naphthalenyl)- Naphthalene, 1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-aceto 68155-66-8: 1-(1,2,3,5,6,7,8,8a-Octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one 1-(2,3,8,8-Tetramethyl-1,2,3,5,6,7,8,8a-octahydronaphthalen-2-yl)ethanone Ethanone, 1-(1,2,3,5,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)- Decalene, 2-Aceto-2,3,8,8-Tetramethyl(1,2,3,5,6,7,8,8A-Octahydro)- 68155-67-9: 1-(1,2,3,4,6,7,8,8a-Octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one 1-(2,3,8,8-Tetramethyl-1,2,3,4,6,7,8,8a-octahydronaphthalen-2-yl)ethanone Ethanone, 1-(1,2,3,4,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)- Decalene, 2-Aceto-2,3,8,8-Tetramethyl(1,2,3,4,6,7,8,8A-Octahydro)-

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.41 %	Category 7A	0.67 %
Category 2	1.1 %	Category 7B	0.67 %
Category 3	0.41 %	Category 8	0.19 %
Category 4	20 %	Category 9	2.4 %
Category 5A	5.1 %	Category 10A	2.4 %
Category 5B	0.56 %	Category 10B	6.6 %
Category 5C	0.76 %	Category 11A	0.19 %
Category 5D	0.19 %	Category 11B	0.19 %
Category 6	0.0093 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) in the various product categories.

REFERENCES:

The IFRA Standard on 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-Octen-3-yl acetate

CAS-No.:	2442-10-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Acetoxyoctene Amyl crotonyl acetate Amyl vinyl carbinyl acetate 1-Octen-3-ol, acetate Octenyl acetate β-Octenyl acetate n-Pentyl vinyl carbinol acetate

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1989 1994 2007 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %
Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %

1-Octen-3-yl acetate

Category 6	0.88 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-Octen-3-yl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-Octen-3-yl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-Octen-3-yl acetate in the various product categories.

REFERENCES:

The IFRA Standard on 1-Octen-3-yl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-Octen-3-yl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

1-Octen-3-yl acetate

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Opoponax

CAS-No.:	8021-36-1 9000-78-6 93384-32-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Opoponax (absolute, resinoid, oil, gum, tincture) Bisabol-myrrh Sweet myrrh Opoponax chironium (L.) W.D.J. Koch Commiphora erythraea Engler var. glabrescens (Burseraceae)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 1994 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

Opoponax

FRAGRANCE INGREDIENT SPECIFICATION:	Opoponax oil can be obtained from solvent extraction or pyrolysis. Opoponax oil obtained through pyrolysis shall be rectified according to Good Manufacturing Practices (GMP) and the content of Polycyclic Aromatic Hydrocarbons (PAH) resulting from their use shall respect the following requirement: Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Birch tar oils or rectified Styrax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Opoponax, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Opoponax and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations

Opoponax

of Opoponax in the various product categories.
In addition, they recommend to use Opoponax according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Opoponax is based on at least one of the following publications:

• The RIFM Safety Assessment on Opoponax if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Peru balsam

CAS-No.:	8007-00-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Prohibition of Peru balsam crude: Exudation of Myroxylon pereirae Klotsch Restriction of Peru balsam extracts and distillates: Balsam oil, Peru (Myroxylon pereirae Klotzsch) Myroxylon pereirae (Balsam Peru) oil Myroxylon pereirae (Balsam Peru) resin Myroxylon pereirae oil Peru balsam absolute Peru balsam anhydrol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1974 1991 2007 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Peru balsam crude should not be used as a fragrance ingredient for any finished product application.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.073 %	Category 7A	0.83 %
Category 2	0.022 %	Category 7B	0.83 %
Category 3	0.44 %	Category 8	0.034 %
Category 4	0.41 %	Category 9	0.80 %
Category 5A	0.10 %	Category 10A	0.80 %

Peru balsam

Category 5B	0.10 %	Category 10B	2.9 %
Category 5C	0.10 %	Category 11A	0.034 %
Category 5D	0.034 %	Category 11B	0.034 %
Category 6	0.24 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The restriction only applies to Peru balsam extracts and distillates (Peru balsam oil, absolute and anhydrol).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels of Peru balsam extracts and distillates are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.
Additional information is available in the RIFM safety assessment for Peru balsam extracts and distillates, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Peru balsam extracts and distillates and recommends the limits for the 12 different product categories, which provide the acceptable use levels of Peru balsam extracts and distillates in the various product categories.
In addition, they recommend not to use Peru balsam crude in any finished product application.

Peru balsam

REFERENCES:

The IFRA Standard on Peru balsam is based on at least one of the following publications:

• The RIFM Safety Assessment on Peru balsam if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

CAS-No.:	13144-88-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Acetyl-1,3,3,4,4-pentamethyl-1-cyclopentene Ethanone, 1-(2,4,4,5,5-pentamethyl-1-cyclopenten-1-yl)- 1-(2,4,4,5,5-Pentamethylcyclopent-1-en-1-yl)ethanone Alpinone (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Phenylacetaldehyde

CAS-No.:	122-78-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzeneacetaldehyde Benzylcarboxaldehyde Hyacinthin 1-Oxo-2-phenylethane α-Tolualdehyde α-Toluic aldehyde Phenylacetic aldehyde Phenyl acetic aldehyde (pure) (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1980 2006

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %
Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %

Phenylacetaldehyde

Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Phenylacetaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Phenylacetaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Phenylacetaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Phenylacetaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Phenylacetaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the

Phenylacetaldehyde

Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Phenylbutanal

CAS-No.:	16251-77-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenepropanal, β-methyl- 3-Phenylbutyraldehyde 3-Phenyl-3-methylpropanal Trifernal (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2010

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.17 %	Category 7A	0.023 %
Category 2	0.069 %	Category 7B	0.023 %
Category 3	0.023 %	Category 8	0.0076 %
Category 4	0.44 %	Category 9	0.080 %
Category 5A	0.24 %	Category 10A	0.080 %
Category 5B	0.023 %	Category 10B	0.36 %
Category 5C	0.034 %	Category 11A	0.0076 %
Category 5D	0.0076 %	Category 11B	0.0076 %
Category 6	0.011 %	Category 12	9.6 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

3-Phenylbutanal

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Phenylbutanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Phenylbutanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Phenylbutanal in the various product categories.

REFERENCES:

The IFRA Standard on 3-Phenylbutanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Phenylbutanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

3-Phenylbutanal

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Phenylpropionaldehyde

CAS-No.:	93-53-8 1340-11-0 34713-70-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzeneacetaldehyde, α-methyl- Hydratropaldehyde α-Methylphenylacetaldehyde α-Methyltolualdehyde 2-Phenylpropanal α-Phenylpropionaldehyde (R)-2-Phenylpropionaldehyde (S)-2-Phenylpropionaldehyde Hydratropic aldehyde (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.029 %	Category 7A	0.19 %
Category 2	0.0087 %	Category 7B	0.19 %
Category 3	0.096 %	Category 8	0.014 %
Category 4	0.16 %	Category 9	0.32 %
Category 5A	0.041 %	Category 10A	0.32 %
Category 5B	0.041 %	Category 10B	0.77 %
Category 5C	0.041 %	Category 11A	0.014 %

2-Phenylpropionaldehyde

Category 5D	0.014 %	Category 11B	0.014 %
Category 6	0.096 %	Category 12	31 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Phenylpropionaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Phenylpropionaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Phenylpropionaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on 2-Phenylpropionaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Phenylpropionaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

2-Phenylpropionaldehyde

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Propylidenephthalide

CAS-No.:	17369-59-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Propylidenephthalide 1(3H)-Isobenzofuranone, 3-propylidene- 3-Propylidene-2-benzofuran-1(3H)-one Propylidene phthalide

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	1977 1994 2008 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.072 %	Category 7A	0.82 %
Category 2	0.022 %	Category 7B	0.82 %
Category 3	0.43 %	Category 8	0.042 %
Category 4	0.40 %	Category 9	0.79 %
Category 5A	0.10 %	Category 10A	2.8 %
Category 5B	0.10 %	Category 10B	2.8 %
Category 5C	0.10 %	Category 11A	1.6 %
Category 5D	0.10 %	Category 11B	1.6 %
Category 6	0.24 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

3-Propylidenephthalide

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Propylidenephthalide, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Propylidenephthalide and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Propylidenephthalide in the various product categories.

REFERENCES:

The IFRA Standard on 3-Propylidenephthalide is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Propylidenephthalide if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

3-Propylidenephthalide

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Rose ketones

CAS-No.:	23696-85-7 23726-93-4 59739-63-8 43052-87-5 24720-09-0 23726-94-5 23726-92-3 23726-91-2 35044-68-9 57378-68-4 71048-82-3 35087-49-1 39872-57-6 70266-48-7 33673-71-1 87064-19-5 The scope of the Standard covers but is not limited to the list of CAS numbers enumerated above (including all their geometric isomers).
Synonyms:	23696-85-7 (C13H18O): 1-(2,6,6-Trimethylcyclohexa-1,3-dienyl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl) Damascenone (commercial name) Floriffone (commercial name) Doricenone (commercial name) 23726-93-4 (C13H18O): (E)-1-(2,6,6-Trimethyl-1,3-cyclohexadien-1-yl)-2-buten-1-one trans-1-(2,6,6-Trimethyl-1,3-cyclohexadien-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)- (2E)- β-Damascenone 59739-63-8 (C13H18O): (2Z)-1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-Buten-1-one (Z)-β-Damascenone cis-Damascenone 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-y1)-, (Z)- 43052-87-5 (C13H20O): α-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)- α-Damascone (commercial name) Dihydrofloriffone α (commercial name) 24720-09-0 (C13H20O): (E)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one trans-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)but-2-en-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, (2E)- trans-α-Damascone Damascone alpha (commercial name) Dorinone (commercial name)

Rose ketones

	23726-94-5 (C13H20O): (Z)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one cis-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, (Z)- 1-(2,6,6-Trimethylcyclohex-2-en-1-yl)but-2-en-1-one cis-α-Damascone 23726-92-3 (C13H20O): 1-(2,6,6-Trimethylcyclohex-1-en-1-yl)but-2-en-1-one (Z)-β-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one (Z)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-, (2Z)- cis-β-Damascone (commercial name) Damasione (commercial name) 23726-91-2 (C13H20O): (2E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one (E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one 1-(2,6,6-Trimethylcyclohex-1-en-1-yl)but-2-en-1-one trans-β-Damascone, Dihydrofloriffone β (commercial name) Dorinone beta (commercial name) 35044-68-9 (C13H20O): 2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)- 2,6,6-Trimethyl-1-(2-butenoyl)-1-cyclohexene 2,6,6-Trimethyl-1-crotonoyl-1-cyclohexene 1-(2,6,6-Trimethylcyclohexenyl)-2-buten-1-one 1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one Damascone β- β-Damascone 57378-68-4 (C13H20O): δ-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)- 1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one δ-Damascone (commercial name) Dihydrofloriffone TD (commercial name) 71048-82-3 (C13H20O): [1α(E),2β]-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one [1α(E),2β]-1-(2,6,6-Trimethylcyclohex-3-en-1-yl)but-2-en-1-one trans,trans-δ-Damascone trans δ Damascone (commercial name) 35087-49-1 (C13H20O): 1-(2,2-Dimethyl-6-methylenecyclohexyl)but-2-en-1-one 2-Buten-1-one, 1-(2,2-dimethyl-6-methylenecyclohexyl)- Damascone γ- γ-Damascone (commercial name) 39872-57-6 (C13H20O):

Rose ketones

	1-(2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one (E)-1-(2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)-, (2E)- 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)-, (E)- (E)-α-Isodamascone Isodamascone (high α) (commercial name) 70266-48-7 (C13H20O): 1-(2,4,4-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,4,4-trimethyl-1-cyclohexene-1-yl) Generic β-Isodamascone Isodamascone (standard quality) (commercial name) 33673-71-1 (C13H20O): 1-(2,4,4-Trimethylcyclohex-2-en-1-yl)but-2-en-1-one 1-(2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)- Isodamascone (isomer unspecified) Generic δ-Isodamascone 87064-19-5 (C13H20O): 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)-, (Z)- cis-Isodamascone (including all geometric isomers).

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 1995 2007 2008 2009

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0077 %	Category 7A	0.088 %
Category 2	0.0023 %	Category 7B	0.088 %
Category 3	0.046 %	Category 8	0.0045 %

Rose ketones

Category 4	0.043 %	Category 9	0.084 %
Category 5A	0.011 %	Category 10A	0.30 %
Category 5B	0.011 %	Category 10B	0.30 %
Category 5C	0.011 %	Category 11A	0.17 %
Category 5D	0.011 %	Category 11B	0.17 %
Category 6	0.025 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The above limits apply to Rose Ketones used individually or in combination. The sum of concentrations of Rose ketones isomers should not exceed the maximum concentration levels established by this Standard.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Rose ketones, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

Rose ketones

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Rose ketones and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Rose ketones in the various product categories.

REFERENCES:

The IFRA Standard on Rose ketones is based on at least one of the following publications:

• The RIFM Safety Assessment on Rose ketones if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Styrax

CAS-No.:	8046-19-3 8024-01-9 94891-27-7 94891-28-8 101227-15-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Prohibition of the crude material: Styrax crude gums Restriction and Specification of the distillates: Styrax resin Styrax oil Styrax oil, rectified Styrax oil, pyrogenated, distilled

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1977 1994 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION / SPECIFICATION**
FRAGRANCE INGREDIENT PROHIBITION:	Crude gums of Liquidambar styraficula L. var. macrophylla or Liquidambar orientalis Mill. should not be used as fragrance ingredients for any finished product application.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.12 %	Category 7A	1.3 %
Category 2	0.034 %	Category 7B	1.3 %
Category 3	0.69 %	Category 8	0.068 %

Styrax

Category 4	0.64 %	Category 9	1.3 %
Category 5A	0.16 %	Category 10A	4.5 %
Category 5B	0.16 %	Category 10B	4.5 %
Category 5C	0.16 %	Category 11A	2.5 %
Category 5D	0.16 %	Category 11B	2.5 %
Category 6	0.38 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
Only extracts or distillates (resinoids, absolutes and oils), prepared from exudations of Liquidambar styraciflua L. var. macrophylla or Liquidambar orientalis Mill., can be used.

FRAGRANCE INGREDIENT SPECIFICATION:	Styrax oil can be obtained from solvent extraction or pyrolysis. Styrax oil obtained through pyrolysis shall be rectified according to Good Manufacturing Practices (GMP) and the content of Polycyclic Aromatic Hydrocarbons (PAH) resulting from their use shall respect the following requirement: Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Birch tar oils or rectified Opoponax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**
RIFM SUMMARIES:	

Styrax

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Styrax, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed data available for Styrax distillates and recommends the limits for the 12 different product categories, which are the acceptable use levels of Styrax distillates in the various product categories.
In addition, they recommend to use Styrax distillates according to the its specification above mentioned.

The Expert Panel for Fragrance Safety further recommends not to use Styrax crude in any finished product application.

REFERENCES:

The IFRA Standard on Styrax is based on at least one of the following publications:

• The RIFM Safety Assessment on Styrax if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Tea leaf absolute

CAS-No.:	84650-60-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Camellia sinensis leaf extract Tea, ext. Tea sinensis absolute Thea chinensis ext. Thea sinensis ext.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2006

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.037 %	Category 7A	0.42 %
Category 2	0.011 %	Category 7B	0.42 %
Category 3	0.22 %	Category 8	0.022 %
Category 4	0.21 %	Category 9	0.40 %
Category 5A	0.052 %	Category 10A	1.4 %
Category 5B	0.052 %	Category 10B	1.4 %
Category 5C	0.052 %	Category 11A	0.80 %
Category 5D	0.052 %	Category 11B	0.80 %
Category 6	0.12 %	Category 12	No Restriction

Tea leaf absolute

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Tea leaf absolute, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Tea leaf absolute and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Tea leaf absolute in the various product categories.

REFERENCES:

The IFRA Standard on Tea leaf absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Tea leaf absolute if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Tea leaf absolute

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Treemoss extracts

CAS-No.:	90028-67-4 68648-41-9 68917-40-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Treemoss absolute (Pseudevernia furfuracea) Treemoss (Usnea furfuracea) Treemoss colourless Pseudevernia furfuracea extract Cedar moss

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 2001 2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.020 %	Category 7A	0.10 %
Category 2	0.016 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.032 %
Category 4	0.10 %	Category 9	0.10 %
Category 5A	0.076 %	Category 10A	0.10 %
Category 5B	0.076 %	Category 10B	0.10 %
Category 5C	0.076 %	Category 11A	0.10 %
Category 5D	0.076 %	Category 11B	0.10 %
Category 6	0.18 %	Category 12	No Restriction

Treemoss extracts

Fragrance ingredient restriction - Note box
For Treemoss and Oakmoss extracts, the restrictions in the Standards are directly linked to the presence of Atranol and Chloroatranol in the finished products. To ensure that those remain below trace levels, the upper concentration levels have not been increased (compared its last publication in the Amendment 43 (2008)). In the presence of Oakmoss extracts, the level of Treemoss in the respective category has to be reduced accordingly, such that the total amount of both extracts does not exceed the maximum permitted level in each category as listed in the table above. If the same fragrance mixture is intended to be used in more than one IFRA Category, then the most restrictive limitation (based on foreseen use concentrations and maximum permitted level) will apply.

FRAGRANCE INGREDIENT SPECIFICATION:	Treemoss extracts shall not contain more than 0.8% of Dehydroabietic acid (DHA) as a marker of 2% of total resin acids. The concentration of DHA (about 40% of the total resin acids) in Treemoss can be measured with an High Performance Liquid Chromatography (HPLC) reverse phase - spectrofluorometry method. Further, levels of Atranol and Chloroatranol should each be below 100 ppm in Treemoss extracts.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Treemoss extracts, which can be

Treemoss extracts

downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Treemoss extracts and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Treemoss extracts in the various product categories.
In addition, they recommend to use Treemoss extracts according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Treemoss extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Treemoss extracts if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

o,m,p-Tolualdehydes and their mixtures

CAS-No.:	529-20-4 620-23-5 104-87-0 1334-78-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	529-20-4: 2-Tolualdehyde ortho-Tolualdehyde 2-Methylbenzaldehyde 620-23-4: meta-Tolualdehyde 3-Methyl-benzaldehyde Benzaldehyde, 3-methyl- 104-87-0: para-Tolualdehyde 4-Methyl-benzaldehyde Benzaldehyde, 4-methyl- Tolyl Aldehyde Para Extra (commercial name) 1334-78-7: Benzaldehyde, methyl- o,m,p-Methyl-benzaldehydes Methylbenzaldehyde (mixed 2,3,4) Tolualdehydes (mixed o,m,p) Tolualdehyde Toluic aldehyde (mixed 2,3,4)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

o,m,p-Tolualdehydes and their mixtures

Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.050 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	3.3 %
Category 5B	0.12 %	Category 10B	3.3 %
Category 5C	0.12 %	Category 11A	1.8 %
Category 5D	0.12 %	Category 11B	1.8 %
Category 6	0.28 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The above limits apply to ortho-, meta- and para-Tolualdehyde used individually or in combination.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

o,m,p-Tolualdehydes and their mixtures

Additional information is available in the RIFM safety assessment for o,m,p-Tolualdehydes and their mixtures, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for o,m,p-Tolualdehydes and their mixtures and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of o,m,p-Tolualdehydes and their mixtures in the various product categories.

REFERENCES:

The IFRA Standard on o,m,p-Tolualdehydes and their mixtures is based on at least one of the following publications:

• The RIFM Safety Assessment on o,m,p-Tolualdehydes and their mixtures if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,6,6-Trimethylcyclohex-1,3-dienyl methanal

CAS-No.:	116-26-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2,6,6-Trimethylcyclohexa-1,3-diene-1-carbaldehyde 2,6,6-Trimethyl-1,3-cyclohexadienal 2,6,6-Trimethyl-1,3-cyclohexadien-1-carboxaldehyde 1,1,3-Trimethyl-2-formylcyclohexa-2,4-diene Dehydro-β-cyclocitral Safranal (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1998 2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0022 %	Category 7A	0.025 %
Category 2	0.00066 %	Category 7B	0.025 %
Category 3	0.013 %	Category 8	0.0013 %
Category 4	0.012 %	Category 9	0.024 %
Category 5A	0.0032 %	Category 10A	0.087 %
Category 5B	0.0032 %	Category 10B	0.087 %
Category 5C	0.0032 %	Category 11A	0.048 %
Category 5D	0.0032 %	Category 11B	0.048 %
Category 6	0.0073 %	Category 12	No Restriction

2,6,6-Trimethylcyclohex-1,3-dienyl methanal

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,6,6-Trimethylcyclohex-1,3-dienyl methanal has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,6,6-Trimethylcyclohex-1,3-dienyl methanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,6,6-Trimethylcyclohex-1,3-dienyl methanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,6,6-Trimethylcyclohex-1,3-dienyl methanal in the various product categories.

REFERENCES:

The IFRA Standard on 2,6,6-Trimethylcyclohex-1,3-dienyl methanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,6,6-Trimethylcyclohex-1,3-dienyl methanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers

2,6,6-Trimethylcyclohex-1,3-dienyl methanal

K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Verbena oil and absolute (Lippia citriodora Kunth.)

CAS-No.:	8024-12-2 85116-63-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Prohibition of Verbena oils: Lippia citriodora oils Restriction of Verbena absolutes: Lippia citriodora absolute Verbena absolute Aloysia triphylla absolute Lippia triphylla absolute Verbena triphylla absolute Zappania citrodora absolute

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1987 2010

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Verbena oils from Lippia citriodora Kunth. should not be used as a fragrance ingredient, based on its sensitizing and phototoxic potential.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.12 %	Category 7A	1.4 %
Category 2	0.037 %	Category 7B	1.4 %
Category 3	0.74 %	Category 8	0.072 %
Category 4	0.69 %	Category 9	1.3 %

Verbena oil and absolute (Lippia citriodora Kunth.)

Category 5A	0.17 %	Category 10A	4.8 %
Category 5B	0.17 %	Category 10B	4.8 %
Category 5C	0.17 %	Category 11A	2.7 %
Category 5D	0.17 %	Category 11B	2.7 %
Category 6	0.40 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Verbena oil and absolute (Lippia citriodora Kunth.). For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Only Verbena absolutes from Lippia citriodora Kunth. can be used as a fragrance ingredient.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, PHOTOTOXICITY**

RIFM SUMMARIES:

Recommended concentration levels of Verbena absolute are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.
Additional information is available in the RIFM safety assessment for Verbena absolute, which can be downloaded from the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Verbena oil and absolute (Lippia citriodora Kunth.)

The Expert Panel for Fragrance Safety reviewed all the available data for Verbena absolute and recommends the limits for the 12 different product categories, which provide the acceptable use levels of Verbena absolute in the various product categories.
In addition, they recommend not to use Verbena oil in any finished product application.

REFERENCES:

The IFRA Standard on Verbena oil and absolute (Lippia citriodora Kunth.) is based on at least one of the following publications:

• The RIFM Safety Assessment on Verbena oil and absolute (Lippia citriodora Kunth.) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ylang ylang extracts

CAS-No.:	8006-81-3 68606-83-7 83863-30-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Cananga odorata (Lamark) (Hooker et Thompson) (Anonaceae) Cananga odorata extract Cananga odorata flower oil Cananga odorata oil Cananga oil Ylang ylang oil (Cananga odorata Hook. f. and Thomas) Ylang ylang oil extra Ylang ylang oil I Ylang ylang oil II Ylang ylang oil III Ylang ylang, Cananga odorata, ext.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.13 %	Category 7A	1.5 %
Category 2	0.039 %	Category 7B	1.5 %
Category 3	0.78 %	Category 8	0.077 %
Category 4	0.73 %	Category 9	1.4 %
Category 5A	0.18 %	Category 10A	5.1 %
Category 5B	0.18 %	Category 10B	5.1 %

Ylang ylang extracts

Category 5C	0.18 %	Category 11A	2.8 %
Category 5D	0.18 %	Category 11B	2.8 %
Category 6	0.43 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Ylang ylang extracts, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ylang ylang extracts and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Ylang ylang extracts in the various product categories.

REFERENCES:

The IFRA Standard on Ylang ylang extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Ylang ylang extracts if available at the RIFM Fragrance Material Safety

Ylang ylang extracts

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetyl hexamethyl indan (AHMI)

CAS-No.:	15323-35-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	5-Acetyl-1,1,2,3,3,6-hexamethyl indan 6-Acetyl-1,1,2,3,3,5-hexamethylindane 1-(2,3-Dihydro-1,1,2,3,3,6-hexamethyl-1h-inden-5-yl)ethanone Ethanone, 1-(2,3-dihydro-1,1,2,3,3,6-hexamethyl-1H-inden-5-yl)- 1,1,2,3,3,6-Hexamethylindan-5-yl methylketone Phantolid (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 1987 2001 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	2.0 %	Category 7A	No Restriction
Category 2	2.0 %	Category 7B	2.0 %
Category 3	2.0 %	Category 8	2.0 %
Category 4	2.0 %	Category 9	No Restriction
Category 5A	2.0 %	Category 10A	No Restriction
Category 5B	2.0 %	Category 10B	2.0 %
Category 5C	2.0 %	Category 11A	No Restriction
Category 5D	2.0 %	Category 11B	2.0 %
Category 6	2.0 %	Category 12	No Restriction

Acetyl hexamethyl indan (AHMI)

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Acetyl hexamethyl indan (AHMI). For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

Human studies – phototoxicity
The IFRA Standard is based upon two photoirritation studies in humans. In the first study, 10 volunteers were treated with 10% solution of Acetyl hexamethyl indan (AHMI) in 75% ethanol plus 25% diethyl phthalate on each forearm. Twenty-four hours later, one arm was irradiated (UVA) and the other served as a control. Observations immediately after radiation, at 24 hrs, and at 48 hours showed no phototoxic effects (RIFM, 1986). In the second study, 10 volunteers were treated with a 10% solution in 75% ethanol plus 25% diethyl phthalate on the back. After 30 minutes, the site was irradiated (UVA and UVB). Observations at 5 minutes after irradiation, and at 3, 24, 48, and 72 hours showed no phototoxic effects (RIFM, 1987).

Animal studies – phototoxicity
• 5, 20, 50 % in guinea pigs, photoirritation observed 20 and 50% (RIFM, 1978a).
• 5, 20% in rabbits, photoirritation observed at 5 and 20% (RIFM, 1978a).
• 1, 5, 10, 20% in guinea pigs and rabbits, photoirritation observed in guinea pigs and rabbits at 5, 10, and 20% (Ogoshi et al., 1980; Ohkoshi et al., 1981).
• 10% in guinea pigs, no photoirritation observed (Guillot et al., 1985).
• 1% in rabbits, photoirritation observed (RIFM, 1978).
• 1, 2, 4 % in rabbits, photoirritation observed (RIFM, 1985a; 1985b).
• 0.01, 1, 10, 25, 50% in hairless mice, photoirritation observed at 10, 25, 50% (RIFM, 1978c).

Animal studies – photoallergy
2% in guinea pigs, no photoallergy observed, 1/10 showed sensitization (RIFM, 1985c).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Acetyl hexamethyl indan (AHMI)

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl hexamethyl indan (AHMI) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Acetyl hexamethyl indan (AHMI) in the various product categories.

REFERENCES:

The IFRA Standard on Acetyl hexamethyl indan (AHMI) is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetyl hexamethyl indan (AHMI) is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Guillot, J.P., Gonnet, J.F., Loquerie, J.F., Martini, M.C., Convert, P., and Cotte, J. (1985). A new method for the assessment of phototoxic and photoallergic potentials by topical applications in the albino guinea pig. J. Toxicol.-Cut. Ocu. Toxicol., 4(2), 117-133.

• Ogoshi, K., Tanaka, N., and Sekine, A. (1980). A study on the phototoxicity of musk type fragrances. Unpublished. Presented at Society of Cosmetic Chemists, Japan. Report number 7465, 17 November.

• Ohkoshi, K., Watanabe, A., and Tanaka, N. (1981). Phototoxicity of musks in perfumery. J. Society Cosmetic Chemists, Japan, 15(3), 207-213.

• Research Institute for Fragrance Materials, Inc. (1978a). Phototoxicity of synthetic musks. Unpublished report from Shiseido laboratories. Report number 4415, 26 August.

• Research Institute for Fragrance Materials, Inc. (1978b). Phototoxicity tests with 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from Quest International. Report number 8055, 1 January.

• Research Institute for Fragrance Materials, Inc. (1978c). Phototoxicity studies. RIFM report number 2042, 12 May.

• Research Institute for Fragrance Materials, Inc. (1985a). Photosensitization test with 2% and 4% 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from PFW Aroma Chemicals. Report number 29705, 1 November.

• Research Institute for Fragrance Materials, Inc. (1985b). Photosensitization test with 1% 5-acetyl-

Acetyl hexamethyl indan (AHMI)

1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from PFW Aroma Chemicals. Report number 29706, 1 November.

• Research Institute for Fragrance Materials, Inc. (1985c). Photosensitization test with 5-acetyl-1,1,2,3,3,6-hexamethylindan (17179) in guinea pigs. Unpublished report from PFW Aroma Chemicals. Report number 29704, 1 November.

• Research Institute for Fragrance Materials, Inc. (1986). Phototoxicity testing in human subjects. RIFM report number 5748, 19 December.

• Research Institute for Fragrance Materials, Inc. (1987). Phototoxicity testing in human subjects. RIFM report number 5743, 23 January.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Angelica root oil

CAS-No.:	8015-64-3 84775-41-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Angelica archangelica oil Angelica archangelica root oil Angelica root oil (Angelica archangelica L.)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1978 2001 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.80 %	Category 7A	No Restriction
Category 2	0.80 %	Category 7B	0.80 %
Category 3	0.80 %	Category 8	0.80 %
Category 4	0.80 %	Category 9	No Restriction
Category 5A	0.80 %	Category 10A	No Restriction
Category 5B	0.80 %	Category 10B	0.80 %
Category 5C	0.80 %	Category 11A	No Restriction
Category 5D	0.80 %	Category 11B	0.80 %
Category 6	0.80 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

Angelica root oil

The Standard is set due to the phototoxic effects of Angelica root oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

Two human phototoxicity studies were conducted.
In one study, the test material at concentrations of 1% and 5% was applied to the backs of 30 male volunteers for 48 hours, under occlusion. 23 hours after patch removal the sites were irradiated. Observations were made at 72 and 96 hours after application. No phototoxic reactions were observed in any subjects with either 1 or 5% concentrations of the test material (RIFM, 1975a).
In a second study, the test material was applied neat to 13 male and female volunteers. Six hours later, the test sites were exposed to UVA radiation. Positive reactions were observed in 5/13 subjects (Kaidbey and Kligman, 1978, 1980).

Additional studies are:
• 4% on guinea pigs, UVA, photoirritation observed in all animals, 20/20 (Guillot, et al, 1985).
• 100% on hairless mice, UV, photoirritation observed (RIFM, 1974. Forbes, et al, 1977). 0.78, 1.56, 3.125, 6.25, 12.5, 25, 50% on hairless mice. UV. Photoirritation observed at concentrations of 1.56% and higher (RIFM, 1975b).
• 0.375, 0.75, and 1.5% on hairless mice. Photoirritation observed at all concentrations (RIFM, 1987).

Angelica root oil

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Angelica root oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Angelica root oil in the various product categories.

REFERENCES:

The IFRA Standard on Angelica root oil is based on at least one of the following publications:

• Forbes P.D., Urbach F., and Davies R.E. (1977). Phototoxicity testing of fragrance raw materials. Food and Cosmetics Toxicology, 15, 55-60.

• Guillot, J.P., Gonnet, J.F., Loquerie, J.F., Martini, M.C., Convert, P., and Cotte, J. (1985). A new method for the assessment of phototoxic and photoallergic potentials by topical applications in the albino guinea pig. Journal of Toxicology: Cutaneous and Ocular Toxicology, 4(2), 117-133.

• Kaidbey, K.H. and Kligman, A.M. (1978). Identification of topical photosensitizing agents in humans. JID 70(3), 149-151.

• Kaidbey, K.H. and Kligman, A.M. (1980). Identification of contact photosensitizers by human assay. Current Concepts in Cutaneous Toxicity, 55-68. Academic Press, NY.

• Research Institute for Fragrance Materials, Inc. (1974). Phototoxicity and irritation test of fragrance materials in the mouse and miniature swine. RIFM report number 2037, 17 July.

• Research Institute for Fragrance Materials, Inc. (1975a). Phototoxicity and irritation test of fragrance materials in the mouse and miniature swine. RIFM report number 2038, 4 February.

• Research Institute for Fragrance materials, Inc. (1975b). Primary skin irritation and phototoxicity evaluation in human subjects with fragrance materials. RIFM report number 15092, December.

• Research Institute for Fragrance Materials, Inc. (1987). Phototoxicity dilution assay of angelica root oil in hairless mice. RIFM report number 5147, 26 May.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Bergamot oil expressed

CAS-No.:	8007-75-8 89957-91-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Not applicable.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1974 1992 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.40 %	Category 7A	No Restriction
Category 2	0.40 %	Category 7B	0.40 %
Category 3	0.40 %	Category 8	0.40 %
Category 4	0.40 %	Category 9	No Restriction
Category 5A	0.40 %	Category 10A	No Restriction
Category 5B	0.40 %	Category 10B	0.40 %
Category 5C	0.40 %	Category 11A	No Restriction
Category 5D	0.40 %	Category 11B	0.40 %
Category 6	0.40 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Bergamot oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Bergamot oil expressed

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

These recommendations are based on the published literature on the phototoxicity of this material, summarized by D.L. Opdyke, Fd. Cosm. Toxicol. 11,1031 (1973) and other investigations published in Contact Dermatitis 3,225 (1977).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bergamot oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Bergamot oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Bergamot oil expressed is based on at least one of the following publications:

Bergamot oil expressed

• D.L. Opdyke, Fd. Cosm. Toxicol. 11,1031 (1973) and other investigations published in Contact Dermatitis 3,225 (1977).

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Bitter orange peel oil expressed

CAS-No.:	68916-04-1 72968-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Orange Peel Oil, Bitter (Citrus aurantium L. subsp amara L.) Bitter orange oil (Citrus aurantium L. subsp. amara L.) Citrus aurantium peel oil Curacao peel oil (Citrus aurantium L.) Daidai peel oil (Citrus aurantium L.)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1992 2002 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	1.25 %	Category 7A	No Restriction
Category 2	1.25 %	Category 7B	1.25 %
Category 3	1.25 %	Category 8	1.25 %
Category 4	1.25 %	Category 9	No Restriction
Category 5A	1.25 %	Category 10A	No Restriction
Category 5B	1.25 %	Category 10B	1.25 %
Category 5C	1.25 %	Category 11A	No Restriction
Category 5D	1.25 %	Category 11B	1.25 %
Category 6	1.25 %	Category 12	No Restriction

Bitter orange peel oil expressed

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Bitter orange peel oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards. If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies. Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils. If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100. For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

Human Studies: The material was tested for phototoxic potential in human volunteers (Kaidbey and Kligman, 1980). Five µL/cm² of 100% bitter orange oil was applied to 2 cm² under occlusive tape. One cm circular sites were exposed to visible light or 20 J/ cm² UVA. Reactions were read at 24 and 48 hours. All 8 subjects reacted.

Animal studies: The NOEL was based on studies conducted with pooled samples of bitter orange oil in one miniature swine and hairless mice, which showed NOEL of 6.25%.

The Expert Panel for Fragrance Safety recommended that the skin contact level should be 1.25%, incorporating a 5 fold uncertainty factor.

Bitter orange peel oil expressed

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bitter orange peel oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Bitter orange peel oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Bitter orange peel oil expressed is based on at least one of the following publications:

• P.D. Forbes, F. Urbach and R.E. Davies (1977). Phototoxicity testing of fragrance raw materials. Food and Cosmetics Toxicology, 15, 55-60. Report number 1422.

• Kaidbey, K.H. and Kligman, A.M. (1980). Identification of contact photosensitizers by human assay. Current Concepts in Cutaneous Toxicity, 55-68. Academic Press, NY. Report number 1995.

• Research Institute for Fragrance Materials, Inc. (1972). Phototoxicity and irritation studies of fragrance materials in hairless mice and miniature swine. RIFM report number 2034, May 26.

• Research Institute for Fragrance Materials, Inc. (1978). Phototoxicity and irritation studies of mice and pigs with fragrance materials. RIFM report number 2042, April 14.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citrus oils and other furocoumarins containing essential oils

CAS-No.:	Not applicable. The scope of this Standard includes any CAS number(s) used to identify these fragrance ingredients.
Synonyms:	Not applicable.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1996 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0015 % (5-MOP)	Category 7A	No Restriction
Category 2	0.0015 % (5-MOP)	Category 7B	0.0015 % (5-MOP)
Category 3	0.0015 % (5-MOP)	Category 8	0.0015 % (5-MOP)
Category 4	0.0015 % (5-MOP)	Category 9	No Restriction
Category 5A	0.0015 % (5-MOP)	Category 10A	No Restriction
Category 5B	0.0015 % (5-MOP)	Category 10B	0.0015 % (5-MOP)
Category 5C	0.0015 % (5-MOP)	Category 11A	No Restriction
Category 5D	0.0015 % (5-MOP)	Category 11B	0.0015 % (5-MOP)
Category 6	0.0015 % (5-MOP)	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Citrus oils and other furocoumarins containing essential oils. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Where the Bergapten (5-Methoxypsoralen, (5-MOP)) content of all relevant oils present in a compound

Citrus oils and other furocoumarins containing essential oils

has been determined, it is recommended that for applications on areas of skin exposed to UV-light, the total level of Bergapten in the consumer products should not exceed 0.0015% (15 ppm). This upper concentration level only applies to applications on skin exposed to UV-light, excluding rinse-off products and incidental skin contact products as detailed in the Guidance for the use of IFRA Standards.

Where the level of Bergapten has not been determined by appropriate methods, the limits specified in the guidelines on individual oils should apply. In those cases, where such oils are used in combination with other furocoumarin-containing phototoxic fragrance ingredients (extracts), the additive effect has to be taken into consideration and the concentration levels have to be reduced accordingly.

The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the finished consumer product, shall not exceed 100. Restrictions for furocoumarin-containing fragrance ingredients (extracts) have been recommended for:

- Angelica root oil,
- Bergamot oil expressed,
- Bitter orange oil expressed,
- Cumin oil,
- Grapefruit oil expressed,
- Lemon oil cold pressed,
- Lime oil expressed,
- Rue oil.

The following essential oils contain small amounts of phototoxic furocoumarins (typical levels are provided in brackets):

- Petitgrain Mandarin oil (50 ppm),
- Tangerine oil cold pressed (50 ppm),
- Parsley leaf oil (20 ppm).

These levels are not high enough to require special restrictions if used alone, but if used in combination with one or the other furocoumarin-containing phototoxic fragrance ingredients (extracts), attention should be paid that the total level of Bergapten in the consumer product does not exceed 15 ppm.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

Citrus oils and other furocoumarins containing essential oils

RIFM SUMMARIES:

These recommendations are based on the published phototoxic effects of Bergapten and the established dose-effect relationships (Young at al., J. Photochem. Photobiol. B,7, 231 (1990); Dubertret et al.ibid 7, 251 (1990), idem, ibid, 7, 362 (1990).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citrus oils and other furocoumarins containing essential oils and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citrus oils and other furocoumarins containing essential oils in the various product categories.

REFERENCES:

The IFRA Standard on Citrus oils and other furocoumarins containing essential oils is based on at least one of the following publications:

• Young at al., J. Photochem. Photobiol. B,7, 231 (1990).

• Dubertret et al. ibid 7, 251 (1990).

• Dubertret et al. ibid, 7, 362 (1990).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cumin oil

CAS-No.:	8014-13-9 84775-51-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cumin seed oil Cuminum cyminum (Cumin) seed oil Cuminum cyminum L. Cuminum cyminum oil Oils, cumin (Cuminum cyminum)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1986 2001 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.40 %	Category 7A	No Restriction
Category 2	0.40 %	Category 7B	0.40 %
Category 3	0.40 %	Category 8	0.40 %
Category 4	0.40 %	Category 9	No Restriction
Category 5A	0.40 %	Category 10A	No Restriction
Category 5B	0.40 %	Category 10B	0.40 %
Category 5C	0.40 %	Category 11A	No Restriction
Category 5D	0.40%	Category 11B	0.40 %
Category 6	0.40 %	Category 12	No Restriction

Cumin oil

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Cumin oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards. If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies. Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils. If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

The NOEL for phototoxicity is 50% based on a study in 23 volunteers patched under occlusion on the back for 24 hours. Patches were removed after 10 minutes followed by irradiation with 16-20 J/cm2 of UVA. Readings were made at 1, 24, 48 & 72 hours after irradiation. No photoirritation was observed (RIFM, 1986).

Additional studies considered are:
• 100% in miniature swine, UV, distinct photoirritant effects were observed (RIFM 1972; Forbes et al., 1977)
• 100% in hairless mice, UV, distinct photoirritant effects were observed (RIFM 1972; Forbes et al., 1977).
• 100% and 25% in hairless mice, UV, no reactions at 25% 0/12, 6/12 reactions at 100% (RIFM, 1983).
• 100%, 75%, 50%, and 25% in hairless mice, UV, no reactions 0/6 at 25%, 5/6 reactions at 50%, 6/6 reactions at 75% and 100% (RIFM, 1983).
• 30% in guinea pigs, UV, no reactions 0/10 (RIFM, 1984)
• 3% and 10% in guinea pigs, UV, no reactions 0/10 at 3%, and 4/10 reactions at 10% (RIFM, 1984).

Cumin oil

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cumin oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cumin oil in the various product categories.

REFERENCES:

The IFRA Standard on Cumin oil is based on at least one of the publications listed below:

• Research Institute for Fragrance Materials, Inc. (1986). Human phototoxicity study of cumin oil, tagetes minuta absolute, thyme concrete and pentyl acetate. RIFM report number 4348, 21 August.

• Research Institute for Fragrance Materials, Inc. (1985). Cumin oil: A photoirritation test in humans. Unpublished report from the Givaudan-Roure Corp. Report number 3877, 7 January.

• Research Institute for Fragrance Materials, Inc. (1972). Phototoxicity and irritation tests of fragrance materials in the hairless mice and miniature swine. Report number 2035, 26 July.

• P.D.Forbes, F.Urbach and R.E.Davies. (1977). Phototoxicity testing of fragrance raw materials. Food and Cosmetics Toxicology, 15, 55-60. Report number 1422.

• K.H.Kaidbey and A.M.Kligman (1978). Identification of topical photosensitizing agents in humans. Journal of Investigative Dermatology, 70(3), 149-151. Report number 3090.

• Research Institute for Fragrance Materials, Inc. (1983). Phototoxicity study of fragrance materials in hairless mice. RIFM report number 2043, 31 January.

• Research Institute for Fragrance Materials, Inc. (1984). Determination of phototoxicity of cumin oil in guinea pigs. Unpublished report from the Givaudan-Roure Corp. Report number 3875, 23 February.

• Research Institute for Fragrance Materials, Inc. (1984). Determination of phototoxicity of cumin oil in guinea pigs. Unpublished report from the Givaudan-Roure Corp. Report number 3876, 17 July.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Grapefruit oil expressed

CAS-No.:	8016-20-4 90045-43-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Not applicable.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1992 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	4.0 %	Category 7A	No Restriction
Category 2	4.0 %	Category 7B	4.0 %
Category 3	4.0 %	Category 8	4.0 %
Category 4	4.0 %	Category 9	No Restriction
Category 5A	4.0 %	Category 10A	No Restriction
Category 5B	4.0 %	Category 10B	4.0 %
Category 5C	4.0 %	Category 11A	No Restriction
Category 5D	4.0 %	Category 11B	4.0 %
Category 6	4.0 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Grapefruit oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Grapefruit oil expressed

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

These recommendations are made in order to promote Good Manufacturing Practices (GMP) considering the large variations in the Bergapten content of commercial samples of Grapefruit oil expressed.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Grapefruit oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Grapefruit oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Grapefruit oil expressed is based on at least one of the following publications:

• Young at al., J. Photochem. Photobiol. B,7, 231 (1990).

Grapefruit oil expressed

• Dubertret et al. ibid 7, 251 (1990).

• Dubertret et al. ibid, 7, 362 (1990).

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Lemon oil cold pressed

CAS-No.:	8008-56-8 84929-31-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Not applicable.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1992 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	2.0 %	Category 7A	No Restriction
Category 2	2.0 %	Category 7B	2.0 %
Category 3	2.0 %	Category 8	2.0 %
Category 4	2.0 %	Category 9	No Restriction
Category 5A	2.0 %	Category 10A	No Restriction
Category 5B	2.0 %	Category 10B	2.0 %
Category 5C	2.0 %	Category 11A	No Restriction
Category 5D	2.0 %	Category 11B	2.0 %
Category 6	2.0 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Lemon oil cold pressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Lemon oil cold pressed

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

These recommendations are based on results of RIFM on the phototoxicity of lemon oil cold pressed (Fd. Cosm. Toxicol. 12,725 (1974), its low bergapten content (C.K. Shu et al. VI Int. Congress of Essential oils 1974) and the observed no-effect level of pooled samples in tests using the animal model.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Lemon oil cold pressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Lemon oil cold pressed in the various product categories.

REFERENCES:

The IFRA Standard on Lemon oil cold pressed is based on at least one of the following publications:

Lemon oil cold pressed

• Fd. Cosm. Toxicol. 12,725 (1974).

• C.K. Shu et al. VI Int. Congress of Essential oils, 1974.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Lime oil expressed

CAS-No.:	8008-26-2 90063-52-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Not applicable.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1992 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.70 %	Category 7A	No Restriction
Category 2	0.70 %	Category 7B	0.70 %
Category 3	0.70 %	Category 8	0.70 %
Category 4	0.70 %	Category 9	No Restriction
Category 5A	0.70 %	Category 10A	No Restriction
Category 5B	0.70 %	Category 10B	0.70 %
Category 5C	0.70 %	Category 11A	No Restriction
Category 5D	0.70 %	Category 11B	0.70 %
Category 6	0.70 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Lime oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Lime oil expressed

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

These recommendations are based on results of RIFM on the phototoxicity of Lime oil expressed (Fd. Cosm. Toxicol. 12, 731 (1974), its Bergapten content reported in J.A.O.A.C. 52, (4), 727 (1969) and the observed no-effect level of pooled samples in tests using the animal model.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Lime oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Lime oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Lime oil expressed is based on at least one of the following publications:

Lime oil expressed

• Fd. Cosm. Toxicol. 12, 731 (1974).

• J.A.O.A.C. 52, (4), 727 (1969).

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl N-methylanthranilate

CAS-No.:	85-91-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl N-methylanthranilate Benzoic acid, 2-(methylamino)-, methyl ester Dimethyl anthranilate 2-Methylamino methyl benzoate N-Methylanthranilic acid, methyl ester Methyl 2-(methylamino)benzoate Methyl 2-methylaminobenzoate Methyl o-methylaminobenzoate

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	1978 2001 2002 2006 2009 2015 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.10 %	Category 7A	0.50 %
Category 2	0.10 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.10 %
Category 4	0.10 %	Category 9	0.50 %
Category 5A	0.10 %	Category 10A	0.50 %
Category 5B	0.10 %	Category 10B	0.10 %
Category 5C	0.10 %	Category 11A	No restriction

Methyl N-methylanthranilate

Category 5D	0.10 %	Category 11B	0.10 %
Category 6	0.50 %	Category 12	No restriction

Fragrance ingredient restriction – Note box

The Standard is set due to the phototoxic effects of Methyl N-methylanthranilate. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FRAGRANCE INGREDIENT SPECIFICATION:	This material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY AND SYSTEMIC TOXICITY, POTENTIAL OF NITROSAMINE FORMATION**

RIFM SUMMARIES:

A human phototoxicity study at 0.5% in 75% Ethanol/25% Diethyl phthalate (DEP) resulted in 0/26 reactions (RIFM, 2001). Another human phototoxicity study with concentrations of 0.1, 0.3, and 0.5% resulted in 0/29 reactions (RIFM, 1998). Several other phototoxicity studies showed phototoxic reactions at 1% and 5% (Kaidbey and Kligman, 1980; Letizia and Api, 2003; RIFM, 1999).
A human photosensitization study at 0.5% in 75% Ethanol/25% DEP resulted in 0/26 reactions (RIFM, 2001). Another human photosensitization study at 5.0% resulted in no photoallergic reactions. However, 14/18 phototoxic reactions were observed (RIFM, 1978a).

A phototoxicity study at 50% in Methanol and 100% on hairless mice produced reactions at both dose levels (RIFM, 1978b).

An in vitro phototoxicity assay using a human skin model (Skin2®) with concentrations of Methyl N-methylanthranilate ranging from 0.05% to 25% in corn oil showed that the material was phototoxic at dose levels above 5% (Api, 1997).

Methyl N-methylanthranilate

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl N-methylanthranilate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl N-methylanthranilate in the various product categories.
In addition, they recommend to use Methyl N-methylanthranilate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Methyl N-methylanthranilate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl N-methylanthranilate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl beta-naphthyl ketone

CAS-No.:	93-08-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Acetonaphthone β-Acetylnaphthalene Cetone d Ethanone, 1-(2-naphthalenyl) β-Methyl naphthyl ketone β-Naphthyl methyl ketone Oranger crystals

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2004 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.20 %	Category 7A	No Restriction
Category 2	0.20 %	Category 7B	0.20 %
Category 3	0.20 %	Category 8	0.20 %
Category 4	0.20 %	Category 9	No Restriction
Category 5A	0.20 %	Category 10A	No Restriction
Category 5B	0.20 %	Category 10B	0.20 %
Category 5C	0.20 %	Category 11A	No Restriction
Category 5D	0.20 %	Category 11B	0.20 %
Category 6	0.20 %	Category 12	No Restriction

Methyl beta-naphthyl ketone

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Methyl beta-naphthyl ketone. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

Human Studies:
A human phototoxicity study with Methyl β-naphthyl ketone (concentrations of 0.1, 1 and 10% in 3:1 DEP:EOH) was conducted. No reactions indicative of primary irritation were observed in this study. However, under irradiated conditions, Methyl β-naphthyl ketone at 10% in 3:1 DEP:EtOH produced moderate erythema in 5 subjects. These responses were stronger than those seen for the irradiated blank patch, which only produced slight to mild erythema. Under the conditions of the study, Methyl β-naphthyl ketone at 10% in 3:1 DEP:EtOH showed evidence of phototoxicity. Erythema scores for Methyl β-naphthyl ketone at 0.1% and 1.0% in 3:1 DEP:EtOH were similar to those seen for the blank patch under irradiated conditions. These reactions were not indicative of phototoxic responses (RIFM, 2004).

Other Studies:
Methyl β-naphthyl ketone has been observed to absorb in the UV range of 290-400 nm and is positive in the Neutral Red Uptake Phototoxicity Assay (RIFM, 2002). However, it has been shown to be non-phototoxic in guinea pigs at concentrations up to 60% in 3:1 EtOH:DEP (RIFM, 2003).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl beta-naphthyl ketone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl beta-naphthyl ketone in the various product categories.

REFERENCES:

Methyl beta-naphthyl ketone

The IFRA Standard on Methyl β-naphthyl ketone is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl β-naphthyl ketone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Research Institute for Fragrance Materials, Inc. (2002). Methyl β-naphthyl ketone: Neutral red uptake phototoxicity assay in BALB/C 3T3 mouse fibroblasts. RIFM report number 40279, May 30 (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (2003). Topical photoallergy screening test of β-Methyl naphthyl ketone in male albino hairless guinea pigs including primary irritation, phototoxicity and contact hypersensitivity evaluations. RIFM report number 44882, June 9 (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (2004). Evaluation of phototoxicity of Methyl β-naphthyl ketone in humans. RIFM report number 45136, March 16 (RIFM, Woodcliff Lake, NJ, USA).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Rue oil

CAS-No.:	8014-29-7 84929-47-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Not applicable.

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1974 1978 2001 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.15 %	Category 7A	No Restriction
Category 2	0.15 %	Category 7B	0.15 %
Category 3	0.15 %	Category 8	0.15 %
Category 4	0.15 %	Category 9	No Restriction
Category 5A	0.15 %	Category 10A	No Restriction
Category 5B	0.15 %	Category 10B	0.15 %
Category 5C	0.15 %	Category 11A	No Restriction
Category 5D	0.15 %	Category 11B	0.15 %
Category 6	0.15 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Rue oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the

Rue oil

Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

This recommendation is based on the fact that Rue oil is known to contain psoralens and on the no-effect level of 0.8% found in hairless mice (P.D. Forbes, F. Urbach, R.E. Davis (1977), Fd. Cosmet. Toxicol. 15, 55-60 and communication from RIFM).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Rue oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Rue oil in the various product categories.

REFERENCES:

The IFRA Standard on Rue oil is based on at least one of the following publications:

• P.D. Forbes, F. Urbach, R.E. Davis (1977), Fd. Cosmet. Toxicol. 15, 55-60.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Rue oil

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Tagetes oil and absolute

CAS-No.:	Prohibition of Tagetes erecta: 90131-43-4 8016-84-0 Restriction and Specification of Tagetes patula and Tagetes minuta: 91722-29-1 8016-84-0 91770-75-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Prohibition of Tagetes erecta: Tagetes erecta L. Restriction and Specification of Tagetes patula and Tagetes minuta: Tagetes absolute (Tagetes patula L.) Tagetes patula absolute Tagetes patula, ext. Tagetes minuta absolute Tagetes oil

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1986 2001 2015

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Tagetes erecta should not be used as a fragrance ingredient in any finished product application. Only Tagetes patula and Tagetes minuta should be used as fragrance ingredients according to the Restriction and Specification set in this Standard.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.010 %	Category 7A	0.10 %

Tagetes oil and absolute

Category 2	0.010 %	Category 7B	0.010 %
Category 3	0.010 %	Category 8	0.010 %
Category 4	0.010 %	Category 9	0.10 %
Category 5A	0.010 %	Category 10A	0.10 %
Category 5B	0.010 %	Category 10B	0.010 %
Category 5C	0.010 %	Category 11A	No Restriction
Category 5D	0.010 %	Category 11B	0.010 %
Category 6	0.10 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Tagetes oil and absolute. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards. The restriction only applies to Tagetes patula and Tagetes minuta.

FRAGRANCE INGREDIENT SPECIFICATION:	The content of alpha-Terthienyl (Terthiophene, CAS number 1081-34-1) in Tagetes patula and Tagetes minuta oils and absolutes must not exceed 0.35 %.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**
RIFM SUMMARIES:	

Tagetes oil and absolute

Tagetes oils and absolutes obtained from Tagetes minuta L. (syn. Tagetes glandulifera Schrank and Tagetes patula L.) were evaluated by RIFM (Letizia and Api, 2000).
A no effect level for phototoxicity of 0.05% was determined on humans using Egyptian Tagetes minuta (RIFM, 1986a).

The following studies have also been considered:
• At 0.003% in guinea pigs, no observable effects, 0/10 (RIFM, 1985a).
• At 0.01% in guinea pigs, phototoxicity observed, 8/10 (RIFM, 1985b).
• At 100% in mice, phototoxicity was observed, 6/6 (RIFM,1986b).
• At 1% in mice, phototoxicity was observed, 6/6 (RIFM, 1986c).
• At 0.1% in mice, phototoxicity was observed, 6/6 (RIFM, 1986c).
• At 0.01% in mice, phototoxicity was observed, 2/6 (RIFM, 1986c).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Restriction and Specification of this Standard is based on the recommendations from the Scientific Committee on Consumer Safety (SCCS) Opinions on the fragrance ingredients Tagetes minuta and Tagetes patula extracts and essential oils (phototoxicity only) (SCCS/1551/15) (https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_172.pdf).

The Expert Panel for Fragrance Safety reviewed the SCCS Opinion SCCS/1551/15 for Tagetes minuta and Tagetes Patula and recommends the limits for the 12 different product categories, which are the acceptable use levels of Tagetes minuta and Tagetes Patula in the various product categories.
In addition, they recommend to use Tagetes minuta and Tagetes Patula according to the its specification above mentioned.

The Prohibition of this Standard is based on the Scientific Committee on Consumer Products (SCCP) Opinion on Tagetes erecta, T. minuta and T. patula Extracts and Oils (phototoxicity only) (SCCP/0869/05) (https://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_025d.pdf).
The Expert Panel for Fragrance Safety recommends not to use Tagetes erecta in any finished product application.

REFERENCES:

The IFRA Standard Tagetes oil and absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Tagetes oil and absolute is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.

Tagetes oil and absolute

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Letizia C.S. and Api A.M (2000). A dermal safety evaluation of extracts from Tagetes plants used in fragrances. The Toxicologist, 54(1), 397.

• Research Institute for Fragrance Materials, Inc. (1985a). Guinea Pig Phototoxicity Test. Unpublished report from Givaudan. Report number 3361, 17 December.

• Research Institute for Fragrance Materials, Inc. (1985b). Guinea Pig Phototoxicity Test. Unpublished report from Givaudan. Report number 3362, 17 December.

• Research Institute for Fragrance Materials, Inc. (1986a). Human Photosensitization Test. RIFM report number 1690, 21 November.

• Research Institute for Fragrance Materials, Inc. (1986b). Mouse Phototoxicity Test. RIFM report number 3828, 25 June.

• Research Institute for Fragrance Materials, Inc. (1986c). Mouse Phototoxicity Test. RIFM report number 4343, 31 July.

• Scientific Committee on Consumer Safety (SCCS) Opinions on the fragrance ingredients Tagetes minuta and Tagetes patula extracts and essential oils (phototoxicity only) (SCCS/1551/15) (https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_172.pdf).

• Scientific Committee on Consumer Products (SCCP) Opinion on Tagetes erecta, T. minuta and T. patula Extracts and Oils (phototoxicity only) (SCCP/0869/05) (https://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_025d.pdf).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Furfural

CAS-No.:	98-01-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Formylfuran Fural Furaldehyde 2-Furaldehyde 2-Furancarbonal 2-Furancarboxaldehyde Furfuraldehyde α-Furfuraldehyde 2-Furylcarboxaldehyde Pyromucic aldehyde

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0010 %	Category 7A	0.0010 %
Category 2	0.0010 %	Category 7B	0.0010 %
Category 3	0.0010 %	Category 8	0.0010 %
Category 4	0.0010 %	Category 9	0.0010 %
Category 5A	0.0010 %	Category 10A	0.0010 %
Category 5B	0.0010 %	Category 10B	0.0010 %
Category 5C	0.0010 %	Category 11A	0.0010 %

Furfural

Category 5D	0.0010 %	Category 11B	0.0010 %
Category 6	0.0010 %	Category 12	0.050 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Furfural has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Furfural, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Furfural and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Furfural in the various product categories.

REFERENCES:

The IFRA Standard on Furfural is based on at least one of the following publications:

• The RIFM Safety Assessment on Furfural is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Furfural

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• SCCS (Scientific Committee on Consumer Safety), Opinion on furfural, 27 March 2012. (https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_083.pdf).

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available at www.ifrafragrance.org.

Estragole

CAS-No.:	140-67-0 1407-27-8 77525-18-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Estragole p-Allylanisole 4-Allylanisole 1-Allyl-4-methoxybenzene Benzene, 1-methoxy-4-(2-propenyl)- Chavicyl methyl ether Isoanethole p-Methoxyallylbenzene 1-Methoxy-4-(2-propen-1-yl)benzene Methyl chavicol

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	2009 2015 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.00031 %	Category 7A	0.00063 %
Category 2	0.0025 %	Category 7B	0.00063 %
Category 3	0.00063 %	Category 8	0.00021 %
Category 4	0.014 %	Category 9	0.0041 %
Category 5A	0.0022 %	Category 10A	0.00094 %
Category 5B	0.00063 %	Category 10B	0.0022 %

Estragole

Category 5C	0.00063 %	Category 11A	0.00021 %
Category 5D	0.00021 %	Category 11B	0.00021 %
Category 6	0.0019 %	Category 12	0.11 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Estragole, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Estragole and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Estragole in the various product categories.

REFERENCES:

The IFRA Standard on Estragole is based on at least one of the following publications:

• The RIFM Safety Assessment on Estragole if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Estragole

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl eugenol

CAS-No.:	93-15-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl eugenol Eugenol methyl ether Eugenyl methyl ether Methyl eugenol ether Allylveratrole 4-Allylveratrole Veratrole methyl ether 4-Allyl-1,2-dimethoxybenzene Benzene, 1,2-dimethoxy-4-(2-propenyl)- 1,2-Dimethoxy-4-allylbenzene 1,2-dimethoxy-4-(2-propenyl)-benzene 3,4-Dimethoxyallylbenzene

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	2002 2015 2020

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.00042 %	Category 7A	0.00042 %
Category 2	0.0015 %	Category 7B	0.00042 %
Category 3	0.00042 %	Category 8	0.000069 %
Category 4	0.011 %	Category 9	0.0017 %
Category 5A	0.0015 %	Category 10A	0.00062 %
Category 5B	0.00021 %	Category 10B	0.0021 %

Methyl eugenol

Category 5C	0.00042 %	Category 11A	0.000069 %
Category 5D	0.000069 %	Category 11B	0.000069 %
Category 6	0.0010 %	Category 12	0.066 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl eugenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl eugenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl eugenol in the various product categories.

REFERENCES:

The IFRA Standard on Methyl eugenol is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl eugenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Methyl eugenol

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl N-formylanthranilate

CAS-No.:	41270-80-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzoic acid, 2-(formylamino)-, methyl ester Methyl 2-(formylamino)benzoate Methyl 2-formamidobenzoate Methyl o-formamidobenzoate N-Formylanthranilic acid, methyl ester

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.10 %	Category 7A	No Restriction
Category 2	0.10 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.10 %
Category 4	0.10 %	Category 9	No Restriction
Category 5A	0.10 %	Category 10A	No Restriction
Category 5B	0.10 %	Category 10B	0.10 %
Category 5C	0.10 %	Category 11A	No Restriction
Category 5D	0.10 %	Category 11B	0.10 %
Category 6	0.10 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

Methyl N-formylanthranilate

The Standard is set due to the phototoxic effects of Methyl N-formylanthranilate. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FRAGRANCE INGREDIENT SPECIFICATION:	This material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY, POTENTIAL OF NITROSAMINE FORMATION**

RIFM SUMMARIES:

Phototoxicity effects of Methyl N-formylanthranilate have been assessed by read-across from Methyl N-methylanthranilate. The following studies have been considered for the determination of the phototoxicity potential of Methyl N-methylanthranilate:

• A human phototoxicity study at 0.5% in 75% Ethanol/25% Diethyl phthalate (DEP) resulted in 0/26 reactions (RIFM, 2001). Another human phototoxicity study with concentrations of 0.1, 0.3, and 0.5% resulted in 0/29 reactions (RIFM, 1998). Several other phototoxicity studies showed phototoxic reactions at 1% and 5% (Kaidbey and Kligman, 1980; Letizia and Api, 2003; RIFM, 1999).
• A human photosensitization study at 0.5% in 75% Ethanol/25% DEP resulted in 0/26 reactions (RIFM, 2001). Another human photosensitization study at 5.0% resulted in no photoallergic reactions. However, 14/18 phototoxic reactions were observed (RIFM, 1978a).
• A phototoxicity study at 50% in Methanol and 100% on hairless mice produced reactions at both dose levels (RIFM, 1978b).
• An in vitro phototoxicity assay using a human skin model (Skin2®) with concentrations of Methyl N-methylanthranilate ranging from 0.05% to 25% in corn oil showed that the material was phototoxic at dose levels above 5% (Api, 1997).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl N-formylanthranilate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl N-formylanthranilate in the various product categories.

Methyl N-formylanthranilate

In addition, they recommend to use Methyl N-formylanthranilate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Methyl N-formylanthranilate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl N-formylanthranilate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Api A.M. (1997). In vitro assessment of phototoxicity. In Vitro Toxicology: Journal of Molec. Cell. Toxicol., 10(3), 339-350.

• Kaidbey K.H. and Kligman A.M. (1980). Identification of contact photosensitizers by human assay. In Current Concepts In Cutaneous Toxicity, Academic Press, New York, pages 55-68.

• Letizia C.S. and Api A.M. (2003). Evaluation of the phototoxic and photoallergenic potential of Methyl N-methyl anthranilate. The Toxicologist, 72(S1), 378-379.

• Research Institute for Fragrance Materials, Inc. (1978a). Phototoxicity and contact photoallergy testing in human subjects. RIFM report number 1788, 18 January.

• Research Institute for Fragrance Materials, Inc. (1978b). Phototoxicity and irritation studies of mice and pigs with fragrance materials. RIFM report number 2042, 13 April.

• Research Institute for Fragrance Materials, Inc. (1998). Evaluation of phototoxicity of Dimethyl anthranilate in humans. RIFM report number 34768, 8 December.

• Research Institute for Fragrance Materials, Inc. (1999). Evaluation of phototoxicity of Dimethyl anthranilate in humans. RIFM report number 34769, 20 July.

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available at www.ifrafragrance.org.

Thujone

CAS-No.:	546-80-5 471-15-8 76231-76-0 1125-12-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-Isopropyl-4-methylbicyclo[3.1.0]hexan-3-one 3-Thujanone, (1s,4r,5r)-(-)- α-Thujone β-Thujone

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.24 %
Category 2	0.21 %	Category 7B	0.24 %
Category 3	0.032 %	Category 8	0.0053 %
Category 4	1.4 %	Category 9	0.13 %
Category 5A	0.095 %	Category 10A	0.13 %
Category 5B	0.032 %	Category 10B	0.22 %
Category 5C	0.016 %	Category 11A	0.0053 %
Category 5D	0.0053 %	Category 11B	0.0053 %
Category 6	0.095 %	Category 12	9.5 %

Thujone

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

The natural contribution of Thujone is determined by the sum of the natural contributions of each of its isomers.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**NEUROTOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Thujone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Thujone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Thujone in the various product categories.

REFERENCES:

The IFRA Standard on Thujone is based on at least one of the following publications:

• The RIFM Safety Assessment on Thujone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

Thujone

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetyl ethyl tetramethyl tetralin (AETT)

CAS-No.:	88-29-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	7-Acetyl-6-ethyl-1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene Ethanone, 1-(3-ethyl-5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl)- Versalide (commercial name)

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1977 1980 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Acetyl ethyl tetramethyl tetralin (AETT) should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**NEUROTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl ethyl tetramethyl tetralin (AETT) and recommends not to use Acetyl ethyl tetramethyl tetralin (AETT) as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Acetyl ethyl tetramethyl tetralin (AETT) is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetyl ethyl tetramethyl tetralin (AETT) is available at the RIFM Safety

Acetyl ethyl tetramethyl tetralin (AETT)

Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 357-360.

• Spencer, P.S., Sterman, A.B et al. (1979), Neurotoxicology 1(1).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetyl isovaleryl

CAS-No.:	13706-86-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	5-Methyl-2,3-hexanedione 2,3-Hexanedione, 5-methyl- Acetyl isopentanoyl

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 1983 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Acetyl isovaleryl should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl isovaleryl and recommends not to use Acetyl isovaleryl as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Acetyl isovaleryl is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetyl isovaleryl is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Acetyl isovaleryl

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J., Letizia, C. (1982), Food and Chemical Toxicology 20, 637.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Alantroot oil

CAS-No.:	97676-35-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Alantroot oil (Inula helenium) Elecampane oil Inula helenium oil

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1975 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Alantroot oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Alantroot oil and recommends not to use Alantroot oil as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Alantroot oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Alantroot oil is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Alantroot oil

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1976), Food and Chemical Toxicology 14, 307.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl heptine carbonate

CAS-No.:	73157-43-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Allyl 2-octynoate 2-Octynoic acid 2-Propenyl ester

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1989 1999 2005 2007

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Allyl heptine carbonate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl heptine carbonate and recommends not to use Allyl heptine carbonate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Allyl heptine carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl heptine carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Allyl heptine carbonate

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl isothiocyanate

CAS-No.:	57-06-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Allyl isosulfocyanate Allyl thiocarbonimide 1-Propenal, 3-isothiocyanato- 2-Propenyl isothiocyanate AITC

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Allyl isothiocyanate should not be used as a fragrance ingredient. Allyl isothiocyanate as such should not be used as a fragrance ingredient. The natural extracts containing Allyl isothiocyanate should not be used as substitutes for this substance.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

Allyl isothiocyanate can be found at relatively high levels in Mustard oil and Horseradish oil. The natural extracts containing Allyl isothiocyanate should not be used as substitutes for this substance. This means that the use of Mustard oil and Horseradish oil cannot be considered safe and therefore both extracts should not be used in fragrance mixtures until additional data is available and considered sufficient to support the safe use of these ingredients.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Allyl isothiocyanate

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl isothiocyanate and recommends not to use Allyl isothiocyanate as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Allyl isothiocyanate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl isothiocyanate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Amylcyclopentenone

CAS-No.:	25564-22-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Cyclopenten-1-one, 2-pentyl- 2-Pentyl-2-cyclopentenone 2-Pentylcyclopent-2-en-1-one

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1987 1994 2007

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Amylcyclopentenone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Amylcyclopentenone and recommends not to use Amylcyclopentenone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Amylcyclopentenone is based on at least one of the following publications:

• The RIFM Safety Assessment on Amylcyclopentenone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Amylcyclopentenone

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Anisylidene acetone

CAS-No.:	943-88-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Butene-2-one, 4-(4-methoxyphenyl) ester 4-(p-methoxyphenyl)-3-butene-2-one Methyl p-methoxycinnamyl ketone

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Anisylidene acetone should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Anisylidene acetone and recommends not to use Anisylidene acetone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Anisylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Anisylidene acetone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Anisylidene acetone

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Chemical Toxicology 13, 456.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis-and trans-Asarone

CAS-No.:	494-40-6 2883-98-9 5273-86-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	494-40-6: Benzene, 1,2,4-trimethoxy-5-(1-propen-1-yl)- (unspecified isomer) (E)-and (Z)-2,4,5-Trimethoxypropen-1-yl benzene 2883-98-9: α-Asarone trans-Asarone Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (E)- trans-Isoasarone 5273-86-9: ß-Asarone cis-ß-Asarone Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)- cis-Isoasarone

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1991

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	December 1991
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	cis- and trans-Asarone as such should not be used as fragrance ingredients. The natural extracts containing cis- and trans-Asarone should not be used as substitutes for this substance.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox

cis-and trans-Asarone

Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box
On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts (e.g. Calamus oils) is regarded acceptable as long as the level of cis- and trans-Asarone in the finished consumer product does not exceed 100ppm (0.01 %).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

The natural contribution of cis-and trans-Asarone is determined by the sum of the natural contributions of each of its isomers.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis-and trans-Asarone and recommends not to use cis-and trans-Asarone as or in fragrance ingredients in any finished product application.
However, the presence of cis-and trans-Asarone in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

cis-and trans-Asarone

REFERENCES:

The IFRA Standard on cis-and trans-Asarone is based on at least one of the following publications:

• The RIFM Safety Assessment on cis-and trans-Asarone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• R.W. Wiseman, E.C. Miller et al. (1987), Cancer Res. 47,2275-2283.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzene

CAS-No.:	71-43-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzol

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	1988

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**
FRAGRANCE INGREDIENT PROHIBITION:	Benzene should not be used as a fragrance ingredient.
FRAGRANCE INGREDIENT SPECIFICATION:	The level of Benzene has to be kept as low as practicable and should never exceed 1 ppm in the fragrance compound/mixture or fragrance oil. Since the introduction of the original Restriction on the use of Benzene by IFRA in 1988, there have been significant changes in manufacturing practices that permit the reduction of the maximum permitted level of this substance. These include use of technological improvements allowing replacement of this solvent for the extraction of fragrance materials and in eliminating its presence as an impurity in alternative extraction solvents.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Benzene

The Expert Panel for Fragrance Safety reviewed all the available data for Benzene and recommends not to use Benzene as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

The IFRA Standard on Benzene is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• IARC (International Agency for Research on Cancer) Monographs Vol 7, p. 203 (1974); Vol 29, p. 93 and 391 (1982); Suppl. 7, p. 120 (1987).

• CSTEE (Scientific Committee on Toxicity, Ecotoxicity and the Environment), Opinion on the results of the Risk Assessment of Benzene carried out in the framework of Council Regulation (EEC) 793/93 as adopted on Feb., 6, 2003.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl cyanide

CAS-No.:	140-29-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzeneacetonitrile Benzylnitrile Phenylacetonitrile Phenyl acetyl nitrile

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	Benzyl cyanide as such should not be used as fragrance ingredient. The natural extracts containing Benzyl cyanide should not be used as substitutes for this substance.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox

Benzyl cyanide

Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils and extracts), exposure to this substance from the use of these oils and extracts is not significant and the use of these oils is authorized as long as the level of Benzyl cyanide in the finished product does not exceed 0.01% (100 ppm).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**RELEASE OF CYANIDE**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl cyanide and recommends not to use Benzyl cyanide as or in fragrance ingredients in any finished product application.
However, the presence of Benzyl cyanide in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

The IFRA Standard on Benzyl cyanide is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl cyanide is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

Benzyl cyanide

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Potter et al., 2001, Food and Chemical Toxicology 39 (2), page 141-146.

• Potter et al., 2001, Food and Chemical Toxicology 39 (2), page 147-151.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzylidene acetone

CAS-No.:	122-57-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-Phenyl-3-buten-2-one 3-Buten-2-one, 4-phenyl- Benzilideneacetone Methyl styryl ketone

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Benzylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzylidene acetone and recommends not to use Benzylidene acetone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Benzylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzylidene acetone is available at the RIFM Safety Assessment Sheet

Benzylidene acetone

Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1973), Food and Chemical Toxicology 11, 1021.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Birch wood pyrolysate

CAS-No.:	8001-88-5 68917-50-0 84012-15-7 85251-66-7 85940-29-0 91745-85-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Prohibition of the crude material: Birch tar oil, crude Specification for the distillates: Birch tar oil dephenolated Birch tar oil rectified Essence bouleau dephenolisée Essence bouleau (Goudron) rect.

History:	Publication date:	2013 (Amendment 47)	Previous Publications:	1996 2003

Implementation dates:	For new creation*:	August 10, 2013
	For existing creation*:	August 10, 2014
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Birch wood pyrolysate should not be used as a fragrance ingredient. Crude birch wood (bark) pyrolysates (oils) derived by pyrolysis (destructive distillation) of the wood or bark of Betula pubescens, Betula pendula, Betula lenta or Betula alba should not be used as a fragrance ingredient for any finished product application. Only rectified (purified) Birch tar oils being in compliance with the limitations for polynuclear aromatic hydrocarbons (PAH) established by this IFRA Standard should be used.

Birch wood pyrolysate

FRAGRANCE INGREDIENT SPECIFICATION:	Limit content of polynuclear aromatic hydrocarbons (PAH) resulting from the use of rectified oils according to Good Manufacturing Practice. Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Styrax oil or rectified Opoponax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY, GENOTOXICITY BY RELEASE OF POLYNUCLEAR HYDROCARBONS (PAH).**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Birch wood pyrolysate and recommends not to use Birch wood pyrolysate (crude) as or in fragrance ingredients in any finished product application.
In addition, they recommend to use Birch wood pyrolysate (distillates) according to the specification mentioned above.

REFERENCES:

The IFRA Standard on Birch wood pyrolysate is based on at least one of the following publications:

• The RIFM Safety Assessment on Birch wood pyrolysate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Boldo oil

CAS-No.:	8022-81-9 84649-96-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Boldo leaf oil (Peumus boldus Mol.) Oil, boldo leaf Peumus boldus oil

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 7, 2009
	For existing creation*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Boldo oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Boldo oil and recommends not to use Boldo oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Boldo oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Boldo oil if available at the RIFM Fragrance Material Safety

Boldo oil

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one

CAS-No.:	76-29-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Bicyclo[2.2.1]heptan-2-one, 3-bromo-1,7,7-trimethyl- 2-Bornanone, 3-bromo- 3-Bromobornan-2-one 3-Bromo-2-bornanone 3-Bromocamphor Camphor bromide Camphor, 3-bromo-

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one and recommends not to use 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one

The IFRA Standard on 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Bromostyrene

CAS-No.:	103-64-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzene, (2-bromoethenyl)- α-Bromo-ß-phenylethylene ß-Bromostyrene ß-Bromovinylbenzene ω-Bromstyrene Bromstyrol Bromstyrolene

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Bromostyrene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bromostyrene and recommends not to use Bromostyrene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

Bromostyrene

The IFRA Standard on Bromostyrene is based on at least one of the following publications:

• The RIFM Safety Assessment on Bromostyrene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-tert-Butylphenol

CAS-No.:	98-54-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-tert-Butylphenol 4-(1,1-Dimethylethyl) phenol 1-Hydroxy-4-tert-butylbenzene Phenol, 4-(1,1-dimethylethyl)- Phenol, p-tert-butyl

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1975 2002

Implementation dates:	For new creation*:	Not applicable
	For existing creation*:	Not applicable
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	p-tert-Butylphenol should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, DERMAL DEPIGMENTATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butylphenol and recommends not to use p-tert-Butylphenol as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on p-tert-Butylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on p-tert-Butylphenol is available at the RIFM Safety Assessment Sheet

p-tert-Butylphenol

Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Chemical Toxicology 12, 835.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cade oil

CAS-No.:	8013-10-3 90046-02-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Prohibition of the crude material: Juniper tar Specification for the distillates: Juniper tar oil Juniperus oxycedrus oil

History:	Publication date:	2013 (Amendment 47)	Previous Publications:	1990 2003

Implementation dates:	For new creation*:	August 10, 2013
	For existing creation*:	August 10, 2014
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Cade oil should not be used as a fragrance ingredient. Crude cade oil derived by pyrolysis of the wood and twigs of Juniperus oxycedrus L. should not be used as a fragrance ingredient for any finished product application. Only rectified (purified) cade oils being in compliance with the limitations for polynuclear aromatic hydrocarbons (PAH) established by this IFRA Standard should be used.

FRAGRANCE INGREDIENT SPECIFICATION:	Limit content of polynuclear aromatic hydrocarbons (PAH) resulting from the use of rectified oils according to Good Manufacturing Practice. Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Birch tar oils, rectified Opoponax oil or rectified Styrax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

Cade oil

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY, GENOTOXICITY BY RELEASE OF POLYNUCLEAR HYDROCARBONS (PAH).**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cade oil and recommends not to use Cade oil (crude) as or in fragrance ingredients in any finished product application.
In addition, they recommend to use Cade oil (distillates) according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Cade oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Cade oil if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Carvone oxide

CAS-No.:	33204-74-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Carvone epoxide 1,6-Epoxy-p-menth-8-en-2-one 1-Methyl-4-(1-methylvinyl)-7-oxabicyclo[4.1.0]heptan-2-one 7-Oxabicyclo[4.1.0]heptan-2-one, 1-methyl-4-(1-methylethenyl)-

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	2003

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Carvone oxide should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Carvone oxide and recommends not to use Carvone oxide as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Carvone oxide is based on at least one of the following publications:

• The RIFM Safety Assessment on Carvone oxide is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Carvone oxide

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Letizia et al., 2000, Food and Chemical Toxicology, Volume 38, Supplement 3, Special Issue IX, pages S25-26.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Chenopodium oil

CAS-No.:	8006-99-3 8024-11-1 89997-47-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	American wormseed oil Chenopodium ambrosioides L. var anthelminticum

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Chenopodium oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Chenopodium oil and recommends not to use Chenopodium oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Chenopodium oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Chenopodium oil if available at the RIFM Fragrance Material Safety

Chenopodium oil

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamylidene acetone

CAS-No.:	4173-44-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3,5-Hexadien-2-one, 6-phenyl- Methyl 4-phenyl-1,3-butadienyl ketone 1-Phenyl-3,5-hexadien-5-one 6-Phenyl-3,5-hexadien-2-on

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Cinnamylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamylidene acetone and recommends not to use Cinnamylidene acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Cinnamylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamylidene acetone if available at the RIFM Fragrance Material

Cinnamylidene acetone

Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Colophony

CAS-No.:	8050-09-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Colophonium Rosin

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1992 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Colophony should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Colophony and recommends not to use Colophony as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Colophony is based on at least one of the following publications:

• The RIFM Safety Assessment on Colophony is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Colophony

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Hausen. B.M. (1989), Contact Dermatitis (20), 41-50; 133-143; 295-301.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Costus root oil, absolute and concrete

CAS-No.:	8023-88-9 90106-55-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Costus root essential oil, absolute and concrete (Saussurea lappa Clarke) Oils, costus Saussurea lappa root oil Spiral flag oil

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 1998 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Costus root oil, absolute and concrete should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Costus root oil, absolute and concrete and recommends not to use Costus root oil, absolute and concrete as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Costus root oil, absolute and concrete is based on at least one of the following publications:

Costus root oil, absolute and concrete

• The RIFM Safety Assessment on Costus root oil, absolute and concrete is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke D.L. (1974), Food and Cosmetics Toxicology 12, 867.

• Mitchell J.C. and Epstein W.L (1974), Archives of Dermatology, 110, 871-872.

• Foussereau, J., Muller J.C. and Benezra C. (1975), Contact Dermatitis, 1, 223-230.

• Epstein, W.L., Reynolds G.W. and Rodriguez, E. (1980), Archives of Dermatology, 116, 59-60.

• Cheminat, A., Benezra, C., Farral M.J. and Frechet, J.M.J. (1981), Canadian Journal of Chemistry, 59, 1405-1414.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclamen alcohol

CAS-No.:	4756-19-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-(4-Isopropylphenyl)-2-methylpropan-1-ol 3-(p-Isopropyl)phenyl-2-methyl-1-propanol Benzenepropanol, .β.-methyl-4-(1-methylethyl)-

History:	Publication date:	1980 (Amendment 4)	Previous Publications:	1977 1978

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**
FRAGRANCE INGREDIENT PROHIBITION:	Cyclamen alcohol should not be used as a fragrance ingredient.
FRAGRANCE INGREDIENT SPECIFICATION:	Cyclamen alcohol should not be used as a fragrance ingredient as such, but a level of up to 1.5% in Cyclamen aldehyde (CAS number 103-95-7) is accepted.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclamen alcohol and recommends not to use Cyclamen alcohol as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

Cyclamen alcohol

The IFRA Standard on Cyclamen alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclamen alcohol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• D.L.J. Opdyke (1979), Fd. Cosmet. Toxicol. 17, 267.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk alpha

CAS-No.:	63697-53-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Musk alpha 1,3-Dibromo-2-methoxy-4-nitro-5-(1,1-dimethylethyl)-6-methyl-benzene Benzene,1,3-dibromo-5-(1,1-dimethylethyl)-2- methoxy-4-methyl-6-nitro-

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Musk alpha should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk alpha and recommends not to use Musk alpha as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Musk alpha is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk alpha if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Musk alpha

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk KS

CAS-No.:	62265-99-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1,3-Dibromo-2-methoxy-4-methyl-5-nitrobenzene Benzene, 1,3-dibromo-2-methoxy-4-methyl-5-nitro- 1,3-Dibromo-2-methoxy-5-nitro-6-methylbenzene 2,4-Dibromo-3-methoxy-6-nitrotoluene 2,6-Dibromo-3-methyl-4-nitroanisole 6-Nitro-2,4-dibromo-3-methoxytoluene Bromorose Musk KS (commercial name)

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Musk KS should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk KS and recommends not to use Musk KS as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

Musk KS

The IFRA Standard on Musk KS is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk KS if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,2-Dichloro-1-methylcyclopropylbenzene

CAS-No.:	3591-42-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzene, (2,2-dichloro-1-methylcyclopropyl)-

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	2,2-Dichloro-1-methylcyclopropylbenzene should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,2-Dichloro-1-methylcyclopropylbenzene and recommends not to use 2,2-Dichloro-1-methylcyclopropylbenzene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,2-Dichloro-1-methylcyclopropylbenzene is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,2-Dichloro-1-methylcyclopropylbenzene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

2,2-Dichloro-1-methylcyclopropylbenzene

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Dienals

CAS-No.:	764-40-9 142-83-6 80466-34-8 5910-85-0 30361-28-5 6750-03-4 2363-88-4 13162-46-4 21662-16-8 25152-84-5 30361-29-6 4313-03-5 20432-40-0 4488-48-6 5577-44-6 5910-87-2 The scope of the Standard covers but is not limited to the list of CAS numbers enumerated above (including all their geometric isomers).
Synonyms:	Including but not limited to: 2,4-Pentadienal 2,4-Hexadienal 2,4-Heptadienal 2,4-Octadienal 2,4-Nonadienal 2,4-Decadienal 2,4-Undecadienal 2,4-Dodecadienal trans,trans-2,4-Decadienal trans,trans-2,4-Undecadienal 2,4-Heptadien-1-al (including all geometric isomers)

History:	Publication date:	2013 (Amendment 47)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 10, 2013
	For existing creation*:	August 10, 2014
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace. This IFRA Standard represents the group of 2-4-Dienals and replaces the existing individual IFRA Standards for the materials listed above. This new group also includes any other 2,4-Dienals.	

RECOMMENDATION:	**PROHIBITION**

2,4-Dienals

FRAGRANCE INGREDIENT PROHIBITION:	2,4-Dienals should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,4-Decadienal (CAS number 2363-88-4) has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dienals and recommends not to use 2,4-Dienals as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,4-Dienals is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Dienals if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Diethyl maleate

CAS-No.:	141-05-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Butenedioic acid (2Z)-, diethyl ester Ethyl maleate Maleic acid, diethyl ester

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1975 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Diethyl maleate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Diethyl maleate and recommends not to use Diethyl maleate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Diethyl maleate is based on at least one of the following publications:

• The RIFM Safety Assessment on Diethyl maleate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Diethyl maleate

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1976), Food and Cosmetics Toxicology 14, 443.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Dihydroxy-3-methylbenzaldehyde

CAS-No.:	6248-20-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzaldehyde, 2,4-dihydroxy-3-methyl- 4-Formyl-2-methylresorcinol

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 1989 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2,4-Dihydroxy-3-methylbenzaldehyde should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dihydroxy-3-methylbenzaldehyde and recommends not to use 2,4-Dihydroxy-3-methylbenzaldehyde as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 2,4-Dihydroxy-3-methylbenzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Dihydroxy-3-methylbenzaldehyde is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

2,4-Dihydroxy-3-methylbenzaldehyde

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 303.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4,6-Dimethyl-8-tert-butylcoumarin

CAS-No.:	17874-34-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2H-1-Benzopyran-2-one, 8-(1,1-dimethylethyl)-4,6-dimethyl- Butolia

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1981 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	4,6-Dimethyl-8-tert-butylcoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOSENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4,6-Dimethyl-8-tert-butylcoumarin and recommends not to use 4,6-Dimethyl-8-tert-butylcoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 4,6-Dimethyl-8-tert-butylcoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 4,6-Dimethyl-8-tert-butylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

4,6-Dimethyl-8-tert-butylcoumarin

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1980), Food and Cosmetics Toxicology 18, 671.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,7-Dimethyl-2-octen-1-ol

CAS-No.:	40607-48-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	6,7-Dihydrogeraniol 2-Octen-1-ol, 3,7-dimethyl

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	3,7-Dimethyl-2-octen-1-ol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-2-octen-1-ol and recommends not to use 3,7-Dimethyl-2-octen-1-ol as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 3,7-Dimethyl-2-octen-1-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,7-Dimethyl-2-octen-1-ol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

3,7-Dimethyl-2-octen-1-ol

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford et al., 1992, Food and Chemical Toxicology, Volume 30, Supplement, Special Issue VIII, page 19S.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dimethyl citraconate

CAS-No.:	617-54-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Butenedioic acid, 2-methyl-, dimethyl ester, (2Z)- Dimethyl methyl maleate Methylmaleic acid, dimethyl ester

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1976 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Dimethyl citraconate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethyl citraconate and recommends not to use Dimethyl citraconate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Dimethyl citraconate is based on at least one of the following publications:

• The RIFM Safety Assessment on Dimethyl citraconate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Dimethyl citraconate

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1976), Food and Cosmetics Toxicology 14, 749.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Diphenylamine

CAS-No.:	122-39-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzeneamine, N-phenyl-

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Diphenylamine should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**TOXICITY, TERATOGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Diphenylamine and recommends not to use Diphenylamine as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Diphenylamine is based on at least one of the following publications:

• The RIFM Safety Assessment on Diphenylamine is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers

Diphenylamine

K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, 1978, Food and Cosmetics Toxicology, Volume 16, Supplement 1, Special Issue IV, page 723-727.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Dodecadien-1-ol, (2E, 4E)

CAS-No.:	18485-38-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2,4-Dodecadien-1-ol

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 10, 2015
	For existing creation*:	August 10, 2016
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2,4-Dodecadien-1-ol, (2E, 4E) should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dodecadien-1-ol, (2E, 4E) and recommends not to use 2,4-Dodecadien-1-ol, (2E, 4E) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,4-Dodecadien-1-ol, (2E, 4E) is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Dodecadien-1-ol, (2E, 4E) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

2,4-Dodecadien-1-ol, (2E, 4E)

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Esters of 2-Nonynoic acid (except Methyl octine carbonate)

CAS-No.:	e.g.: 10031-92-2 This IFRA Standard covers CAS numbers of any esters of 2-Nonynoic acid (except Methyl octine carbonate, CAS number 111-80-8).
Synonyms:	Ethyl 2-nonynoate Ethyl octine carbonate Ethyl octyne carbonate 2-Nonynoic acid, ethyl ester

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Esters of 2-Nonynoic acid (except Methyl octine carbonate) should not be used as a fragrance ingredient. For Methyl octine carbonate (CAS Number 111-80-8), please refer to the IFRA Restricted Standard Methyl octine carbonate.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Esters of 2-Nonynoic acid (except Methyl octine carbonate) and recommends not to use Esters of 2-Nonynoic acid (except Methyl octine carbonate) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

Esters of 2-Nonynoic acid (except Methyl octine carbonate)

REFERENCES:

The IFRA Standard on Esters of 2-Nonynoic acid (except Methyl octine carbonate) is based on at least one of the following publications:

• The RIFM Safety Assessment on Esters of 2-Nonynoic acid (except Methyl octine carbonate) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Esters of 2-Octynoic acid (except Methyl heptine carbonate)

CAS-No.:	e.g.: 10484-32-9 10519-20-7 This IFRA Standard covers CAS numbers of any esters of 2-Octynoic acid (except Methyl heptine carbonate, CAS number 111-12-6).
Synonyms:	10484-32-9: Amyl heptine carbonate 2-Octynoic acid, pentyl ester Pentyl 2-octynoic acid Vert de violette 10519-20-7: Ethyl heptine carbonate Ethyl 2-octynoate 2-Octynoic acid, ethyl ester

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Esters of 2-Octynoic acid (except Methyl heptine carbonate) should not be used as a fragrance ingredient. For Methyl heptine carbonate (CAS number 111-12-6), please refer to the IFRA Restricted Standard Methyl heptine carbonate.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Esters of 2-Octynoic acid (except Methyl heptine carbonate)

The Expert Panel for Fragrance Safety reviewed all the available data for Esters of 2-Octynoic acid (except Methyl heptine carbonate) and recommends not to use Esters of 2-Octynoic acid (except Methyl heptine carbonate) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Esters of 2-Octynoic acid (except Methyl heptine carbonate) is based on at least one of the following publications:

• The RIFM Safety Assessment on Esters of 2-Octynoic acid (except Methyl heptine carbonate) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethyl acrylate

CAS-No.:	140-88-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Ethyl propenoate 2-Propenoic acid, ethyl ester

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Ethyl acrylate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ethyl acrylate and recommends not to use Ethyl acrylate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Ethyl acrylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethyl acrylate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Ethyl acrylate

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Cosmetics Toxicology 13, 801.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethylene glycol monoethyl ether and its acetate

CAS-No.:	110-80-5 (ether) 111-15-9 (acetate) The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	110-80-5 (ether): Ethylene glycol ethyl ether 2-Ethoxyethanol Ethanol, 2-ethoxy- Cellosolve Oxitol 111-15-9 (acetate): Ethylene glycol ethyl ether acetate 2-Ethoxyethyl acetate Ethyl cellosolve acetate Ethanol, 2-ethoxy-, acetate 1-Acetoxy-2-ethoxyethane

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Ethylene glycol monoethyl ether and its acetate should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**REPRODUCTIVE TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Ethylene glycol monoethyl ether and its acetate

The Expert Panel for Fragrance Safety reviewed all the available data for Ethylene glycol monoethyl ether and its acetate and recommends not to use Ethylene glycol monoethyl ether and its acetate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Ethylene glycol monoethyl ether and its acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethylene glycol monoethyl ether and its acetate is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• NIOSH, 1983, Current Intelligence bulletin, No. 39, page 1-20.

• EPA, 1984b, EPA/540/1-86/052; PB86-134632.

• ECETOC, 1985, ECETOC Technical Report, 17.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethylene glycol monomethyl ether and its acetate

CAS-No.:	109-86-4 (ether) 110-49-6 (acetate) The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	109-86-4 (ether): Ethylene glycol methyl ether 2-Methoxyethanol Ethanol, 2-methoxy- Methyl cellosolve 110-49-6 (acetate): Ethylene glycol methyl ether acetate 2-Methoxyethanol acetate 2-Methoxyethyl acetate Methyl cellosolve acetate Ethanol, 2-methoxy-, acetate

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Ethylene glycol monomethyl ether and its acetate should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**REPRODUCTIVE TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Ethylene glycol monomethyl ether and its acetate

The Expert Panel for Fragrance Safety reviewed all the available data for Ethylene glycol monomethyl ether and its acetate and recommends not to use Ethylene glycol monomethyl ether and its acetate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Ethylene glycol monomethyl ether and its acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethylene glycol monomethyl ether and its acetate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• NIOSH, 1983, Current Intelligence bulletin, No. 39, page 1-20.

• EPA, 1984b, EPA/540/1-86/052; PB86-134632.

• ECETOC, 1985, ECETOC Technical Report, 17.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Fig leaf absolute

CAS-No.:	68916-52-9 90028-74-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Ficus carica absolute Fig leaf absolute (Ficus carica)

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 1983 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Fig leaf absolute should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, PHOTOTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Fig leaf absolute and recommends not to use Fig leaf absolute as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Fig leaf absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Fig leaf absolute is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Fig leaf absolute

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J., Letizia, C. (1982), Food and Chemical Toxicology 20, 691.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Furfuryl alcohol

CAS-No.:	98-00-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Furancarbinol 2-Furanmethanol Furfuralcohol Furfuryl alcohol α-Furylcarbinol 2-Furylcarbinol 2-Furylmethanol 2-Hydroxymethylfuran

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	2009

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Furfuryl alcohol should not be used as a fragrance ingredient. The natural extracts containing Furfuryl alcohol should not be used as substitutes for this substance.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Furfuryl alcohol has been found in natural extracts but only at trace levels.
Those contributions from other sources like Coffee extracts or certain types of Cade oil have been evaluated. On the basis of the established maximum level of Furfuryl alcohol in these commercially available natural sources, exposure to this substance from the use of these oils and extracts is not significant and not regarded of concern from a consumer safety point of view.
For more information, please also refer to the note on contributions from other sources in Chapter 1 of the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Furfuryl alcohol

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Furfuryl alcohol and recommends not to use Furfuryl alcohol as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Furfuryl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Furfuryl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Furfurylidene acetone

CAS-No.:	623-15-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Buten-2-one, 4-(2-furanyl)- Furfuralacetone 4-(2-Furyl)-3-buten-2-one

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Furfurylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Furfurylidene acetone and recommends not to use Furfurylidene acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Furfurylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Furfurylidene acetone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Furfurylidene acetone

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Geranyl nitrile

CAS-No.:	5146-66-7 5585-39-7 31983-27-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	(2E)-3,7-dimethylocta-2,6-dienenitrile 3,7-Dimethyl-2,6-octadienenitrile Geranonitrile (isomer unspecified) 2,6-Octadienenitrile, 3,7-dimethyl- Citranile (commercial name) Citralva (commercial name) Geranitrile (commercial name)

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2006

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Geranyl nitrile should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**GENOTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The material has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it should not be used as a fragrance ingredient, or in fragrance ingredients above unavoidable trace levels until additional data is available and considered sufficient to support the safe use of these ingredients.

Geranyl nitrile

REFERENCES:

The IFRA Standard on Geranyl nitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on Geranyl nitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

trans-2-Heptenal

CAS-No.:	18829-55-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	beta-Butylacrolein 3-Butylacrolein (E)-2-Hepten-1-al 2-Heptenal, (E)-

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1985 1989 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	trans-2-Heptenal should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Heptenal and recommends not to use trans-2-Heptenal as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on trans-2-Heptenal is based on at least one of the following publications:

• The RIFM Safety Assessment on trans-2-Heptenal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

trans-2-Heptenal

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 331.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Hexadien-1-ol

CAS-No.:	111-28-4 17102-64-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-Hydroxy-2,4-hexadiene Hexa-2,4-dien-1-ol Sorbic alcohol Sorbyl alcohol Hexadienol (commercial name)

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 10, 2015
	For existing creation*:	August 10, 2016
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	2,4-Hexadien-1-ol should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Hexadien-1-ol and recommends not to use 2,4-Hexadien-1-ol as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

2,4-Hexadien-1-ol

The IFRA Standard on 2,4-Hexadien-1-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Hexadien-1-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hexahydrocoumarin

CAS-No.:	700-82-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2H-1-Benzopyran-2-one, 3,4,5,6,7,8-hexahydro- Coumarin, hexahydro- Coumarin, 3,4,5,6,7,8-hexahydro- 1-Cyclohexene-1-propanoic acid, 2-hydroxy-, d-lactone 3,4,5,6,7,8-Hexahydro-2H-1-benzopyran-2-one

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hexahydrocoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hexahydrocoumarin and recommends not to use Hexahydrocoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hexahydrocoumarin is based on at least one of the following publications:

Hexahydrocoumarin

• The RIFM Safety Assessment on Hexahydrocoumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

trans-2-Hexenal diethyl acetal

CAS-No.:	67746-30-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1,1-Diethoxy-trans-2-hexene (E)-2-Hexenal diethyl acetal 2-Hexene, 1,1-diethoxy-, (2E)-

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1985 1989 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	trans-2-Hexenal diethyl acetal should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Hexenal diethyl acetal and recommends not to use trans-2-Hexenal diethyl acetal as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on trans-2-Hexenal diethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on trans-2-Hexenal diethyl acetal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

trans-2-Hexenal diethyl acetal

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 345.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

trans-2-Hexenal dimethyl acetal

CAS-No.:	18318-83-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1,1-Dimethoxy-trans-2-hexene 2-Hexene, 1,1-dimethoxy-, (2E)-

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1985 1989 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	trans-2-Hexenal dimethyl acetal should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Hexenal dimethyl acetal and recommends not to use trans-2-Hexenal dimethyl acetal as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on trans-2-Hexenal dimethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on trans-2-Hexenal dimethyl acetal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

trans-2-Hexenal dimethyl acetal

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 347.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroabietyl alcohol, Dihydroabietyl alcohol

CAS-No.:	13393-93-6 26266-77-3 1333-89-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Abitol (mixture of different hydroabietyl alcohols)

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	1974 1976 1995

Implementation dates:	For new creation*:	May 6, 2004
	For existing creation*:	May 6, 2005
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hydroabietyl alcohol, Dihydroabietyl alcohol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroabietyl alcohol, Dihydroabietyl alcohol and recommends not to use Hydroabietyl alcohol, Dihydroabietyl alcohol as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hydroabietyl alcohol, Dihydroabietyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Hydroabietyl alcohol, Dihydroabietyl alcohol is available at the RIFM

Hydroabietyl alcohol, Dihydroabietyl alcohol

Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• RIFM Monograph 323, Fd. Cosmet. Toxicol. 12, 919-921 (1974).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroquinone monoethyl ether

CAS-No.:	622-62-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-Ethoxy-4-hydroxybenzene p-Ethoxyphenol Phenol, 4-ethoxy- 4-Ethoxyphenol

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1982 1983 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hydroquinone monoethyl ether should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DEPIGMENTATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroquinone monoethyl ether and recommends not to use Hydroquinone monoethyl ether as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hydroquinone monoethyl ether is based on at least one of the following publications:

Hydroquinone monoethyl ether

• The RIFM Safety Assessment on Hydroquinone monoethyl ether is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• E. Frenk, (1969), Arch. Klin. Exp. Derm. 235, 16.

• E. Frenk (1970), Ann. Derm. Syph (Paris) 97, 287.

• E. Frenk & F. Ott (1971), Journal of Investigative Dermatology 56, 287.

• W. Wohlrab and R.P. Zaumseil (1976), Derm. Monatsschr. 162, 908.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroquinone monomethyl ether

CAS-No.:	150-76-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-Hydroxyanisole p-Hydroxyanisole 4-Methoxyphenol p-Methoxyphenol Phenol, p-methoxy-

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1983 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hydroquinone monomethyl ether should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DEPIGMENTATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroquinone monomethyl ether and recommends not to use Hydroquinone monomethyl ether as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hydroquinone monomethyl ether is based on at least one of the following publications:

Hydroquinone monomethyl ether

• The RIFM Safety Assessment on Hydroquinone monomethyl ether is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• E. Frenk, (1969), Arch. Klin. Exp. Derm. 235, 16.

• E. Frenk (1970), Ann. Derm. Syph (Paris) 97, 287.

• E. Frenk & F. Ott (1971), Journal of Investigative Dermatology 56, 287.

• W. Wohlrab and R.P. Zaumseil (1976), Derm. Monatsschr. 162, 908.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isophorone

CAS-No.:	78-59-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Cyclohexen-1-one, 3,5,5-trimethyl- Isoacetophorone 3,5,5-Trimethyl-2-cyclohexen-1-one

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	Isophorone as such should not be used as fragrance ingredient. Natural extracts containing Isophorone should not be used as substitutes for this substance.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox

Isophorone

Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box
On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils and extracts), exposure to this substance from the use of these oils and extracts is not significant and the use of these oils is authorized as long as the level of Isophorone in the finished product does not exceed 0.0013%.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

RIFM SUMMARIES:

The dose response for preputial gland carcinoma was identified as the critical effect for deriving an oral exposure threshold. Thus the NOAEL for preputial gland carcinoma from the 2-year US-NTP carcinogenicity study was determined to be 250 mg/kg/day.

The U.S. Environmental Protection Agency (EPA) reported that over a life-time, an individual could consume 40 µg/l (0.04 mg/l) Isophorone and would have no more than a one-in-a-million increased chance of developing cancer as a direct result of ingesting water containing this chemical. According to the EPA, drinking water consumption is 2 l/day. As such, 40 µg/l X 2l/day consumption = 80 µg/person/day. Using a 60 kg bodyweight/person the Reference Dose (RfD) can be derived for humans as, 80/60 = 1.33 µg/kg/day.
This dose was used in the Creme RIFM Model to derive the acceptable safe use of 0.0013% in the final product.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isophorone and recommends not to use Isophorone as or in fragrance ingredients in any finished product application.
However, the presence of Isophorone in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

Isophorone

The IFRA Standard on Isophorone is based on at least one of the following publications:

• The RIFM Safety Assessment on Isophorone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6-Isopropyl-2-decalol

CAS-No.:	34131-99-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Decahydro-6-isopropyl-2-naphthol Decahydro-6-(1-methylethyl)-2-naphthalenol 6-Isopropyl-2-decahydronaphthalenol 6-Isopropyldecalol 2-Naphthalenol, decahydro-6-(1-methylethyl)- Decatol

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1989 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	6-Isopropyl-2-decalol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6-Isopropyl-2-decalol and recommends not to use 6-Isopropyl-2-decalol as or in fragrance ingredients in any finished product application.

REFERENCES:

6-Isopropyl-2-decalol

The IFRA Standard on 6-Isopropyl-2-decalol is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Isopropyl-2-decalol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A., (1988), Food and Chemical Toxicology 26, 367.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Massoia bark oil

CAS-No.:	85085-26-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cryptocarya massoio oil Cryptocarya massoy bark extract Cryptocarya massoy, ext. Massoia bark oil (Cryptocarya massoio)

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Massoia bark oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Massoia bark oil and recommends not to use Massoia bark oil as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Massoia bark oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Massoia bark oil if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Massoia bark oil

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Massoia lactone

CAS-No.:	54814-64-1 51154-96-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Decen-1,5-lactone (-)-2-Decenoic acid, 5-hydroxy, δ-lactone (R)-5,6-Dihydro-6-pentyl-2H-pyran-2-one 5,6-Dihydro-6-pentyl-2H-pyran-2-one 5-Hydroxy-2-decenoic acid δ-lactone 2H-Pyran-2-one, 5,6-dihydro-6-pentyl-, (R)- Massoi lactone

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	2008

Implementation dates:	For new creation*:	August 10, 2015
	For existing creation*:	August 10, 2016
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Massoia lactone should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Massoia lactone and recommends not to use Massoia lactone as or in fragrance ingredients in any finished product application.

REFERENCES:

Massoia lactone

The IFRA Standard on Massoia lactone is based on at least one of the following publications:

• The RIFM Safety Assessment on Massoia lactone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

7-Methoxycoumarin

CAS-No.:	531-59-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2H-1-Benzopyran-2-one, 7-methoxy- Herniarin

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1979 1989

Implementation dates:	For new creation*:	August 16, 2008
	For existing creation*:	August 16, 2009
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	7-Methoxycoumarin as such should not be used as fragrance ingredient. The natural extracts containing 7-Methoxycoumarin should not be used as substitutes for this substance.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox

7-Methoxycoumarin

Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box
On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts is regarded acceptable as long as the level of 7-Methoxy-coumarin in the finished product does not exceed 0.01% (100 ppm).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, PHOTOSENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methoxycoumarin and recommends not to use 7-Methoxycoumarin as or in fragrance ingredients in any finished product application.
However, the presence of 7-Methoxycoumarin in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

The IFRA Standard on 7-Methoxycoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 7-Methoxycoumarin if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

7-Methoxycoumarin

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• R.A. Ford et al. (1988), Fd. Chem. Toxic. 26, 375.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Methyl anisylidene acetone

CAS-No.:	104-27-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-(p-Methoxyphenyl)-1-penten-3-one p-Methoxystyryl ethyl ketone alpha-Methylanisalacetone α-Methylanisalacetone 1-(4-Methoxyphenyl)-1-penten-3-one 1-Penten-3-one, 1-(4-(methoxyphenyl))- Ethone (commercial name)

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1977 1980 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	α-Methyl anisylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Methyl anisylidene acetone and recommends not to use α-Methyl anisylidene acetone as or in fragrance ingredients in any finished product application.

REFERENCES:

α-Methyl anisylidene acetone

The IFRA Standard on α-Methyl anisylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Methyl anisylidene acetone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1979), Food and Chemical Toxicology 17, 863.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6-Methylcoumarin

CAS-No.:	92-48-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2H-1-Benzopyran-2-one, 6-methyl 6-Methyl-2h-1-benzopyran-2-one 6-Methylbenzopyrone 6-Methyl coumarin 6-Methyl-cis-o-coumarinic lactone 5-Methyl-2-hydroxyphenylpropenoic acid lactone Toncarine (commercial name)

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1978 1980 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	6-Methylcoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOSENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6-Methylcoumarin and recommends not to use 6-Methylcoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

6-Methylcoumarin

The IFRA Standard on 6-Methylcoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Methylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Kaidbay, K.H. &. Kligman, A.M. (1978), Contact Dermatitis 4, No 5, 277.

• Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 275.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

7-Methylcoumarin

CAS-No.:	2445-83-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2H-1-Benzopyran-2-one, 7-methyl- 7-Methyl-2-H-1-benzopyran-2-one

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1983 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	7-Methylcoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, PHOTOSENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methylcoumarin and recommends not to use 7-Methylcoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 7-Methylcoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 7-Methylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

7-Methylcoumarin

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J., Letizia, C.S. (1982), Food and Chemical Toxicology 20, 747.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl crotonate

CAS-No.:	623-43-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Butenoic acid, methyl ester, (E)- Methyl trans-2-butenoate

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1978 1980 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Methyl crotonate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl crotonate and recommends not to use Methyl crotonate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Methyl crotonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl crotonate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Methyl crotonate

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 865.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Methyl-7-ethoxycoumarin

CAS-No.:	87-05-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2H-1-Benzopyran-2-one, 7-ethoxy-4-methyl- Coumarin, 7-ethoxy-4-methyl- 7-Ethoxy-4-methylcoumarin 4-Methyl-7-ethoxybenzopyrone Maraniol (commercial name)

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	4-Methyl-7-ethoxycoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOSENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methyl-7-ethoxycoumarin and recommends not to use 4-Methyl-7-ethoxycoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 4-Methyl-7-ethoxycoumarin is based on at least one of the following publications:

4-Methyl-7-ethoxycoumarin

• The RIFM Safety Assessment on 4-Methyl-7-ethoxycoumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Methylhydrocinnamic aldehyde

CAS-No.:	5406-12-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzenepropanal, 4-methyl p-Methyldihydrocinnamaldehyde p-Methylhydrocinnamaldehyde 3-(4-Methylphenyl)propanal 3-p-Tolylpropionaldehyde

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1987 1994 2002 2007

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	p-Methylhydrocinnamic aldehyde should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Methylhydrocinnamic aldehyde and recommends not to use p-Methylhydrocinnamic aldehyde as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on p-Methylhydrocinnamic aldehyde is based on at least one of the following publications:

p-Methylhydrocinnamic aldehyde

• The RIFM Safety Assessment on p-Methylhydrocinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl methacrylate

CAS-No.:	80-62-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl 2-methacrylate, 2-(methoxycarbonyl)-1-propene Methyl 2-methyl-2-propenoate 2-Propenoic acid, 2-methyl-, methyl ester MMA

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Methyl methacrylate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Methyl methacrylate has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl methacrylate and recommends not to use Methyl methacrylate as or in fragrance ingredients in any finished product application.

REFERENCES:

Methyl methacrylate

The IFRA Standard on Methyl methacrylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl methacrylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Methyl-2(3)-nonenenitrile

CAS-No.:	53153-66-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Nonenenitrile, 3-methyl- Citgrenile (commercial name)

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1980 1983 2007

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	3-Methyl-2(3)-nonenenitrile should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-2(3)-nonenenitrile and recommends not to use 3-Methyl-2(3)-nonenenitrile as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 3-Methyl-2(3)-nonenenitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Methyl-2(3)-nonenenitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

3-Methyl-2(3)-nonenenitrile

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk moskene

CAS-No.:	116-66-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1,1,3,3,5-Pentamethyl-4,6-dinitroindane 1H-Indene, 2,3-dihydro-1,1,3,3,5-pentamethyl-4,6,-dinitro-

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2005

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Musk moskene should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk moskene and recommends not to use Musk moskene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Musk moskene is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk moskene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Musk moskene

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk ambrette

CAS-No.:	83-66-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzene, 1-(1,1-dimethylethyl)-2-methoxy-4-methyl-3,5-dinitro- 1-tert-Butyl-2-methoxy-4-methyl-3,5-dinitrobenzene 4-tert-Butyl-3-methoxy-2,6-dinitrotoluene 6-tert-Butyl-3-methyl-2,4-dinitroanisole 1-(1,1-Dimethylethyl)-2-methoxy-4-methyl-3,5-dinitrobenzene 2,6-Dinitro-3-methoxy-1-methyl-4-tert-butylbenzene 2,6-Dinitro-3-methoxy-4-tert-butyltoluene 2,4-Dinitro-3-methyl-6-tert-butylanisole

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1981 1994 1995 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Musk ambrette should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOSENSITIZATION, NEUROTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk ambrette and recommends not to use Musk ambrette as or in fragrance ingredients in any finished product application.

REFERENCES:

Musk ambrette

The IFRA Standard on Musk ambrette is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk ambrette is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Spencer, P.S., Bischoff-Fenton, M.C., Moreno, O.M., Opdyke D.L. and Ford, R.A. (1984), Toxicology and Applied Pharmacology 75, 571.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk tibetene

CAS-No.:	145-39-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-tert-Butyl-2,6-dinitro-3,4,5-trimethylbenzene Benzene, 1-(1,1-dimethylethyl)-3,4,5-trimethyl-2,6-dinitro-

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2005

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk tibetene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk tibetene and recommends not to use Musk tibetene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Musk tibetene is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk tibetene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Musk tibetene

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk xylene

CAS-No.:	81-15-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2,4,6-Trinitro-1,3-methyl-5-tert-butylbenzene 1-tert-Butyl-3,5-dimethyl-2,4,6-trinitrobenzene Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl-2,4,6-trinitro- Musk xylol

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 7, 2009
	For existing creation*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk xylene should not be used as a fragrance ingredient. Musk xylene can be present in Musk ketone as an impurity. Please refer to the IFRA Specification Standard on Musk ketone.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**VPVB**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk xylene and recommends not to use Musk xylene as or in fragrance ingredients in any finished product application.

REFERENCES:

Musk xylene

The IFRA Standard on Musk xylene is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk xylene is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• PBT draft Addendum to the final report (2005) of the Risk Assessment (PBT assessment), January 2008 (the Netherlands National Institute for Public health and Environment, RIVM) (https://echa.europa.eu/documents/10162/cb2b7fc5-8af1-46df-a1c0-7bf8335162a0).

• ECHA (European Chemicals Agency, Member State Committee, Substances of Very High Concern support document for identification of 5-tert-butyl-2,4,6-trinitro-m-xylene, Adopted on October 8, 2008 (https://echa.europa.eu/documents/10162/909dd42e-2554-4f59-911a-729a2da1d529).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Nitrobenzene

CAS-No.:	98-95-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzene, nitro Nitrobenzol Mirbane oil

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Nitrobenzene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**ACUTE TOXICITY, SKIN TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Nitrobenzene and recommends not to use Nitrobenzene as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Nitrobenzene is based on at least one of the following publications:

• The RIFM Safety Assessment on Nitrobenzene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Nitrobenzene

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Christensen, H.E., Toxic Substances List, National Institute for Occupational Safety and Health (1972), p. 369.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Pentylidene cyclohexanone

CAS-No.:	25677-40-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cyclohexanone, 2-pentylidene-

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1983 2002

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2-Pentylidene cyclohexanone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Pentylidene cyclohexanone and recommends not to use 2-Pentylidene cyclohexanone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 2-Pentylidene cyclohexanone is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Pentylidene cyclohexanone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

2-Pentylidene cyclohexanone

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. and Letizia, C. (1982), Food and Chemical Toxicology, 20, 797.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Phenyl acetone

CAS-No.:	103-79-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzyl methyl ketone Methyl benzyl ketone 2-Propanone, 1-phenyl

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Phenyl acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Phenyl acetone and recommends not to use Phenyl acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Phenyl acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Phenyl acetone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Phenyl acetone

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Phenyl benzoate

CAS-No.:	93-99-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzoic acid, phenyl ester

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Phenyl benzoate should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Phenyl benzoate and recommends not to use Phenyl benzoate as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Phenyl benzoate is based on at least one of the following publications:

• The RIFM Safety Assessment on Phenyl benzoate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Phenyl benzoate

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Pseudoionone

CAS-No.:	141-10-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Citrylideneacetone 2,6-Dimethylundeca-2,6,8-trien-10-one 6,10-Dimethyl-3,5,9-undecatrien-2-one 3,5,9-Undecatrien-2-one, 6,10-dimethyl-

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1987 1989

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**
FRAGRANCE INGREDIENT PROHIBITION:	Pseudoionone should not be used as a fragrance ingredient.
FRAGRANCE INGREDIENT SPECIFICATION:	Pseudoionone should not be used as fragrance ingredient as such, but a level of up to 2% as an impurity in Ionones is accepted.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Pseudoionone and recommends not to use Pseudoionone as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

Pseudoionone

The IFRA Standard on Pseudoionone is based on at least one of the following publications:

• The RIFM Safety Assessment on Pseudoionone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke D.L.J. (1975), Food and Cosmetics Toxicology 13, 549.

• Ford R.A. et al. (1988), Food and Chemical Toxicology 26, 311.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Pseudo methylionones

CAS-No.:	26651-96-7 72968-25-3 1117-41-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	2,6-Dimethyldodeca-2,6,8-trien-10-one 7,11-Dimethyl-4,6,10-dodecatrien-3-one 7,11-Dimethyldodeca-4,6,10-trien-3-one 4,6,10-Dodecatrien-3-one, 7,11-dimethyl- 3,6,10-Trimethylundeca-3,5,9-trien-2-one

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	1979 1989 2002 2006

Implementation dates:	For new creation*:	August 7, 2009
	For existing creation*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**
FRAGRANCE INGREDIENT PROHIBITION:	Pseudo methylionones should not be used as a fragrance ingredient.
FRAGRANCE INGREDIENT SPECIFICATION:	Pseudo methylionones should not be used as fragrance ingredient as such, but a level of up to 2% as an impurity in Methylionones is accepted.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Pseudo methylionones and recommends not to use Pseudo methylionones as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

Pseudo methylionones

REFERENCES:

The IFRA Standard on Pseudo methylionones is based on at least one of the following publications:

• The RIFM Safety Assessment on Pseudo methylionones is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Cosmetics Toxicology 13, 863.

• Ford R.A. et al. (1988), Food and Chemical Toxicology 26, 305 and 413.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Quinoline

CAS-No.:	91-22-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-Benzazine 2,3-Benzopyridine Benzo(b)pyridine Chinoleine Leucoline Quinoleine

History:	Publication date:	2010 (Amendment 45)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 11, 2010
	For existing creation*:	August 11, 2011
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Quinoline should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY, MUTAGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Quinoline and recommends not to use Quinoline as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Quinoline is based on at least one of the following publications:

Quinoline

• The RIFM Safety Assessment on Quinoline is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Commission Directive 2009/2/EC (31st ATP to Directive 67/548/EEC).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Safrole, Isosafrole and Dihydrosafrole

CAS-No.:	94-59-7 120-58-1 94-58-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	94-59-7: 1,3-Benzodioxole, 5-(2-propenyl)- 3,4-Methylene dioxyallylbenzene 4-Allyl-1,2-methylene dioxybenzene 5-Allyl-1,3-benzodioxole Safrol 120-58-1: 1,2-Methylenedioxy-4-propenylbenzene 1,3-Benzodioxole, 5-(1-propenyl)- 5-Prop-1-en-1-yl-1,3-benzodioxole Iso-safrole 94-58-6: 1,3-Benzodioxole, 5-propyl- 3,4-Methylenedioxypropylbenzene 5-Propyl-1,3-benzodioxole

History:	Publication date:	1987 (Amendment 17)	Previous Publications:	1976

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**
FRAGRANCE INGREDIENT PROHIBITION:	Safrole, Isosafrole and/or Dihydrosafrole as such should not be used as fragrance ingredients. The natural extracts containing Safrole, Isosafrole and/or Dihydrosafrole should not be used as substitutes for these ingredients.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

Safrole, Isosafrole and Dihydrosafrole

Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box
On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts is regarded acceptable as long as the total concentration of Safrole, Isosafrole and Dihydrosafrole in the finished consumer product does not exceed 0.01%.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Safrole, Isosafrole and Dihydrosafrole and recommends not to use Safrole, Isosafrole and Dihydrosafrole as or in fragrance ingredients in any finished product application.
However, the presence of Safrole, Isosafrole and Dihydrosafrole in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

Safrole, Isosafrole and Dihydrosafrole

REFERENCES:

The IFRA Standard on Safrole, Isosafrole and Dihydrosafrole is based on at least one of the following publications:

• The RIFM Safety Assessment on Safrole, Isosafrole and Dihydrosafrole is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Conclusions of the Scientific Committee on Cosmetology of the EEC on Safrole and on the similarity of the biological activity of these substances (Scientific Committee of Cosmetology of the EEC, opinion reached on September 2, 1980; Communication to the EEC Commission ENV/521/79 and IARC Monograph Vol. 10, 1976, 231-244).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Santolina oil

CAS-No.:	84961-58-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Not applicable.

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2006

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Santolina oil should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Santolina oil and recommends not to use Santolina oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Santolina oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Santolina oil if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Santolina oil

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Savin oil

CAS-No.:	Prohibition of Savin oil: 8024-00-8 90046-04-1 Specification of Savin oil: 68916-94-9 90046-03-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Prohibition of Savin oil: Juniperus sabina L. Specification of Savin oil: Juniperus phoenicea L.

History:	Publication date:	1982 (Amendment 10)	Previous Publications:	1980

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Savin oil should not be used as a fragrance ingredient. Savin oil prepared from Juniperus sabina L. should not be used as a fragrance ingredient. Only oils obtained from Juniperus phoenicea L. should be used, under the conditions set in the fragrance ingredient specification mentioned below.

FRAGRANCE INGREDIENT SPECIFICATION:	In the absence of an international standard, the following specificiations for oils of Juniperus phoenicea L. are proposed: - Density d 20/20 0,864 - 0,873 - Refraction n 20 D 1,4700 - 1,4720 - Rotation alpha 20 D -1° - +4° - Acid value 0,4 - 1 - Ester value 2,5 - 7

Savin oil

	- Ester value after acetylation 10 - 23 - Solubility 0.5-6 vol. in alcohol 96%, beyond that opalescence on dilution.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**ACUTE TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Savin oil and recommends not to use Savin oil (Juniperus sabina L.) as or in fragrance ingredients in any finished product application.
In addition, they recommend to use Savin oil (Juniperus phoenicea L.) according to the specification mentioned above.

REFERENCES:

The IFRA Standard on Savin oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Savin oil is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• R.E. Gosselin, H.C. Hodge, R.P. Smith & M.N. Gleason (1976), Clinical Toxicology of Commercial Products, 4th ed., Section II, p. 153, Williams & Wilkins Co., Baltimore.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Toluene

CAS-No.:	108-88-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Toluol Methylbenzol Methylbenzene

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	May 6, 2004
	For existing creation*:	May 6, 2005
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**
FRAGRANCE INGREDIENT PROHIBITION:	Toluene should not be used as a fragrance ingredient.
FRAGRANCE INGREDIENT SPECIFICATION:	The level of Toluene has to be kept as low as practicable and should never exceed 100 ppm in the fragrance compound/mixture or fragrance oil.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**LIVER TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Toluene and recommends not to use Toluene as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

Toluene

The IFRA Standard on Toluene is based on at least one of the following publications:

• The RIFM Safety Assessment on Toluene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Cosmetic Ingredient Review, Journal of the American College of Toxicology JACT 6 (1) 1987.

• IARC (International Agency for Research on Cancer) Monographs Vol 47, p .79 (1989); Vol 71 p. 829 (1999).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Sclareol

CAS-No.:	515-03-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Labd-14-ene-8,13-diol 1-Naphthalenepropanol,decahydro-alpha-ethenyl-2-hydroxy- alpha,2,5,5,8apentamethyl-, (1R-(1-alpha(R*),2-beta,4a-beta,8a-alpha))-

History:	Publication date:	2005 (Amendment 39)	Previous Publications:	1986

Implementation dates:	For new creation*:	November 12, 2005
	For existing creation*:	November 12, 2006
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Sclareol used as a fragrance ingredient should have a minimum purity of 98%.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Sclareol is found in natural extracts, but its natural contributions are not relevant for the fragrance ingredient specification mentioned above.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Sclareol

The Expert Panel for Fragrance Safety reviewed all the available data for Sclareol. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Sclareol is based on at least one of the following publications:

• The RIFM Safety Assessment on Sclareol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Research Institute for Fragrance Materials, Inc. (1975a). Repeated Insult Patch Test with Sclareol. RIFM report number 45024, June 17. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1975b). Repeated Insult Patch Test with Sclareol. RIFM report number 45025, June 18. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1979a). Report on Human Maximization Studies. RIFM report number 1697, April 20. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1979b). Report on Human Maximization Studies. RIFM report number 1697, November 6. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1981). Report on Human Maximization Studies. RIFM report number 1792, March 18. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1986). Report on Human Maximization Studies. RIFM report number 3100, January 15. (RIFM, Woodcliff Lake, NJ, USA).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Pinacea derivatives

CAS-No.:	Not applicable. The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	Derivatives from the Pine Family

History:	Publication date:	1994 (Amendment 28)	Previous Publications:	1976

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**
FRAGRANCE INGREDIENT SPECIFICATION:	Essential oils (e.g. Turpentine oil) and isolates (e.g. delta-3-Carene) derived from the Pinacea family, including Pinus and Abies genera, should only be used when the level of peroxides is kept to the lowest practicable level, for instance by adding antioxidants at the time of production. Such products should have a peroxide value of less than 10 millimoles peroxide per liter, determined according to the IFRA analytical methodology for the determination of the peroxide value, which can be downloaded from the IFRA website (www.ifrafragrance.org).
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE FRAGRANCE MATERIAL SPECIFICATION**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Pinacea derivatives

The Expert Panel for Fragrance Safety reviewed all the available data for Pinacea derivatives. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Pinacea derivatives is based on at least one of the following publications:

• The RIFM Safety Assessment on Pinacea derivatives is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Fd. Cosmet. Toxicol. 11, 1053 (1973); 16, 843 (1978);16, 853 (1978).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Nootkatone

CAS-No.:	4674-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	5,6-Dimethyl-8-isopropenylbicyclo(4.4.0)dec-1-en-3-one 4a,5-Dimethyl-1,2,3,4,4a,5,6,7-octahydro-7-keto-3-isopropenylnaphthalene 4betaH,5alpha-Eremorphila-1(10),11-dien-2-one (4R-(4alpha,4a alpha,6beta))-4,4a,5,6,7,8-Hexahydro-4,4a-dimethyl-6-(1-methylvinyl)naphthalen-2(3H)-one 4,4a,5,6,7,8-Hexahydro-6-isopropenyl-4,4a-dimethyl-2(3H)-naphthalenone 2(3H)-Naphthalenone, 4,4a,5,6,7,8-hexahydro-4,4a-dimethyl-6-(1-methylethenyl)-, (4R,4aS,6R)-

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980

Implementation dates:	For new creation*:	December 11, 2006
	For existing creation*:	December 11, 2007
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**
FRAGRANCE INGREDIENT SPECIFICATION:	Nootkatone used as a fragrance ingredient should be at least 98% pure, with a melting point of at least 32°C. Lower purity grades may not be used as a fragrance ingredient.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Nootkatone is found in natural extracts, but its natural contributions are not relevant for the fragrance ingredient specification mentioned above.

Nootkatone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Nootkatone. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Nootkatone is based on at least one of the following publications:

• The RIFM Safety Assessment on Nootkatone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Research Institute for Fragrance Materials, Inc., 1971. Sensitization and irritation study of nootkatone. Unpublished report from Givaudan, May 24, Report number 41820.

• Research Institute for Fragrance Materials, Inc., 1977. Report on human maximization studies. RIFM report number 1702, June 6c.

• Research Institute for Fragrance Materials, Inc., 1978. Report on human maximization studies. RIFM report number 1698, January 13a.

• Research Institute for Fragrance Materials, Inc., 1979. Report on human maximization studies. RIFM report number 1775, September 11.

• Research Institute for Fragrance Materials, Inc., 2005. Repeated insult patch test with nootkatone. Unpublished report from Bedoukian Research, Inc., May 11. Report number 46155.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Limonene

CAS-No.:	138-86-3 7705-14-8 5989-27-5 5989-54-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	p-Mentha-1,8-diene 1-methyl-4-prop-1-en-2-ylcyclohexene 1-Methyl-4-(1-methylethenyl)cyclohexene 1-Methyl-4-isopropenyl-1-cyclohexene 4-Isopropenyl-1-methylcyclohexene Cyclohexene, 1-methyl-4-(1-methylethenyl)- Dipentene

History:	Publication date:	1995 (Amendment 29)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Oxidation products of Limonene, especially hydroperoxides, have been demonstrated to be potent sensitizers. d-, l- and dl-Limonene and natural products containing substantial amounts of it, should only be used when the level of (hydro)peroxides is kept to the lowest practical level, for instance by adding antioxidants at the time of production. The addition of 0.1% BHT or α-Tocopherol for example has shown great efficiency. Such products should have a peroxide value of less than 20 millimoles per liter, determined according to the IFRA analytical method for the determination of the peroxide value, which can be downloaded from the IFRA website (www.ifrafragrance.org).
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but

Limonene

	must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE FRAGRANCE MATERIAL SPECIFICATION**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Limonene. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Limonene is based on at least one of the following publications:

• The RIFM Safety Assessment on Limonene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• D.L.J. Opdyke, Fd. Cosmet. Toxicol. 13; 825 (1975).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Linalool

CAS-No.:	78-70-6 126-90-9 126-91-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	78-70-6 (Linalool): 1,6-Octadien-3-ol, 3,7-dimethyl- 2,6-Dimethyl-2,7-octadien-6-ol 2,7-Octadien-6-ol, 2,6-dimethyl- 3,7-Dimethyl-1,6-octadien-3-ol 3,7-Dimethylocta-1,6-dien-3-ol Coriandrol Licareol Linalyl alcohol 126-90-9 (d-Linalool): (S)-3,7-Dimethyl-1,6-octadien-3-ol 1,6-Octadien-3-ol, 3,7-dimethyl-, (S)- 126-91-0 (l-Linalool): (R)-3,7-Dimethyl-1,6-octadien-3-ol 1,6-Octadien-3-ol, 3,7-dimethyl-, (R)-

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	May 6, 2004
	For existing creation*:	May 6, 2005
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Oxidation products of Linalool, especially hydroperoxides, have been demonstrated to be potent sensitizers. d-, l- and dl-Linalool and natural products containing substantial amounts of it, should only be used when the level of (hydro)peroxides is kept to the lowest practical level, for instance by adding antioxidants at the time of production. The addition of 0.1% BHT or α-Tocopherol for example has shown great efficiency. Such products should have a peroxide value of less than 20 millimoles per liter,

Linalool

	determined according to the IFRA analytical method for the determination of the peroxide value, which can be downloaded from the IFRA website (www.ifrafragrance.org).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE FRAGRANCE MATERIAL SPECIFICATION**

Natural products known to be rich in Linalool include bois de rose, coriander or ho wood oil.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Linalool. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Linalool is based on at least one of the following publications:

• The RIFM Safety Assessment on Linalool is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• M.Skold, A.Borje, M.Matura and A.-T.Karlberg., 2002. Studies on the autoxidation and sensitizing capacity of the fragrance chemical linalool, identifying a linalool hyperperoxide. Contact Dermatitis, 46(5), 267-272.

Linalool

• M.Skold, A.Borje, M.Matura and A.-T.Karlberg., 2002. Sensitization studies on the fragrance chemical linalool, with respect to auto-oxidation. Contact Dermatitis, 46 (Suppl. 4), 20.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl esters

CAS-No.:	Not applicable. The scope of this Standard includes any CAS number(s) used to identify these fragrance ingredients.
Synonyms:	Not applicable.

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	1977

Implementation dates:	For new creation*:	Not applicable.
	For existing creation*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**
FRAGRANCE INGREDIENT SPECIFICATION:	Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**IRRITATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl esters. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

Allyl esters

REFERENCES:

The IFRA Standard on Allyl esters is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl esters is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Fd. Cosmet, Toxicol, 15,611-21 (1977).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk ketone

CAS-No.:	81-14-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-(4-tert-Butyl-2,6-dimethyl-3,5-dinitrophenyl) ethanone 4'-tert-butyl-2',6'-dimethyl-3',5'-dinitroacetophenone 3,5-Dinitro-2,6-dimethyl-4-tert-butylacetophenone 1-[4-(1,1-Dimethylethyl)-2,6-dimethyl-3,5-dinitrophenyl]ethanone Ethanone, 1-[4-(1,1-dimethylethyl)-2,6-dimethyl-3,5-dinitrophenyl]-

History:	Publication date:	2010 (Amendment 45)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	January 11, 2011
	For existing creation*:	January 11, 2012
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**
FRAGRANCE INGREDIENT SPECIFICATION:	Musk xylene (CAS number 81-15-2), which has been prohibited for use in fragrance compounds for environmental reasons (vPvB), can be present in Musk ketone as an impurity. Musk ketone should only be used if it contains less than 0.1% of Musk xylene.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**SEE FRAGRANCE MATERIAL SPECIFICATION**

Musk ketone

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk ketone. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Musk ketone is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk ketone if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• PBT draft Addendum to the final report (2005) of the Risk Assessment (PBT assessment), January 2008 (the Netherlands National Institute for Public health and Environment, RIVM) (https://echa.europa.eu/documents/10162/cb2b7fc5-8af1-46df-a1c0-7bf8335162a0).

• ECHA (European Chemicals Agency, Member State Committee, Substances of Very High Concern support document for identification of 5-tert-butyl-2,4,6-trinitro-m-xylene, Adopted on October 8, 2008 (https://echa.europa.eu/documents/10162/909dd42e-2554-4f59-911a-729a2da1d529).

• IFRA Standard on Musk xylene.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Propenylguaethol

CAS-No.:	94-86-0 63477-41-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-Ethoxy-2-hydroxy-4-propenylbenzene 2-Ethoxy-5-prop-1-en-1-ylphenol 2-Ethoxy-5-propenylphenol 3-Propenyl-6-ethoxyphenol 6-Ethoxy-m-anol Phenol, 2-ethoxy-5-(1-propenyl)- Vanitrope (commercial name) Isosafroeugenol (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.18 %	Category 7A	0.32 %
Category 2	0.053 %	Category 7B	0.32 %
Category 3	0.11 %	Category 8	0.071 %
Category 4	0.99 %	Category 9	0.75 %
Category 5A	0.25 %	Category 10A	0.75 %
Category 5B	0.21 %	Category 10B	3.7 %
Category 5C	0.25 %	Category 11A	0.071 %
Category 5D	0.071 %	Category 11B	0.071 %

Propenylguaethol

Category 6	0.58 %	Category 12	58 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Propenylguaethol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Propenylguaethol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Propenylguaethol in the various product categories.

REFERENCES:

The IFRA Standard on Propenylguaethol is based on at least one of the following publications:

• The RIFM Safety Assessment on Propenylguaethol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the

Propenylguaethol

Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Methoxy-4-propylphenol

CAS-No.:	2785-87-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Phenol, 2-methoxy-4-propyl- 4-Propyl-ortho-methoxyphenol 4-Propylguaicol 5-Propyl-ortho-hydroxyanisole Dihydroeugenol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.13 %	Category 7A	1.5 %
Category 2	0.039 %	Category 7B	1.5 %
Category 3	0.78 %	Category 8	0.062 %
Category 4	0.73 %	Category 9	1.4 %
Category 5A	0.19 %	Category 10A	1.4 %
Category 5B	0.19 %	Category 10B	5.1 %
Category 5C	0.19 %	Category 11A	0.062 %
Category 5D	0.062 %	Category 11B	0.062 %
Category 6	0.43 %	Category 12	No Restriction

2-Methoxy-4-propylphenol

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methoxy-4-propylphenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methoxy-4-propylphenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Methoxy-4-propylphenol in the various product categories.

REFERENCES:

The IFRA Standard on 2-Methoxy-4-propylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Methoxy-4-propylphenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

2-Methoxy-4-propylphenol

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Bisabolol

CAS-No.:	515-69-5 23089-26-1 23178-88-3 78148-59-1 76738-75-5 72691-24-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	(R*,R*)-.α.,4-Dimethyl-.α.-(4-methyl-3-pentenyl)cyclohex-3-ene-1-methanol 3-Cyclohexene-1-methanol, .α.,4-dimethyl-.α.-(4-methyl-3-pentenyl)-, (R*,R*)- 6-Methyl-2-(4-methyl-3-cyclohexen-1-yl)-5-hepten-2-ol 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αS,1S)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αR,1R)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αR,1S)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αS,1R)- alpha-Bisabolol Bisabolol Bisabolol nat. roh (Candela-Öl) (Commercial name) Dragosantol (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.42 %	Category 7A	3.0 %
Category 2	0.13 %	Category 7B	3.0 %
Category 3	2.5 %	Category 8	0.20 %
Category 4	2.4 %	Category 9	4.6 %

alpha-Bisabolol

Category 5A	0.60 %	Category 10A	4.6 %
Category 5B	0.60 %	Category 10B	17 %
Category 5C	0.60 %	Category 11A	0.20 %
Category 5D	0.20 %	Category 11B	0.20 %
Category 6	1.4 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Bisabolol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Bisabolol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Bisabolol in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Bisabolol is based on at least one of the following publications:

alpha-Bisabolol

• The RIFM Safety Assessment on alpha-Bisabolol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Tolyl alcohol

CAS-No.:	589-18-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	(4-Methylphenyl)methanol Benzenemethanol, 4-methyl- p-Methylbenzyl alcohol p-Tolualcohol 4-(Hydroxymethyl)toluene 4-Methylbenzyl alcohol 4-Tolylcarbinol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.048 %	Category 7A	0.048 %
Category 2	0.048 %	Category 7B	0.048 %
Category 3	0.048 %	Category 8	0.016 %
Category 4	1.5 %	Category 9	0.53 %
Category 5A	0.64 %	Category 10A	0.53 %
Category 5B	0.048 %	Category 10B	0.048 %
Category 5C	0.048 %	Category 11A	0.016 %
Category 5D	0.016 %	Category 11B	0.016 %
Category 6	0.048 %	Category 12	No Restriction

p-Tolyl alcohol

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Tolyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Tolyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Tolyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on p-Tolyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Tolyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

p-Tolyl alcohol

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Isopropylbenzyl alcohol

CAS-No.:	536-60-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	(4-Isopropylphenyl)methanol Benzenemethanol, 4-(1-methylethyl)- p-iso-Propylbenzyl alcohol p-Cymen-7-ol Cumin alcohol Cuminic alcohol Cuminol Cuminyl alcohol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	0.80 %
Category 2	0.14 %	Category 7B	0.80 %
Category 3	0.40 %	Category 8	0.21 %
Category 4	2.5 %	Category 9	2.0 %
Category 5A	0.64 %	Category 10A	2.0 %
Category 5B	0.64 %	Category 10B	4.8 %
Category 5C	0.64 %	Category 11A	0.21 %
Category 5D	0.21 %	Category 11B	0.21 %

p-Isopropylbenzyl alcohol

Category 6	1.5 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Isopropylbenzyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Isopropylbenzyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Isopropylbenzyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on p-Isopropylbenzyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Isopropylbenzyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

p-Isopropylbenzyl alcohol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,6,10-Trimethylundeca-5,9-dien-1-ol

CAS-No.:	24048-14-4 185019-19-6 58001-88-0 58001-87-9 1373932-23-0 1018832-07-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	24048-14-4: 2,6,10-Trimethylundeca-5,9-dienol 5,9-Undecadien-1-ol, 2,6,10-trimethyl- Dihydroapofarnesol Profarnesol 185019-19-6 and 58001-88-0: (E)-2,6,10-Trimethylundeca-5,9-dien-1-ol 58001-87-9: (Z)-2,6,10-Trimethylundeca-5,9-dien-1-ol 1373932-23-0: (2R,5E)-2,6,10-Trimethylundeca-5,9-dien-1-ol 1018832-07-9: (2S, 5E)-2,6,10-Trimethylundeca-5,9-dien-1-ol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.21 %	Category 7A	2.4 %
Category 2	0.062 %	Category 7B	2.4 %

2,6,10-Trimethylundeca-5,9-dien-1-ol

Category 3	1.2 %	Category 8	0.12 %
Category 4	1.2 %	Category 9	2.3 %
Category 5A	0.29 %	Category 10A	8.1 %
Category 5B	0.29 %	Category 10B	8.1 %
Category 5C	0.29 %	Category 11A	4.5 %
Category 5D	0.29 %	Category 11B	4.5 %
Category 6	0.68 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,6,10-Trimethylundeca-5,9-dien-1-ol has been reported to be found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,6,10-Trimethylundeca-5,9-dien-1-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

2,6,10-Trimethylundeca-5,9-dien-1-ol

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,6,10-Trimethylundeca-5,9-dien-1-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,6,10-Trimethylundeca-5,9-dien-1-ol in the various product categories.

REFERENCES:

The IFRA Standard on 2,6,10-Trimethylundeca-5,9-dien-1-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,6,10-Trimethylundeca-5,9-dien-1-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cedrene

CAS-No.:	11028-42-5 469-61-4 546-28-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.
Synonyms:	11028-42-5: Cedr-8-ene 469-61-4: α-Cedrene Cedr-8-ene 1H-3a,7-Methanoazulene, 2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-, (3R-(3-α,3a-β,8a-α)] 546-28-1: β.-Cedrene 1H-3a,7-Methanoazulene, octahydro-3,8,8-trimethyl-6-methylene-, [3R-(3alpha,3abeta,7beta,8aalpha)]- Cedr-8(15)-ene

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %

Cedrene

Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %
Category 6	0.88 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

The natural contribution of Cedrene is determined by the sum of the natural contributions of each of its isomers.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cedrene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cedrene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cedrene in the various product categories.

REFERENCES:

Cedrene

The IFRA Standard on Cedrene is based on at least one of the following publications:

• The RIFM Safety Assessment on Cedrene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Phenyl-3-buten-2-ol

CAS-No.:	17488-65-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Buten-2-ol, 4-phenyl- 4-Phenylbut-3-en-2-ol Methyl styryl carbinol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.22 %	Category 7A	2.5 %
Category 2	0.066 %	Category 7B	2.5 %
Category 3	1.3 %	Category 8	0.13 %
Category 4	1.2 %	Category 9	2.4 %
Category 5A	0.32 %	Category 10A	8.7 %
Category 5B	0.32 %	Category 10B	8.7 %
Category 5C	0.32 %	Category 11A	4.8 %
Category 5D	0.32 %	Category 11B	4.8 %
Category 6	0.73 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

4-Phenyl-3-buten-2-ol

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4-Phenyl-3-buten-2-ol has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Phenyl-3-buten-2-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Phenyl-3-buten-2-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Phenyl-3-buten-2-ol in the various product categories.

REFERENCES:

The IFRA Standard on 4-Phenyl-3-buten-2-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Phenyl-3-buten-2-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

4-Phenyl-3-buten-2-ol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Longifolene

CAS-No.:	475-20-7 16846-09-6 19067-29-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4,8,8-Trimethyl-9-methylenedecahydro-1,4-methanoazulene 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-) 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-, [1S-(1α,3αβ,4α,8aβ)]- 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-, (1R,3αS,4R,8αR)-

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %
Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %
Category 6	0.88 %	Category 12	No Restriction

Longifolene

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Longifolene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Longifolene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Longifolene in the various product categories.

REFERENCES:

The IFRA Standard on Longifolene is based on at least one of the following publications:

• The RIFM Safety Assessment on Longifolene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Longifolene

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Hydroxy-2,5-dimethyl-3(2H)-furanone

CAS-No.:	3658-77-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3(2H)-Furanone, 4-hydroxy-2,5-dimethyl- 2,5-Dimethyl-4-hydroxy-2,3-dihydrofuran-3-one 4-Hydroxy-2,5-dimethylfuran-3(2H)-one Dimethylhydroxy furanone Strawberry furanone Furaneol (Commercial name) Neofuraneol (Commercial name) Pineapple compound (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %
Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %

4-Hydroxy-2,5-dimethyl-3(2H)-furanone

Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4-Hydroxy-2,5-dimethyl-3(2H)-furanone has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Hydroxy-2,5-dimethyl-3(2H)-furanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Hydroxy-2,5-dimethyl-3(2H)-furanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Hydroxy-2,5-dimethyl-3(2H)-furanone in the various product categories.

REFERENCES:

The IFRA Standard on 4-Hydroxy-2,5-dimethyl-3(2H)-furanone is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Hydroxy-2,5-dimethyl-3(2H)-furanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

4-Hydroxy-2,5-dimethyl-3(2H)-furanone

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Farnesal

CAS-No.:	19317-11-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2,6,10-Dodecatrienal, 3,7,11-trimethyl- 3,7,11-Trimethyl dodecatrien-2,6,10-al-1 3,7,11-Trimethyl-2,6,10-dodecatrienal 3,7,11-Trimethyldodeca-2,6,10-trienal

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.34 %
Category 2	0.032 %	Category 7B	0.34 %
Category 3	0.11 %	Category 8	0.051 %
Category 4	0.60 %	Category 9	0.57 %
Category 5A	0.15 %	Category 10A	0.57 %
Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	0.051 %
Category 5D	0.051 %	Category 11B	0.051 %
Category 6	0.11 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

Farnesal

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Farnesal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Farnesal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Farnesal in the various product categories.

REFERENCES:

The IFRA Standard on Farnesal is based on at least one of the following publications:

• The RIFM Safety Assessment on Farnesal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Farnesal

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,7-Dimethyl-2,6-nonadien-1-al

CAS-No.:	41448-29-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2,6-Nonadien-1-al, 3,7-dimethyl- 3,7-Dimethylnona-2,6-dienal Ethyl citral

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	1.2 %
Category 2	0.032 %	Category 7B	1.2 %
Category 3	0.65 %	Category 8	0.051 %
Category 4	0.60 %	Category 9	0.16 %
Category 5A	0.15 %	Category 10A	0.16 %
Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	0.051 %
Category 5D	0.051 %	Category 11B	0.051 %
Category 6	0.16 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

3,7-Dimethyl-2,6-nonadien-1-al

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,7-Dimethyl-2,6-nonadien-1-al, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-2,6-nonadien-1-al and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,7-Dimethyl-2,6-nonadien-1-al in the various product categories.

REFERENCES:

The IFRA Standard on 3,7-Dimethyl-2,6-nonadien-1-al is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,7-Dimethyl-2,6-nonadien-1-al if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

3,7-Dimethyl-2,6-nonadien-1-al

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

5,9-Dimethyl-4,8-decadienal

CAS-No.:	762-26-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4,8-Decadienal, 5,9-dimethyl- 5,9-Dimethyldeca-4,8-dienal Geraldehyde (Commercial name) Geranyl Acetaldehyde (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.074 %	Category 7A	1.1 %
Category 2	0.16 %	Category 7B	1.1 %
Category 3	0.074 %	Category 8	0.025 %
Category 4	3.0 %	Category 9	2.5 %
Category 5A	0.76 %	Category 10A	2.5 %
Category 5B	0.15 %	Category 10B	4.6 %
Category 5C	0.074 %	Category 11A	0.025 %
Category 5D	0.025 %	Category 11B	0.025 %
Category 6	0.074 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

5,9-Dimethyl-4,8-decadienal

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 5,9-Dimethyl-4,8-decadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 5,9-Dimethyl-4,8-decadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 5,9-Dimethyl-4,8-decadienal in the various product categories.

REFERENCES:

The IFRA Standard on 5,9-Dimethyl-4,8-decadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 5,9-Dimethyl-4,8-decadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

5,9-Dimethyl-4,8-decadienal

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,7-Dimethyl-3,6-octadienal

CAS-No.:	55722-59-3 1754-00-3 72203-98-6 72203-97-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3,6-Octadienal, 3,7-dimethyl- 3,7-Dimethylocta-3,6-dienal (E)-3,7-Dimethyl-3,6-octadienal (Z)-3,7-Dimethyl-3,6-octadienal Isocitral (Commercial name) Isogeranial (Commercial name) Isoneral (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.54 %	Category 7A	0.12 %
Category 2	0.16 %	Category 7B	0.12 %
Category 3	0.030 %	Category 8	0.010 %
Category 4	3.0 %	Category 9	0.79 %
Category 5A	0.76 %	Category 10A	0.79 %
Category 5B	0.12 %	Category 10B	4.2 %
Category 5C	0.030 %	Category 11A	0.010 %

3,7-Dimethyl-3,6-octadienal

Category 5D	0.010 %	Category 11B	0.010 %
Category 6	1.3 %	Category 12	53 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

The natural contribution of 3,7-Dimethyl-3,6-octadienal is determined by the sum of the natural contributions of each of its isomers.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,7-Dimethyl-3,6-octadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-3,6-octadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,7-Dimethyl-3,6-octadienal in the various product categories.

REFERENCES:

The IFRA Standard on 3,7-Dimethyl-3,6-octadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,7-Dimethyl-3,6-octadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

3,7-Dimethyl-3,6-octadienal

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citronellal

CAS-No.:	106-23-0 5949-05-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	106-23-0: 2,3-Dihydrocitral 3,7-Dimethyl-6-octenal 3,7-Dimethyloct-6-enal 6-Octenal, 3,7-dimethyl- Citronellal Extra (Commercial name) Rhodinal (Commercial name) 5949-05-3: 6-Octenal, 3,7-dimethyl-, (3S)- l-Citronellal

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.41 %	Category 7A	0.077 %
Category 2	0.16 %	Category 7B	0.077 %
Category 3	0.026 %	Category 8	0.017 %
Category 4	0.49 %	Category 9	1.4 %
Category 5A	0.33 %	Category 10A	1.4 %
Category 5B	0.051 %	Category 10B	2.3 %

Citronellal

Category 5C	0.10 %	Category 11A	0.017 %
Category 5D	0.017 %	Category 11B	0.017 %
Category 6	0.82 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citronellal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citronellal in the various product categories.

REFERENCES:

The IFRA Standard on Citronellal is based on at least one of the following publications:

• The RIFM Safety Assessment on Citronellal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Citronellal

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4,8-Dimethyl-4,9-decadienal

CAS-No.:	71077-31-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4,9-Decadienal, 4,8-dimethyl- Aldehyde DMD (Commercial name) Floral Super (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.042 %	Category 7A	0.48 %
Category 2	0.013 %	Category 7B	0.48 %
Category 3	0.25 %	Category 8	0.020 %
Category 4	0.24 %	Category 9	0.46 %
Category 5A	0.060 %	Category 10A	0.46 %
Category 5B	0.060 %	Category 10B	1.7 %
Category 5C	0.060 %	Category 11A	0.020 %
Category 5D	0.020 %	Category 11B	0.020 %
Category 6	0.14 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

4,8-Dimethyl-4,9-decadienal

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4,8-Dimethyl-4,9-decadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4,8-Dimethyl-4,9-decadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4,8-Dimethyl-4,9-decadienal in the various product categories.

REFERENCES:

The IFRA Standard on 4,8-Dimethyl-4,9-decadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 4,8-Dimethyl-4,9-decadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

4,8-Dimethyl-4,9-decadienal

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis,trans-4-(Isopropyl)cyclohexanemethanol

CAS-No.:	5502-75-0 13828-37-0 13674-19-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	(4-propan-2-ylcyclohexyl)methanol 4-(1-methylethyl)-cyclohexanemethanol 4-Isopropylcyclohexylmethanol (4-Isopropylcyclohexyl)methanol Reaction mass of trans-4-(isopropyl)cyclohexanemethanol and cis-4-(isopropyl)cyclohexanemethanol cis-4-(Isopropyl)cyclohexanemethanol trans-4-(Isopropyl)cyclohexanemethanol Cyclohexanemethanol, 4-(1-methylethyl)-, cis Cyclohexanemethanol, 4-(1-methylethyl)-, trans p-Menthan-7-ol cis-p-Menthan-7-ol trans-p-Menthan-7-ol Mayol (commercial name) Meijiff (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.25 %	Category 7A	0.13 %
Category 2	0.39 %	Category 7B	0.13 %
Category 3	0.099 %	Category 8	0.049 %
Category 4	4.7 %	Category 9	0.39 %

cis,trans-4-(Isopropyl)cyclohexanemethanol

Category 5A	1.2 %	Category 10A	0.39 %
Category 5B	0.15 %	Category 10B	1.1 %
Category 5C	0.20 %	Category 11A	0.049 %
Category 5D	0.049 %	Category 11B	0.049 %
Category 6	0.0099 %	Category 12	28 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis,trans-4-(Isopropyl)cyclohexanemethanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis,trans-4-(Isopropyl)cyclohexanemethanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis,trans-4-(Isopropyl)cyclohexanemethanol in the various product categories.

cis,trans-4-(Isopropyl)cyclohexanemethanol

REFERENCES:

The IFRA Standard on cis,trans-4-(Isopropyl)cyclohexanemethanol is based on at least one of the following publications:

• The RIFM Safety Assessment on cis,trans-4-(Isopropyl)cyclohexanemethanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-(Isopropyl)-.beta.-methylcyclohexanethanol

CAS-No.:	67634-03-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-(4-Isopropylcyclohexyl)propan-1-ol Cyclohexaneethanol, .β.-methyl-4-(1-methylethyl)- Rodipol C (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.26 %	Category 7A	0.26 %
Category 2	0.39 %	Category 7B	0.26 %
Category 3	0.26 %	Category 8	0.086 %
Category 4	6.4 %	Category 9	4.9 %
Category 5A	0.52 %	Category 10A	4.9 %
Category 5B	0.26 %	Category 10B	1.0 %
Category 5C	0.26 %	Category 11A	0.086 %
Category 5D	0.086 %	Category 11B	0.086 %
Category 6	0.26 %	Category 12	20 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

4-(Isopropyl)-.beta.-methylcyclohexanethanol

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-(Isopropyl)-.beta.-methylcyclohexanethanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-(Isopropyl)-.beta.-methylcyclohexanethanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-(Isopropyl)-.beta.-methylcyclohexanethanol in the various product categories.

REFERENCES:

The IFRA Standard on 4-(Isopropyl)-.beta.-methylcyclohexanethanol is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-(Isopropyl)-.beta.-methylcyclohexanethanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

4-(Isopropyl)-.beta.-methylcyclohexanethanol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclohexanemethanol, 2,4-dimethyl-

CAS-No.:	68480-15-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	(2,4-Dimethylcyclohexyl)methanol 2,4-Dimethylcyclohexanemethanol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0013 %	Category 7A	0.0013 %
Category 2	0.39 %	Category 7B	0.0013 %
Category 3	0.0013 %	Category 8	0.00043 %
Category 4	0.0013 %	Category 9	3.1 %
Category 5A	1.3 %	Category 10A	3.1 %
Category 5B	0.0013 %	Category 10B	0.0013 %
Category 5C	0.0013 %	Category 11A	0.00043 %
Category 5D	0.00043 %	Category 11B	0.00043 %
Category 6	0.0013 %	Category 12	0.0013 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

Cyclohexanemethanol, 2,4-dimethyl-

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclohexanemethanol, 2,4-dimethyl-, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclohexanemethanol, 2,4-dimethyl- and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclohexanemethanol, 2,4-dimethyl- in the various product categories.

REFERENCES:

The IFRA Standard on Cyclohexanemethanol, 2,4-dimethyl- is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclohexanemethanol, 2,4-dimethyl- if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

Cyclohexanemethanol, 2,4-dimethyl-

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

CAS-No.:	107898-54-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-Penten-2-ol, 3,3-dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)- (+/-) trans-3,3-Dimethyl-5-(2,2,3-trimethyl-cyclopent-3-en-1-yl)pent-4-en-2-ol Mysantol (Commercial name) Polysantol (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.031 %	Category 7A	0.63 %
Category 2	0.057 %	Category 7B	0.63 %
Category 3	0.25 %	Category 8	0.091 %
Category 4	1.1 %	Category 9	1.7 %
Category 5A	0.27 %	Category 10A	1.7 %
Category 5B	0.27 %	Category 10B	4.0 %
Category 5C	0.27 %	Category 11A	0.091 %
Category 5D	0.091 %	Category 11B	0.091 %
Category 6	0.031 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol in the various product categories.

REFERENCES:

The IFRA Standard on 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

CAS-No.:	65113-99-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Cyclopentene-1-butanol, .α.,.β.,2,2,3-pentamethyl- 3-Methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pentan-2-ol a,b,2,2,3-Pentamethylcyclopent-3-ene-1-butanol Sandal Series G (Commercial name) Sandalore (Commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.21 %	Category 7A	2.4 %
Category 2	0.062 %	Category 7B	2.4 %
Category 3	1.2 %	Category 8	0.12 %
Category 4	1.2 %	Category 9	2.3 %
Category 5A	0.29 %	Category 10A	8.1 %
Category 5B	0.29 %	Category 10B	8.1 %
Category 5C	0.29 %	Category 11A	4.5 %
Category 5D	0.29 %	Category 11B	4.5 %
Category 6	0.68 %	Category 12	No Restriction

5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol in the various product categories.

REFERENCES:

The IFRA Standard on 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the

5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

CAS-No.:	65114-03-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)butanal 3-Cyclopentene-1-butanal, α,2,2,3-tetramethyl- Florenza (commercial name) Santafleur (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.038 %	Category 7A	0.44 %
Category 2	0.011 %	Category 7B	0.44 %
Category 3	0.23 %	Category 8	0.023 %
Category 4	0.21 %	Category 9	0.42 %
Category 5A	0.054 %	Category 10A	1.5 %
Category 5B	0.054 %	Category 10B	1.5 %
Category 5C	0.054 %	Category 11A	0.83 %
Category 5D	0.054 %	Category 11B	0.83 %
Category 6	0.13 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde in the various product categories.

REFERENCES:

The IFRA Standard on alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isobutyl N-methylanthranylate

CAS-No.:	65505-24-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Benzoic acid, 2-(methylamino)-, 2-methylpropyl ester Isobutyl 2-(methylamino)benzoate

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 7, 2009
	For existing creation*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**
FRAGRANCE INGREDIENT SPECIFICATION:	The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**POTENTIAL OF NITROSAMINE FORMATION**
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:	

Isobutyl N-methylanthranylate

The Expert Panel for Fragrance Safety reviewed all the available data for Isobutyl N-methylanthranylate. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Isobutyl N-methylanthranylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Isobutyl N-methylanthranylate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.p df).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september- 2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Methyltetrahydroquinoline

CAS-No.:	91-61-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	6-Methyl-1,2,3,4-tetrahydroquinoline Quinoline, 1,2,3,4-tetrahydro-6-methyl- 1,2,3,4-Tetrahydro-6-methylquinoline Tetrahydro-p-methylquinoline

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 7, 2009
	For existing creation*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**
FRAGRANCE INGREDIENT SPECIFICATION:	The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**POTENTIAL OF NITROSAMINE FORMATION**

p-Methyltetrahydroquinoline

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Methyltetrahydroquinoline. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on p- Methyltetrahydroquinoline is based on at least one of the following publications:

• The RIFM Safety Assessment on p- Methyltetrahydroquinoline if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1,2,3,4-Tetrahydro-4-methylquinoline

CAS-No.:	19343-78-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-Methyl-1,2,3,4-tetrahydroquinoline Quinoline, 1,2,3,4-tetrahydro-4-methyl- 1,2,3,4-Tetrahydrolepidine 1,2,3,4-Tetrahydro-4-methylquinoline

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	August 7, 2009
	For existing creation*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**
FRAGRANCE INGREDIENT SPECIFICATION:	The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**POTENTIAL OF NITROSAMINE FORMATION**

1,2,3,4-Tetrahydro-4-methylquinoline

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1,2,3,4-Tetrahydro-4-methylquinoline. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on 1,2,3,4-Tetrahydro-4- methylquinoline is based on at least one of the following publications:

• The RIFM Safety Assessment on 1,2,3,4-Tetrahydro-4- methylquinoline if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-(4-Hydroxyphenyl)butan-2-one

CAS-No.:	5471-51-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	p-Hydroxybenzylacetone 1-p-Hydroxyphenyl-3-butanone 2-Butanone, 4-(4-hydroxyphenyl)- 4-(p-Hydroxyphenyl)-2-butanone Raspberry ketone Corps N 112 (commercial name) Frambinon (commercial name) Oxanone (commercial name) Oxyphenylon (commercial name)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new creation*:	February 10, 2021
	For existing creation*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.68 %	Category 7A	0.41 %
Category 2	1.0 %	Category 7B	0.41 %
Category 3	0.27 %	Category 8	0.045 %
Category 4	1.0 %	Category 9	1.0 %
Category 5A	1.0 %	Category 10A	1.0 %
Category 5B	0.14 %	Category 10B	1.0 %
Category 5C	0.27 %	Category 11A	0.045 %
Category 5D	0.045 %	Category 11B	0.045 %

4-(4-Hydroxyphenyl)butan-2-one

Category 6	0.82 %	Category 12	78 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4-(4-Hydroxyphenyl)butan-2-one has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DEPIGMENTATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-(4-Hydroxyphenyl)butan-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-(4-Hydroxyphenyl)butan-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-(4-Hydroxyphenyl)butan-2-one in the various product categories.

REFERENCES:

The IFRA Standard on 4-(4-Hydroxyphenyl)butan-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-(4-Hydroxyphenyl)butan-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

4-(4-Hydroxyphenyl)butan-2-one

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Mintlactone

CAS-No.:	13341-72-5 38049-04-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Mintlactone 2(4H)-Benzofuranone, 5,6,7,7a-tetrahydro-3,6-dimethyl- 3,6-Dimethyl-5,6,7,7a-tetrahydro-1-benzofuran-2(4H)-one 3,6-Dimethyl-5,6,7,7a-tetrahydro-2(4H)benzo-furanone 5,6,7,7a-Tetrahydro-3,6-dimethyl-(4H)-benzofuran-2-one Dehydroxymenthofurolactone Menthofurolactone Mint furanone 2(4H)-Benzofuranone, 5,6,7,7a-tetrahydro-3,6-dimethyl-, (6R,7aR)- (-)-Mintlactone

History:	Publication date:	2021 (Amendment 50)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	August 30, 2021
	For existing creation*:	July 30, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**
FRAGRANCE INGREDIENT PROHIBITION:	Mintlactone should not be used as a fragrance ingredient.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**GENOTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The material Mintalctone has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it cannot be safely used as a fragrance ingredient. If the substance is found as an impurity in other

Mintlactone

fragrance ingredients, leading to trace level presence in finished products, please check the latest version of the Guidance to the IFRA Standards for the respective IFRA procedure.

REFERENCES:

The IFRA Standard on Mintlactone is based on at least one of the following publications:

• The RIFM Safety Assessment on Mintlactone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethyl isopropyl bicycloheptene-2-carboxylate

CAS-No.:	116044-44-1 116126-82-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Ethyl isopropyl bicycloheptene-2-carboxylate (2-endo,3-exo)-Ethyl 3-(1-methylethyl)bicyclo[2.2.1]hept-5-ene-2-carboxylate (2-endo,3-exo)-Ethyl 3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 3-(1-methylethyl)-, ethyl ester, (2-endo,3-exo)- Ethyl (2S,3S)-3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate 3-(1-Methyl ethyl) bicyclo(2.2.1) hept-5-ene-2-carboxylic acid ethyl ester Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 3-(1-methylethyl)-, ethyl ester, (2-exo,3-endo)- Ethyl (2R,3R)-3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate Herbanate (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.15 %	Category 7A	0.61 %
Category 2	0.050 %	Category 7B	0.61 %
Category 3	0.45 %	Category 8	0.080 %
Category 4	0.94 %	Category 9	1.8 %
Category 5A	0.24 %	Category 10A	3.0 %
Category 5B	0.24 %	Category 10B	0.15 %
Category 5C	0.24 %	Category 11A	0.080 %

Ethyl isopropyl bicycloheptene-2-carboxylate

Category 5D	0.080 %	Category 11B	0.080 %
Category 6	0.15 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Ethyl isopropyl bicycloheptene-2-carboxylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ethyl isopropyl bicycloheptene-2-carboxylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Ethyl isopropyl bicycloheptene-2-carboxylate in the various product categories.

REFERENCES:

The IFRA Standard on Ethyl isopropyl bicycloheptene-2-carboxylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethyl isopropyl bicycloheptene-2-carboxylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Ethyl isopropyl bicycloheptene-2-carboxylate

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Tetramethyl bicyclo-2-heptene-2-propionaldehyde

CAS-No.:	33885-52-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Tetramethyl bicyclo-2-heptene-2-propionaldehyde .alpha.,.alpha.,6,6-Tetramethyl-2-norpinene-2-propionaldehyde .alpha.,.alpha.,6,6-Tetramethylbicyclo[3.1.1]hept-2-ene-2-propionaldehyde .α.,.α.,6,6-Tetramethyl-2-norpinene-2-propionaldehyde .α.,.α.,6,6-Tetramethylbicyclo[3.1.1]hept-2-ene-2-propionaldehyde 3-(6,6-Dimethylbicyclo[3.1.1]hept-2-en-2-yl)-2,2-dimethylpropanal Bicyclo[3.1.1]hept-2-ene-2-propanal, .alpha.,.alpha.,6,6-tetramethyl- Bicyclo[3.1.1]hept-2-ene-2-propanal, .α.,.α.,6,6-tetramethyl- PIBA (commercial name) Pinyl iso butyraldehyde (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0014 %	Category 7A	0.0041 %
Category 2	0.11 %	Category 7B	0.0041 %
Category 3	0.0014 %	Category 8	0.00046 %
Category 4	1.3 %	Category 9	0.087 %
Category 5A	0.019 %	Category 10A	0.0096 %
Category 5B	0.0014 %	Category 10B	0.13 %
Category 5C	0.0014 %	Category 11A	0.00046 %

Tetramethyl bicyclo-2-heptene-2-propionaldehyde

Category 5D	0.00046 %	Category 11B	0.00046 %
Category 6	0.0014 %	Category 12	25 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Tetramethyl bicyclo-2-heptene-2-propionaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Tetramethyl bicyclo-2-heptene-2-propionaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Tetramethyl bicyclo-2-heptene-2-propionaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Tetramethyl bicyclo-2-heptene-2-propionaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Tetramethyl bicyclo-2-heptene-2-propionaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Tetramethyl bicyclo-2-heptene-2-propionaldehyde

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(2,2,6-Trimethylcyclohexyl)-3-hexanol

CAS-No.:	70788-30-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-(2,2,6-Trimethylcyclohexyl)-3-hexanol 1-(Trimethylcyclohexyl)-hexanol 2,2,6-Trimethyl-alpha-propylcyclohexanepropanol 2,2,6-Trimethyl-α-propylcyclohexanepropanol Cyclohexanepropanol, 2,2,6-trimethyl-.alpha.-propyl- Cyclohexanepropanol, 2,2,6-trimethyl-.α.-propyl- Norlimbanol (commercial name) Norlimbanol Dextrol (commercial name) Timberol (commercial name) Karmawood (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.17 %	Category 7A	0.51 %
Category 2	0.071 %	Category 7B	0.51 %
Category 3	0.51 %	Category 8	0.11 %
Category 4	1.3 %	Category 9	2.6 %
Category 5A	0.34 %	Category 10A	0.68 %
Category 5B	0.34 %	Category 10B	4.7 %
Category 5C	0.34 %	Category 11A	0.11 %

1-(2,2,6-Trimethylcyclohexyl)-3-hexanol

Category 5D	0.11 %	Category 11B	0.11 %
Category 6	0.17 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol in the various product categories.

REFERENCES:

The IFRA Standard on 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

1-(2,2,6-Trimethylcyclohexyl)-3-hexanol

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(2-tert.-Butyl cyclohexyloxy)-2-butanol

CAS-No.:	139504-68-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-(2-tert.-Butyl cyclohexyloxy)-2-butanol 1-(2-tert-Butylcyclohexyl)oxybutan-2-ol 1-[(2-tert-Butylcyclohexyl)oxy]butan-2-ol 1-(2-t.-Butyl cyclohexyloxy)-2-butanol 1-(2-t-Butylcyclohexyl)oxybutan-2-ol 1-[(2-t-Butylcyclohexyl)oxy]butan-2-ol Amber Core (commercial name) Coramber (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.24 %	Category 7A	2.7 %
Category 2	0.071 %	Category 7B	2.7 %
Category 3	1.4 %	Category 8	0.11 %
Category 4	1.3 %	Category 9	2.6 %
Category 5A	0.34 %	Category 10A	4.5 %
Category 5B	0.34 %	Category 10B	9.3 %
Category 5C	0.34 %	Category 11A	0.11 %
Category 5D	0.11 %	Category 11B	0.11 %

1-(2-tert.-Butyl cyclohexyloxy)-2-butanol

Category 6	0.75 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol in the various product categories.

REFERENCES:

The IFRA Standard on 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

1-(2-tert.-Butyl cyclohexyloxy)-2-butanol

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,6,7-Trimethyl-2,6-octadienal

CAS-No.:	1891-67-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3,6,7-Trimethyl-2,6-octadienal 2,6-Octadienal, 3,6,7-trimethyl-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.011 %	Category 7A	0.011 %
Category 2	0.032 %	Category 7B	0.011 %
Category 3	0.023 %	Category 8	0.011 %
Category 4	0.60 %	Category 9	0.24 %
Category 5A	0.15 %	Category 10A	0.011 %
Category 5B	0.034 %	Category 10B	2.4 %
Category 5C	0.069 %	Category 11A	0.011 %
Category 5D	0.011 %	Category 11B	0.011 %
Category 6	0.011 %	Category 12	80 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

3,6,7-Trimethyl-2,6-octadienal

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,6,7-Trimethyl-2,6-octadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,6,7-Trimethyl-2,6-octadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,6,7-Trimethyl-2,6-octadienal in the various product categories.

REFERENCES:

The IFRA Standard on 3,6,7-Trimethyl-2,6-octadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,6,7-Trimethyl-2,6-octadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

3,6,7-Trimethyl-2,6-octadienal

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4,4,7-Tetramethyl-6-octen-3-one

CAS-No.:	74338-72-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2,4,4,7-Tetramethyl-6-octen-3-one Claritone (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.34 %	Category 7A	3.9 %
Category 2	0.10 %	Category 7B	3.9 %
Category 3	2.0 %	Category 8	0.16 %
Category 4	1.9 %	Category 9	3.7 %
Category 5A	0.48 %	Category 10A	10 %
Category 5B	0.48 %	Category 10B	13 %
Category 5C	0.48 %	Category 11A	0.16 %
Category 5D	0.16 %	Category 11B	0.16 %
Category 6	0.45 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

2,4,4,7-Tetramethyl-6-octen-3-one

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,4,4,7-Tetramethyl-6-octen-3-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4,4,7-Tetramethyl-6-octen-3-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,4,4,7-Tetramethyl-6-octen-3-one in the various product categories.

REFERENCES:

The IFRA Standard on 2,4,4,7-Tetramethyl-6-octen-3-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4,4,7-Tetramethyl-6-octen-3-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

2,4,4,7-Tetramethyl-6-octen-3-one

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Cyclohexylidene-2-ortho-tolylacetonitrile

CAS-No.:	916887-53-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Cyclohexylidene-2-ortho-tolylacetonitrile 2-Cyclohexylidene-2-o-tolylacetonitrile Benzeneacetonitrile, alpha-cyclohexylidene-2-methyl- Benzeneacetonitrile, α-cyclohexylidene-2-methyl- Petalia (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.066 %	Category 7A	0.99 %
Category 2	0.027 %	Category 7B	0.99 %
Category 3	0.33 %	Category 8	0.043 %
Category 4	0.52 %	Category 9	1.0 %
Category 5A	0.13 %	Category 10A	0.066 %
Category 5B	0.13 %	Category 10B	3.6 %
Category 5C	0.13 %	Category 11A	0.043 %
Category 5D	0.043 %	Category 11B	0.043 %
Category 6	0.066 %	Category 12	66 %

2-Cyclohexylidene-2-ortho-tolylacetonitrile

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Cyclohexylidene-2-ortho-tolylacetonitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Cyclohexylidene-2-ortho-tolylacetonitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Cyclohexylidene-2-ortho-tolylacetonitrile in the various product categories.

REFERENCES:

The IFRA Standard on 2-Cyclohexylidene-2-ortho-tolylacetonitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Cyclohexylidene-2-ortho-tolylacetonitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients.

2-Cyclohexylidene-2-ortho-tolylacetonitrile

Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethyl and Methyl furaneol

CAS-No.:	27538-09-6 27538-10-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Ethyl-4-hydroxy-5-methylfuran-3-one Ethyl furaneol Methyl furaneol 2-Ethyl-4-hydroxy-5-methyl-3(2H)-furanone 3(2H)-Furanone, 5-ethyl-4-hydroxy-2-methyl- 5-Ethyl-4-hydroxy-2-methyl-3(2H)-furanone 5-Ethyl-4-hydroxy-2-methylfuran-3(2H)-one 2-Ethyl-4-hydroxy-5-methylfuran-3(2H)-one 3(2H)-Furanone, 2-ethyl-4-hydroxy-5-methyl- Homofuraneol Maltarome (commercial name) Homofuronol (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %
Category 5A	0.064 %	Category 10A	0.98 %
Category 5B	0.064 %	Category 10B	1.8 %

Ethyl and Methyl furaneol

Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %
Category 6	0.15 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Ethyl and Methyl furaneol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ethyl and Methyl furaneol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Ethyl and Methyl furaneol in the various product categories.

REFERENCES:

The IFRA Standard on Ethyl and Methyl furaneol is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethyl and Methyl furaneol if available at the RIFM Fragrance Material

Ethyl and Methyl furaneol

Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Hexylidenecyclohexan-1-one

CAS-No.:	16429-07-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Hexylidenecyclohexan-1-one 2-Hexylidenecyclohexanone Cyclohexanone, 2-hexylidene-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.023 %	Category 7A	0.26 %
Category 2	0.0069 %	Category 7B	0.26 %
Category 3	0.14 %	Category 8	0.014 %
Category 4	0.13 %	Category 9	0.25 %
Category 5A	0.033 %	Category 10A	0.90 %
Category 5B	0.033 %	Category 10B	0.90 %
Category 5C	0.033 %	Category 11A	0.50 %
Category 5D	0.033 %	Category 11B	0.50 %
Category 6	0.076 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

2-Hexylidenecyclohexan-1-one

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Hexylidenecyclohexan-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Hexylidenecyclohexan-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Hexylidenecyclohexan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 2-Hexylidenecyclohexan-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Hexylidenecyclohexan-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

2-Hexylidenecyclohexan-1-one

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Methyl-2-pentenal

CAS-No.:	623-36-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Methyl-2-pentenal 2-Methylpent-2-enal 2-Pentenal, 2-methyl- 2,4-Dimethylcrotonaldehyde α-Methyl-β-ethylacrolein alpha-Methyl-beta-ethylacrolein

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0014 %	Category 7A	0.016 %
Category 2	0.00041 %	Category 7B	0.016 %
Category 3	0.0083 %	Category 8	0.00067 %
Category 4	0.0077 %	Category 9	0.015 %
Category 5A	0.0020 %	Category 10A	0.054 %
Category 5B	0.0020 %	Category 10B	0.054 %
Category 5C	0.0020 %	Category 11A	0.00067 %
Category 5D	0.00067 %	Category 11B	0.00067 %
Category 6	0.0045 %	Category 12	No restriction

2-Methyl-2-pentenal

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methyl-2-pentenal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methyl-2-pentenal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Methyl-2-pentenal in the various product categories.

REFERENCES:

The IFRA Standard on 2-Methyl-2-pentenal is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Methyl-2-pentenal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

2-Methyl-2-pentenal

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Octen-4-one

CAS-No.:	4643-27-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Octen-4-one Butyl propenyl ketone Oct-2-en-4-one Propenyl butyl ketone Strawbinone (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %
Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %
Category 5B	0.012 %	Category 10B	0.33 %
Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No restriction

2-Octen-4-one

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Octen-4-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Octen-4-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Octen-4-one in the various product categories.

REFERENCES:

The IFRA Standard on 2-Octen-4-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Octen-4-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

2-Octen-4-one

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl lavender ketone

CAS-No.:	67801-33-6 67633-95-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl lavender ketone 2-Nonanone, 3-(hydroxymethyl)- 3-(Hydroxymethyl)nonan-2-one Herbal ketone 2-Acetyl-1-octanol 1-Hydroxydecan-3-one 3-Decanone, 1-hydroxy 1-Hydroxy-3-decanone Ethyl hydroxyheptyl ketone

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.015 %	Category 7A	0.17 %
Category 2	0.0044 %	Category 7B	0.17 %
Category 3	0.088 %	Category 8	0.0086 %
Category 4	0.082 %	Category 9	0.16 %
Category 5A	0.021 %	Category 10A	0.57 %
Category 5B	0.021 %	Category 10B	0.57 %
Category 5C	0.021 %	Category 11A	0.32 %

Methyl lavender ketone

Category 5D	0.021 %	Category 11B	0.32 %
Category 6	0.048 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl lavender ketone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl lavender ketone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl lavender ketone in the various product categories.

REFERENCES:

The IFRA Standard on Methyl lavender ketone is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl lavender ketone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Methyl lavender ketone

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,4,5,6,6-Pentamethylhept-3-en-2-one

CAS-No.:	81786-74-5 81786-73-4 86115-11-9 81786-75-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3,4,5,6,6-Pentamethylhept-3-en-2-one 2-Heptanone, 3,5,6,6-tetramethyl-4-methylene- 3,5,6,6-Tetramethyl-4-methyleneheptan-2-one 3,5,6,6-Tetramethyl-4-methylideneheptan-2-one (Z)-3,4,5,6,6-Pentamethylhept-3-en-2-one 3-Hepten-2-one, 3,4,5,6,6-pentamethyl-, (Z)- 3-Hepten-2-one, 3,4,5,6,6-pentamethyl- (E)-3,4,5,6,6-Pentamethylhept-3-en-2-one 3-Hepten-2-one, 3,4,5,6,6-pentamethyl-, (E)- Koavone (commercial name) Acetyl Diisoamylene (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0095 %	Category 7A	0.086 %
Category 2	0.10 %	Category 7B	0.086 %
Category 3	0.019 %	Category 8	0.0032 %
Category 4	1.9 %	Category 9	0.39 %
Category 5A	0.26 %	Category 10A	0.39 %
Category 5B	0.029 %	Category 10B	2.6 %

3,4,5,6,6-Pentamethylhept-3-en-2-one

Category 5C	0.0095 %	Category 11A	0.0032 %
Category 5D	0.0032 %	Category 11B	0.0032 %
Category 6	0.0095 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,4,5,6,6-Pentamethylhept-3-en-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,4,5,6,6-Pentamethylhept-3-en-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,4,5,6,6-Pentamethylhept-3-en-2-one in the various product categories.

REFERENCES:

The IFRA Standard on 3,4,5,6,6-Pentamethylhept-3-en-2-one is based on at least one of the following publications:

3,4,5,6,6-Pentamethylhept-3-en-2-one

• The RIFM Safety Assessment on 3,4,5,6,6-Pentamethylhept-3-en-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Methyl-5-phenylpent-2-enenitrile

CAS-No.:	53243-60-0 53243-59-7 93893-89-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Methyl-5-phenylpent-2-enenitrile 2-Pentenenitrile, 3-methyl-5-phenyl- (isomer unspecified) (Z)-3-Methyl-5-phenylpent-2-enenitrile 2-Pentenenitrile, 3-methyl-5-phenyl-, (Z)- (E)-3-Methyl-5-phenylpent-2-enenitrile 2-Pentenenitrile, 3-methyl-5-phenyl-, (E)- Citronitrile (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.021 %	Category 7A	0.24 %
Category 2	0.0062 %	Category 7B	0.24 %
Category 3	0.12 %	Category 8	0.0097 %
Category 4	0.12 %	Category 9	0.23 %
Category 5A	0.029 %	Category 10A	0.81 %
Category 5B	0.029 %	Category 10B	0.81 %
Category 5C	0.029 %	Category 11A	0.0097 %
Category 5D	0.0097 %	Category 11B	0.0097 %

3-Methyl-5-phenylpent-2-enenitrile

Category 6	0.065 %	Category 12	65 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Methyl-5-phenylpent-2-enenitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-5-phenylpent-2-enenitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Methyl-5-phenylpent-2-enenitrile in the various product categories.

REFERENCES:

The IFRA Standard on 3-Methyl-5-phenylpent-2-enenitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Methyl-5-phenylpent-2-enenitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

3-Methyl-5-phenylpent-2-enenitrile

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Octen-2-one

CAS-No.:	1669-44-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Octen-2-one Oct-3-en-2-one Methyl hexenyl ketone 1-Hexenyl methyl ketone

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %
Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %
Category 5B	0.012 %	Category 10B	0.33 %
Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

3-Octen-2-one

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Octen-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Octen-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Octen-2-one in the various product categories.

REFERENCES:

The IFRA Standard on 3-Octen-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Octen-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

3-Octen-2-one

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dimethyl octenone

CAS-No.:	2550-11-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Dimethyl octenone 4,7-Dimethyloct-6-en-3-one 6-Octen-3-one, 4,7-dimethyl-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.18 %	Category 7A	0.55 %
Category 2	0.10 %	Category 7B	0.55 %
Category 3	0.37 %	Category 8	0.12 %
Category 4	1.9 %	Category 9	1.5 %
Category 5A	0.48 %	Category 10A	0.73 %
Category 5B	0.37 %	Category 10B	2.4 %
Category 5C	0.48 %	Category 11A	0.12 %
Category 5D	0.12 %	Category 11B	0.12 %
Category 6	0.18 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

Dimethyl octenone

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dimethyl octenone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethyl octenone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dimethyl octenone in the various product categories.

REFERENCES:

The IFRA Standard on Dimethyl octenone is based on at least one of the following publications:

• The RIFM Safety Assessment on Dimethyl octenone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Dimethyl octenone

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isopentylcyclohexanone

CAS-No.:	16587-71-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Isopentylcyclohexanone 4-(1,1-Dimethylpropyl)cyclohexanone 4-t-Amylcyclohexanone 4-tert-Amylcyclohexanone 4-tert-Pentylcyclohexanone Cyclohexanone, 4-(1,1-dimethylpropyl)- p-tert Amyl cyclohexanone Orris hexanone 4-(2-Methylbutan-2-yl)cyclohexan-1-one Orivone (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.027 %	Category 7A	0.24 %
Category 2	0.0080 %	Category 7B	0.24 %
Category 3	0.16 %	Category 8	0.013 %
Category 4	0.15 %	Category 9	0.29 %
Category 5A	0.038 %	Category 10A	0.061 %
Category 5B	0.038 %	Category 10B	1.1 %
Category 5C	0.038 %	Category 11A	0.013 %

Isopentylcyclohexanone

Category 5D	0.013 %	Category 11B	0.013 %
Category 6	0.061 %	Category 12	61 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isopentylcyclohexanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isopentylcyclohexanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isopentylcyclohexanone in the various product categories.

REFERENCES:

The IFRA Standard on Isopentylcyclohexanone is based on at least one of the following publications:

• The RIFM Safety Assessment on Isopentylcyclohexanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

Isopentylcyclohexanone

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Woody furan

CAS-No.:	351343-77-6 338735-71-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Woody furan 2,6,6,7,8,8-hexamethyldecahydro-2H-indeno[4,5-b]furan Decahydro-2,6,6,7,8,8-hexamethyl-2H-indeno[4,5-b]furan 8H-Indeno(4,5-B)furan,2,3,3a,4,5,5a,6,7,8a,9-decahydro-2,6,6,7,8,8-hexamethyl (mixture of isomers) 1H-Indene, 2,3,3a,4,5,7a-hexahydro-1,1,2,3,3-pentamethyl-6-(2-propenyl)- Trisamber (commercial name) Tris amber super (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.17 %	Category 7A	1.9 %
Category 2	0.050 %	Category 7B	1.9 %
Category 3	1.0 %	Category 8	0.080 %
Category 4	0.94 %	Category 9	1.8 %
Category 5A	0.24 %	Category 10A	4.1 %
Category 5B	0.24 %	Category 10B	6.6 %
Category 5C	0.24 %	Category 11A	0.080 %
Category 5D	0.080 %	Category 11B	0.080 %

Woody furan

Category 6	0.56 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Woody furan, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Woody furan and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Woody furan in the various product categories.

REFERENCES:

The IFRA Standard on Woody furan is based on at least one of the following publications:

• The RIFM Safety Assessment on Woody furan if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the

Woody furan

Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl 3-cyclohexylpropionate

CAS-No.:	2705-87-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Allyl 3-cyclohexylpropionate 2-Propen-1-yl cyclohexanepropionate Allyl 3-cyclohexylpropanoate Allyl beta-cyclohexylpropionate Allyl β-cyclohexylpropionate Allyl cyclohexanepropionate Allyl cyclohexylpropionate Allyl hexahydrophenylpropionate Cyclohexanepropionic acid, 2-propenyl ester Prop-2-enyl 3-cyclohexylpropanoate Cyclohexylpropionic acid allyl ester

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.70 %
Category 2	0.025 %	Category 7B	0.70 %
Category 3	0.35 %	Category 8	0.040 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	0.7 %
Category 5B	0.12 %	Category 10B	3.3 %
Category 5C	0.12 %	Category 11A	0.040 %

Allyl 3-cyclohexylpropionate

Category 5D	0.040 %	Category 11B	0.040 %
Category 6	0.28 %	Category 12	No restriction

FRAGRANCE INGREDIENT SPECIFICATION:	According to the IFRA Specification Standard of Allyl esters, Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol. Please also refer to the IFRA Specification Standard Allyl esters.
FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Allyl 3-cyclohexylpropionate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl 3-cyclohexylpropionate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Allyl 3-cyclohexylpropionate in the various product categories.

Allyl 3-cyclohexylpropionate

In addition, they recommend to use Allyl 3-cyclohexylpropionate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Allyl 3-cyclohexylpropionate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl 3-cyclohexylpropionate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Amylcinnamicaldehyde diethyl acetal

CAS-No.:	60763-41-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	alpha-Amylcinnamicaldehyde diethyl acetal α-Amylcinnamicaldehyde diethyl acetal [2-(Diethoxymethyl)hept-1-en-1-yl]benzene 1,1-Diethoxy-2-amyl-3-phenyl-2-propene 1,1-Diethoxy-2-amyl-3-phenylacrolein 2-Diethoxymethyl-1-phenylhept-1-ene Benzene, [2-(diethoxymethyl)-1-heptenyl]- 2-(Diethoxymethyl)hept-1-enylbenzene

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.063 %	Category 7A	0.72 %
Category 2	0.019 %	Category 7B	0.72 %
Category 3	0.38 %	Category 8	0.037 %
Category 4	0.35 %	Category 9	0.69 %
Category 5A	0.089 %	Category 10A	2.5 %
Category 5B	0.089 %	Category 10B	2.5 %
Category 5C	0.089 %	Category 11A	1.4 %
Category 5D	0.089 %	Category 11B	1.4 %

alpha-Amylcinnamicaldehyde diethyl acetal

Category 6	0.21 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amylcinnamicaldehyde diethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amylcinnamicaldehyde diethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amylcinnamicaldehyde diethyl acetal in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Amylcinnamicaldehyde diethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Amylcinnamicaldehyde diethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

alpha-Amylcinnamicaldehyde diethyl acetal

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Amylcinnamicaldehyde dimethyl acetal

CAS-No.:	91-87-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	alpha-Amylcinnamicaldehyde dimethyl acetal α-Amylcinnamicaldehyde dimethyl acetal alpha-Amylcinnamaldehyde dimethyl acetal α-Amylcinnamaldehyde dimethyl acetal [2-(Dimethoxymethyl)hept-1-en-1-yl]benzene 1,1-Dimethoxy-2-amyl-3-phenyl-2-propene 1,1-Dimethoxy-2-benzylideneheptane alpha-Amyl-beta-phenylacrolein dimethyl acetal α-Amyl-β-phenylacrolein dimethyl acetal alpha-Pentylcinnamaldehyde dimethyl acetal α-Pentylcinnamaldehyde dimethyl acetal Benzene, [2-(dimethoxymethyl)-1-heptenyl]- [2-(Dimethoxymethyl)-1-heptenyl]benzene

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.063 %	Category 7A	0.72 %
Category 2	0.019 %	Category 7B	0.72 %
Category 3	0.38 %	Category 8	0.037 %
Category 4	0.35 %	Category 9	0.69 %
Category 5A	0.089 %	Category 10A	2.5 %
Category 5B	0.089 %	Category 10B	2.5 %

alpha-Amylcinnamicaldehyde dimethyl acetal

Category 5C	0.089 %	Category 11A	1.4 %
Category 5D	0.089 %	Category 11B	1.4 %
Category 6	0.21 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amylcinnamicaldehyde dimethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amylcinnamicaldehyde dimethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amylcinnamicaldehyde dimethyl acetal in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Amylcinnamicaldehyde dimethyl acetal is based on at least one of the following publications:

alpha-Amylcinnamicaldehyde dimethyl acetal

• The RIFM Safety Assessment on alpha-Amylcinnamicaldehyde dimethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

alpha-Cyclohexylidene benzeneacetonitrile

CAS-No.:	10461-98-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	alpha-Cyclohexylidene benzeneacetonitrile α-Cyclohexylidene benzeneacetonitrile .delta.1,.alpha.-Cyclohexaneacetonitrile, .alpha.-phenyl- .δ.1,.α.-Cyclohexaneacetonitrile, .α.-phenyl- 2-Cyclohexylidene-2-phenylacetonitrile Benzeneacetonitrile, alpha-cyclohexylidene- Benzeneacetonitrile, α-cyclohexylidene- Peonile (commercial name) Rosinile (commercial name) Sensinile (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.052 %	Category 7A	0.94 %
Category 2	0.027 %	Category 7B	0.94 %
Category 3	0.47 %	Category 8	0.043 %
Category 4	0.52 %	Category 9	1.0 %
Category 5A	0.13 %	Category 10A	2.9 %
Category 5B	0.13 %	Category 10B	3.6 %
Category 5C	0.13 %	Category 11A	0.043 %

alpha-Cyclohexylidene benzeneacetonitrile

Category 5D	0.043 %	Category 11B	0.043 %
Category 6	0.052 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Cyclohexylidene benzeneacetonitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Cyclohexylidene benzeneacetonitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Cyclohexylidene benzeneacetonitrile in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Cyclohexylidene benzeneacetonitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on alpha-Cyclohexylidene benzeneacetonitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

alpha-Cyclohexylidene benzeneacetonitrile

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

5-Hexen-1-yl 2-methylbutanoate

CAS-No.:	155514-23-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	5-Hexen-1-yl 2-methylbutanoate Hex-5-en-1-yl 2-methylbutanoate Butanoic acid, 2-methyl-, 5-hexen-1-yl ester Fructate (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.12 %	Category 7A	1.3 %
Category 2	0.034 %	Category 7B	1.3 %
Category 3	0.69 %	Category 8	0.068 %
Category 4	0.64 %	Category 9	1.3 %
Category 5A	0.16 %	Category 10A	4.5 %
Category 5B	0.16 %	Category 10B	4.5 %
Category 5C	0.16 %	Category 11A	2.5 %
Category 5D	0.16 %	Category 11B	2.5 %
Category 6	0.38 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

5-Hexen-1-yl 2-methylbutanoate

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 5-Hexen-1-yl 2-methylbutanoate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 5-Hexen-1-yl 2-methylbutanoate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 5-Hexen-1-yl 2-methylbutanoate in the various product categories.

REFERENCES:

The IFRA Standard on 5-Hexen-1-yl 2-methylbutanoate is based on at least one of the following publications:

• The RIFM Safety Assessment on 5-Hexen-1-yl 2-methylbutanoate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

5-Hexen-1-yl 2-methylbutanoate

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Carvyl acetate

CAS-No.:	97-42-7 1205-42-1 1134-95-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Carvyl acetate 2-Cyclohexen-1-ol, 2-methyl-5-(1-methylethenyl)-, acetate 5-Isopropenyl-2-methylcyclohex-2-en-1-yl acetate p-Mentha-6,8-dien-2-yl acetate p-Mentha-6,8-dien-2-ol, acetate 2-Cyclohexen-1-ol, 2-methyl-5-(1-methylethenyl)-, acetate, cis- 5-Isopropenyl-2-methylcyclohex-2-en-1-yl acetate, cis- p-Mentha-6,8-dien-2-ol, acetate, cis- l-1-p-Mentha-6,8(9)-dien-2-yl acetate cis-Carvyl acetate laevo-Carvyl acetate 1-Carvyl acetate cis-2-Methyl-5-(1-methylvinyl)cyclohex-2-en-1-yl acetate 2-Cyclohexen-1-ol, 2-methyl-5-(1-methylethenyl)-, acetate, trans- 5-Isopropenyl-2-methyl-2-cyclohexen-1-yl acetate, trans- p-Mentha-6,8-dien-2-ol, acetate, trans- trans-Carvyl acetate (E)-Carvyl acetate Carvyl acetate E

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.042 %	Category 7A	0.48 %
Category 2	0.013 %	Category 7B	0.48 %
Category 3	0.25 %	Category 8	0.025 %

Carvyl acetate

Category 4	0.24 %	Category 9	0.46 %
Category 5A	0.060 %	Category 10A	1.7 %
Category 5B	0.060 %	Category 10B	1.7 %
Category 5C	0.060 %	Category 11A	0.92 %
Category 5D	0.060 %	Category 11B	0.92 %
Category 6	0.14 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Carvyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Carvyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Carvyl acetate in the various product categories.

REFERENCES:

Carvyl acetate

The IFRA Standard on Carvyl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Carvyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis-3-Heptenyl acetate

CAS-No.:	1576-78-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	cis-3-Heptenyl acetate (Z)-Hept-3-enyl acetate 3-Hepten-1-ol, acetate, (Z)- Hept-3-en-1-yl acetate 3-Hepten-1-yl acetate (Z)-3-hepten-1-yl acetate Violana (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.037 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	0.037 %
Category 5D	0.037 %	Category 11B	0.037 %
Category 6	0.25 %	Category 12	No restriction

cis-3-Heptenyl acetate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Heptenyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Heptenyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Heptenyl acetate in the various product categories.

REFERENCES:

The IFRA Standard on cis-3-Heptenyl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on cis-3-Heptenyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19

cis-3-Heptenyl acetate

(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis-3-Hexenyl isovalerate

CAS-No.:	35154-45-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	cis-3-Hexenyl isovalerate (Z)-Hex-3-enyl isovalerate Hex-3-en-1-yl 3-methylbutanoate Isovaleric acid, 3-hexenyl ester, (z)- (Z)-3-Hexen-1-yl isovalerate

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.037 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	1.8 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	0.037 %
Category 5D	0.037 %	Category 11B	0.037 %
Category 6	0.25 %	Category 12	No restriction

cis-3-Hexenyl isovalerate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Hexenyl isovalerate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Hexenyl isovalerate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Hexenyl isovalerate in the various product categories.

REFERENCES:

The IFRA Standard on cis-3-Hexenyl isovalerate is based on at least one of the following publications:

• The RIFM Safety Assessment on cis-3-Hexenyl isovalerate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

cis-3-Hexenyl isovalerate

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis-3-Hexenyl methyl carbonate

CAS-No.:	67633-96-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	cis-3-Hexenyl methyl carbonate Carbonic acid, 3-hexenyl methyl ester, (Z)- cis-3-Hexenyl carbonate cis-3-Hexenyl methyl carbonate Hex-3-en-1-yl methyl carbonate Methyl cis-3-hexenyl carbonate (Z)-3-Hexen-1-yl methyl carbonate Liffarome (commercial name) Leafovert (commercial name) Vertelione (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.10 %	Category 7A	1.1 %
Category 2	0.030 %	Category 7B	1.1 %
Category 3	0.60 %	Category 8	0.047 %
Category 4	0.56 %	Category 9	1.1 %
Category 5A	0.14 %	Category 10A	3.9 %
Category 5B	0.14 %	Category 10B	3.9 %
Category 5C	0.14 %	Category 11A	0.047 %

cis-3-Hexenyl methyl carbonate

Category 5D	0.047 %	Category 11B	0.047 %
Category 6	0.33 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Hexenyl methyl carbonate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Hexenyl methyl carbonate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Hexenyl methyl carbonate in the various product categories.

REFERENCES:

The IFRA Standard on cis-3-Hexenyl methyl carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on cis-3-Hexenyl methyl carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

cis-3-Hexenyl methyl carbonate

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis-3-Nonenyl acetate

CAS-No.:	13049-88-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	cis-3-Nonenyl acetate (Z)-3-Nonenyl acetate 3-Nonen-1-ol, acetate, (3Z)- (Z)-3-Nonen-1-yl acetate Acetic acid 3-nonenyl ester Pear acetate (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.037 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	0.037 %
Category 5D	0.037 %	Category 11B	0.037 %
Category 6	0.25 %	Category 12	No restriction

cis-3-Nonenyl acetate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Nonenyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Nonenyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Nonenyl acetate in the various product categories.

REFERENCES:

The IFRA Standard on cis-3-Nonenyl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on cis-3-Nonenyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

cis-3-Nonenyl acetate

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citronellyl acetate

CAS-No.:	150-84-5 67601-05-2 141-11-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Citronellyl acetate 3,7-Dimethyl-6-octen-1-ol acetate 3,7-Dimethyl-6-octen-1-yl acetate 3,7-Dimethyloct-6-en-1-yl acetate 6-Octen-1-ol, 3,7-dimethyl-, acetate Acetic acid, citronellyl ester laevo-Citronellyl acetate 3,7-Dimethyloct-6-enyl acetate 6-Octen-1-ol, 3,7-dimethyl-, 1-acetate (3S)- 6-Octen-1-ol, 3,7-dimethyl-, acetate (S)- (S)-3,7-Dimethyloct-6-en-1-yl acetate (-)-3,7-dimethyloct-6-enyl acetate alpha-Citronellyl acetate 3,7-Dimethyl-(6-or 7-)octen-1-yl acetate 3,7-Dimethyl-(6-or 7-)octen-1-yl ethanoate 3,7-Dimethyloct-7-en-1-yl acetate 7-Octen-1-ol, 3,7-dimethyl-, acetate 3,7-Dimethyl-7-octen-1-yl acetate 3,7-Dimethyl-7-octen-1-yl ethanoate (S)-3,7-Dimethyloct-7-enyl acetate Rhodinyl acetate Rhodinyl ethanoate L-Citronellyl acetate (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.49 %	Category 7A	2.4 %

Citronellyl acetate

Category 2	0.15 %	Category 7B	2.4 %
Category 3	2.0 %	Category 8	0.23 %
Category 4	2.7 %	Category 9	5.4 %
Category 5A	0.70 %	Category 10A	0.41 %
Category 5B	0.70 %	Category 10B	16 %
Category 5C	0.70 %	Category 11A	0.23 %
Category 5D	0.23 %	Category 11B	0.23 %
Category 6	0.82 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Citronellyl acetate

The Expert Panel for Fragrance Safety reviewed all the available data for Citronellyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citronellyl acetate in the various product categories.

REFERENCES:

The IFRA Standard on Citronellyl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Citronellyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclohexadecanone

CAS-No.:	2550-52-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cyclohexadecanone Homoexaltone Isomuscone (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.25 %	Category 7A	7.4 %
Category 2	0.23 %	Category 7B	7.4 %
Category 3	4.4 %	Category 8	0.37 %
Category 4	4.3 %	Category 9	8.4 %
Category 5A	1.1 %	Category 10A	0.98 %
Category 5B	1.1 %	Category 10B	13 %
Category 5C	1.1 %	Category 11A	0.37 %
Category 5D	0.37 %	Category 11B	0.37 %
Category 6	0.25 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

Cyclohexadecanone

	Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclohexadecanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclohexadecanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclohexadecanone in the various product categories.

REFERENCES:

The IFRA Standard on Cyclohexadecanone is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclohexadecanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Cyclohexadecanone

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclohexadecenone

CAS-No.:	3100-36-5 88642-03-9 5365-06-0 2550-59-6 5120-20-7 854373-71-0 854373-70-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Cyclohexadecenone Cyclohexadec-2-en-1-one Cyclohexadec-8(7)-en-1-one 8-Cyclohexadecen-1-one, (8E) (Z)-Cyclohexadec-8-enone 7-Cyclohexadecen-1-one 8-Cyclohexadecen-1-one Cyclohexadec-8-en-1-one mixture of cis and trans isomer Cyclohexadec-8-en-1-one 8-Cyclohexadecen-1-one, (8Z) 8-Cyclohexadecen-1-one, (Z) (Z)-8-Cyclohexadecen-1-one 8-Cyclohexadecenone cis-Cyclohexadec-8-en-1-on 8-cis-Cyclohexadecen-1-on 7-Cyclohexadecen-1-one, (7Z) 7-Cyclohexadecen-1-one, (7E) (E)-Cyclohexadec-7-enone Globanone (commercial name) Aurelione (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

Cyclohexadecenone

Category 1	0.43 %	Category 7A	3.5 %
Category 2	0.23 %	Category 7B	3.5 %
Category 3	2.2 %	Category 8	0.14 %
Category 4	4.3 %	Category 9	8.4 %
Category 5A	1.1 %	Category 10A	7.3 %
Category 5B	1.1 %	Category 10B	30 %
Category 5C	0.43 %	Category 11A	0.14 %
Category 5D	0.14 %	Category 11B	0.14 %
Category 6	0.43 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclohexadecenone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center:

Cyclohexadecenone

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclohexadecenone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclohexadecenone in the various product categories.

REFERENCES:

The IFRA Standard on Cyclohexadecenone is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclohexadecenone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(2,2,6-Trimethylcyclohexyl)-3-pentanol

CAS-No.:	60241-53-4 60241-52-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	1-(2,2,6-Trimethylcyclohexyl)-3-pentanol Cyclohexanepropanol, α-ethyl-2,2,6-trimethyl- Cyclohexanepropanol, alpha-ethyl-2,2,6-trimethyl- alpha-Ethyl-2,2,6-trimethylcyclohexanepropanol α-Ethyl-2,2,6-trimethylcyclohexanepropanol .alpha.,.beta.,2,2,6-Pentamethylcyclohexanepropanol .α.,.β.,2,2,6-Pentamethylcyclohexanepropanol 3-Methyl-4-(2,2,6-trimethylcyclohexyl)butan-2-ol 4-(2,6,6-Trimethylcyclohexyl)-3-methylbutan-2-ol Cyclohexanepropanol, .α.,.β.,2,2,6-pentamethyl- Cyclohexanepropanol, .alpha.,.beta.,2,2,6-pentamethyl- Methyltetrahydroionol Iso-methyl tetrahydroionol Madranol (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.096 %	Category 7A	2.7 %
Category 2	0.071 %	Category 7B	2.7 %
Category 3	1.4 %	Category 8	0.032 %
Category 4	1.3 %	Category 9	2.6 %
Category 5A	0.34 %	Category 10A	3.4 %

1-(2,2,6-Trimethylcyclohexyl)-3-pentanol

Category 5B	0.34 %	Category 10B	9.3 %
Category 5C	0.096 %	Category 11A	0.032 %
Category 5D	0.032 %	Category 11B	0.032 %
Category 6	0.096 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol in the various product categories.

REFERENCES:

1-(2,2,6-Trimethylcyclohexyl)-3-pentanol

The IFRA Standard on 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

(Ethoxymethoxy)-cyclododecane

CAS-No.:	58567-11-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	(Ethoxymethoxy)-cyclododecane Cyclododecane, (ethoxymethoxy)- Formaldehyde cyclododecyl ethyl acetal Amber decane Amberwood 2-Cyclododecyl propanol Amberwood F (commercial name) Boisambrene forte (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.13 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %
Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	0.13 %
Category 5D	0.13 %	Category 11B	0.13 %

(Ethoxymethoxy)-cyclododecane

Category 6	0.49 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for (Ethoxymethoxy)-cyclododecane, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for (Ethoxymethoxy)-cyclododecane and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of (Ethoxymethoxy)-cyclododecane in the various product categories.

REFERENCES:

The IFRA Standard on (Ethoxymethoxy)-cyclododecane is based on at least one of the following publications:

• The RIFM Safety Assessment on (Ethoxymethoxy)-cyclododecane if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers

(Ethoxymethoxy)-cyclododecane

K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6-Hydroxy-2,6-dimethylheptanal

CAS-No.:	62439-42-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	6-Hydroxy-2,6-dimethylheptanal Heptanal, 6-hydroxy-2,6-dimethyl-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.22 %	Category 7A	1.8 %
Category 2	0.066 %	Category 7B	1.8 %
Category 3	1.3 %	Category 8	0.11 %
Category 4	1.2 %	Category 9	2.4 %
Category 5A	0.32 %	Category 10A	0.91 %
Category 5B	0.32 %	Category 10B	8.7 %
Category 5C	0.32 %	Category 11A	0.11 %
Category 5D	0.11 %	Category 11B	0.11 %
Category 6	0.73 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

6-Hydroxy-2,6-dimethylheptanal

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 6-Hydroxy-2,6-dimethylheptanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6-Hydroxy-2,6-dimethylheptanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 6-Hydroxy-2,6-dimethylheptanal in the various product categories.

REFERENCES:

The IFRA Standard on 6-Hydroxy-2,6-dimethylheptanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Hydroxy-2,6-dimethylheptanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

6-Hydroxy-2,6-dimethylheptanal

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isobutyl cinnamate

CAS-No.:	122-67-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Isobutyl cinnamate 2-Methylpropyl 3-phenylpropenoate 2-Methylpropyl beta-phenylacrylate 2-Methylpropyl β-phenylacrylate 2-Methylpropyl cinnamate 2-Propenoic acid, 3-phenyl-, 2-methylpropyl ester Isobutyl 3-phenylacrylate Isobutyl 3-phenylpropenoate Isobutyl beta-phenylacrylate Labdanol 3-Phenylpropenoic acid isobutyl ester 2-methylpropyl (E)-3-phenylprop-2-enoate

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.22 %	Category 7A	2.5 %
Category 2	0.066 %	Category 7B	2.5 %
Category 3	1.3 %	Category 8	0.11 %
Category 4	1.2 %	Category 9	2.4 %
Category 5A	0.32 %	Category 10A	0.55 %
Category 5B	0.32 %	Category 10B	0.55 %

Isobutyl cinnamate

Category 5C	0.32 %	Category 11A	0.11 %
Category 5D	0.11 %	Category 11B	0.11 %
Category 6	0.73 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isobutyl cinnamate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isobutyl cinnamate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isobutyl cinnamate in the various product categories.

REFERENCES:

The IFRA Standard on Isobutyl cinnamate is based on at least one of the following publications:

• The RIFM Safety Assessment on Isobutyl cinnamate if available at the RIFM Fragrance Material Safety

Isobutyl cinnamate

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isoeugenyl acetate

CAS-No.:	93-29-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Isoeugenyl acetate 2-Methoxy-4-prop-1-en-1-ylphenyl acetate 2-Methoxy-4-propenylphenyl acetate 4-Acetoxy-3-methoxy-1-(1-propen-1-yl)benzene Acetisoeugenol Acetyl isoeugenol Isoeugenol acetate Phenol, 2-methoxy-4-(1-propenyl)-, acetate 1-Acetoxy-2-methoxy-4-(1-propenyl)benzene Acetic acid isoeugenyl ester

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.18 %	Category 7A	0.061 %
Category 2	0.053 %	Category 7B	0.061 %
Category 3	0.061 %	Category 8	0.020 %
Category 4	0.99 %	Category 9	0.20 %
Category 5A	0.25 %	Category 10A	0.061 %
Category 5B	0.061 %	Category 10B	0.45 %
Category 5C	0.082 %	Category 11A	0.020 %

Isoeugenyl acetate

Category 5D	0.020 %	Category 11B	0.020 %
Category 6	0.020 %	Category 12	16 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isoeugenyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isoeugenyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isoeugenyl acetate in the various product categories.

REFERENCES:

The IFRA Standard on Isoeugenyl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Isoeugenyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients.

Isoeugenyl acetate

Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate

CAS-No.:	68966-86-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate Bicyclo[2.2.2]oct-5-ene-2-carboxylic acid, 1(or 4)-methyl-4(or 1)-(1-methylethyl)-, methyl ester Methyl 4(or 1)-isopropyl-1(or 4)-methylbicyclo[2.2.2]oct-5-ene-2-carboxylate Mahagonat (commercial name) Poivrol (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.17 %	Category 7A	0.85 %
Category 2	0.050 %	Category 7B	0.85 %
Category 3	0.85 %	Category 8	0.080 %
Category 4	0.94 %	Category 9	1.8 %
Category 5A	0.24 %	Category 10A	2.0 %
Category 5B	0.24 %	Category 10B	6.6 %
Category 5C	0.24 %	Category 11A	0.080 %
Category 5D	0.080 %	Category 11B	0.080 %
Category 6	0.17 %	Category 12	No restriction

4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate in the various product categories.

REFERENCES:

The IFRA Standard on 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the

4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate

Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl vanillyl ether

CAS-No.:	5533-03-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methyl vanillyl ether 2-Methoxy-4-(methoxymethyl)phenol Phenol, 2-methoxy-4-(methoxymethyl)- 4-Hydroxy-3-methoxybenzyl methyl ether Mevanyl (commercial name) Vani-White (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.065 %	Category 7A	0.065 %
Category 2	0.080 %	Category 7B	0.065 %
Category 3	0.065 %	Category 8	0.022 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	5.8 %
Category 5B	0.065 %	Category 10B	11 %
Category 5C	0.065 %	Category 11A	0.022 %
Category 5D	0.022 %	Category 11B	0.022 %
Category 6	0.065 %	Category 12	No restriction

Methyl vanillyl ether

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl vanillyl ether, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl vanillyl ether and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl vanillyl ether in the various product categories.

REFERENCES:

The IFRA Standard on Methyl vanillyl ether is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl vanillyl ether if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Methyl vanillyl ether

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Myraldyl acetate

CAS-No.:	72403-67-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Myraldyl acetate 3(or 4)-(4-Methylpenten-3-yl)cyclohex-3-ene-1-methyl acetate 3-Cyclohexene-1-methanol, 3(or 4)-(4-methyl-3-pentenyl)-, acetate 4(or 3)-(4-Methyl-3-pentenyl)-3-cyclohexenylmethyl acetate & isomers

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

Myraldyl acetate

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Myraldyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Myraldyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Myraldyl acetate in the various product categories.

REFERENCES:

The IFRA Standard on Myraldyl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Myraldyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

Myraldyl acetate

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers)

CAS-No.:	68991-96-8 68991-97-9 68738-96-5 68738-94-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2-Naphthalenecarboxaldehyde, octahydro-8,8-dimethyl- Dimethyloctahydro-2-naphthaldehyde Octahydro-8,8-dimethyl-2-naphthalenecarboxaldehyde Octahydro-8,8-dimethylnaphthalene-2-carbaldehyde 2-Naphthalenecarboxaldehyde, octahydro-5,5-dimethyl- Octahydro-5,5-dimethylnaphthalene-2-carbaldehyde 1,2,3,4,5,6,7,8-Octahydro-5,5-dimethylnaphthalene-2-carbaldehyde 2-Naphthalenecarboxaldehyde, 1,2,3,4,5,6,7,8-octahydro-5,5-dimethyl- 5,5-Dimethyl-1,2,3,4,5,6,7,8-octahydro-2-naphthalenecarboxaldehyde 1,2,3,4,5,6,7,8-Octahydro-8,8-dimethyl-2-naphthaldehyde 2-Naphthalenecarboxaldehyde, 1,2,3,4,5,6,7,8-octahydro-8,8-dimethyl- 8,8-Dimethyl-1,2,3,4,5,6,7,8-octahydro-2-naphthalenecarboxaldehyde Melafleur (commercial name) Cyclemone A (commercial name) Cyclomeral (commercial name) Cyclomyral (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.38 %	Category 7A	4.4 %
Category 2	0.11 %	Category 7B	4.4 %
Category 3	2.3 %	Category 8	0.23 %

Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers)

Category 4	2.1 %	Category 9	4.2 %
Category 5A	0.54 %	Category 10A	15 %
Category 5B	0.54 %	Category 10B	15 %
Category 5C	0.54 %	Category 11A	8.3 %
Category 5D	0.54 %	Category 11B	8.3 %
Category 6	1.3 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) and recommends the concentrations for the 12 different product

Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers)

categories, which are the maximum acceptable concentrations of Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) in the various product categories.

REFERENCES:

The IFRA Standard on Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) is based on at least one of the following publications:

• The RIFM Safety Assessment on Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Cresol

CAS-No.:	106-44-5 1319-77-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	106-44-5: p-Cresol 1-Hydroxy-4-methylbenzene 1-Methyl-4-hydroxybenzene 4-Cresol 4-Methylphenol para-Cresol p-Cresylic acid Phenol, 4-methyl- p-Hydroxytoluene p-Methylphenol 1319-77-3: Cresols Cresol (mixed isomers) Cresol, pure Methylphenol Mixed cresols Phenol, methyl-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0050 %	Category 7A	0.0050 %
Category 2	0.0050 %	Category 7B	0.0050 %
Category 3	0.0050 %	Category 8	0.0017 %

p-Cresol

Category 4	0.0050 %	Category 9	0.0050 %
Category 5A	0.0050 %	Category 10A	0.0050 %
Category 5B	0.0050 %	Category 10B	0.0050 %
Category 5C	0.0050 %	Category 11A	0.0017 %
Category 5D	0.0017 %	Category 11B	0.0017 %
Category 6	0.0050 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DEPIGMENTATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Cresol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Cresol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Cresol in the various product categories.

REFERENCES:

p-Cresol

The IFRA Standard on p-Cresol is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Cresol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Phenoxyacetaldehyde

CAS-No.:	2120-70-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Phenoxyacetaldehyde Acetaldehyde, phenoxy- Cortex aldehyde 50 2-Phenoxyacetaldehyde Acetaldehyde, 2-phenoxy-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.24 %
Category 2	0.014 %	Category 7B	0.24 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %
Category 5A	0.064 %	Category 10A	0.48 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %
Category 6	0.15 %	Category 12	No restriction

Phenoxyacetaldehyde

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Phenoxyacetaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Phenoxyacetaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Phenoxyacetaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Phenoxyacetaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Phenoxyacetaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Phenoxyacetaldehyde

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Carvomenthone

CAS-No.:	499-70-7 59471-80-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Carvomenthone trans-p-Menthan-2-one p-Menthan-2-one trans-5-Isopropyl-2-methylcyclohexan-1-one 5-Isopropyl-2-methylcyclohexanone Cyclohexanone, 2-methyl-5-(1-methylethyl)-, trans- Tetrahydrocarvone Cyclohexanone, 2-methyl-5-(1-methylethyl)-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.0019 %	Category 7A	0.0019 %
Category 2	0.0019 %	Category 7B	0.0019 %
Category 3	0.0019 %	Category 8	0.00064 %
Category 4	1.9 %	Category 9	0.054 %
Category 5A	0.079 %	Category 10A	0.0019 %
Category 5B	0.0019 %	Category 10B	0.0019 %
Category 5C	0.019 %	Category 11A	0.00064 %
Category 5D	0.00064 %	Category 11B	0.00064 %

Carvomenthone

Category 6	0.027 %	Category 12	0.0019 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Carvomenthone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Carvomenthone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Carvomenthone in the various product categories.

REFERENCES:

The IFRA Standard on Carvomenthone is based on at least one of the following publications:

• The RIFM Safety Assessment on Carvomenthone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the

Carvomenthone

Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-tert-Butylcyclohexanone

CAS-No.:	98-53-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	4-tert-Butylcyclohexanone para-tert-Butylcyclohexanone p-tert-Butylcyclohexanone Cyclohexanone, 4-(1,1-dimethylethyl)-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.027 %	Category 7A	0.26 %
Category 2	0.0080 %	Category 7B	0.26 %
Category 3	0.16 %	Category 8	0.013 %
Category 4	0.15 %	Category 9	0.29 %
Category 5A	0.038 %	Category 10A	0.13 %
Category 5B	0.038 %	Category 10B	0.52 %
Category 5C	0.038 %	Category 11A	0.013 %
Category 5D	0.013 %	Category 11B	0.013 %
Category 6	0.088 %	Category 12	58 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

4-tert-Butylcyclohexanone

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-tert-Butylcyclohexanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-tert-Butylcyclohexanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-tert-Butylcyclohexanone in the various product categories.

REFERENCES:

The IFRA Standard on 4-tert-Butylcyclohexanone is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-tert-Butylcyclohexanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

4-tert-Butylcyclohexanone

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

7-Methoxy-3,7-dimethyloct-1-ene

CAS-No.:	53767-86-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	7-Methoxy-3,7-dimethyloct-1-ene 1-Octene, 7-methoxy-3,7-dimethyl-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.000010 %	Category 7A	0.000010 %
Category 2	0.000010 %	Category 7B	0.000010 %
Category 3	0.000010 %	Category 8	0.0000033 %
Category 4	0.000010 %	Category 9	0.0042 %
Category 5A	0.042 %	Category 10A	0.000010 %
Category 5B	0.000010 %	Category 10B	0.61 %
Category 5C	0.000010 %	Category 11A	0.0000033 %
Category 5D	0.0000033 %	Category 11B	0.0000033 %
Category 6	0.000010 %	Category 12	0.1 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply

7-Methoxy-3,7-dimethyloct-1-ene

	with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 7-Methoxy-3,7-dimethyloct-1-ene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methoxy-3,7-dimethyloct-1-ene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 7-Methoxy-3,7-dimethyloct-1-ene in the various product categories.

REFERENCES:

The IFRA Standard on 7-Methoxy-3,7-dimethyloct-1-ene is based on at least one of the following publications:

• The RIFM Safety Assessment on 7-Methoxy-3,7-dimethyloct-1-ene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

7-Methoxy-3,7-dimethyloct-1-ene

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methoxycyclododecane

CAS-No.:	2986-54-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	Methoxycyclododecane Cyclododecane, methoxy- Cyclododecyl methyl ether Palisandin

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.000010 %	Category 7A	0.012 %
Category 2	0.023 %	Category 7B	0.012 %
Category 3	0.0015 %	Category 8	0.0000033 %
Category 4	0.43 %	Category 9	0.026 %
Category 5A	0.018 %	Category 10A	0.0092 %
Category 5B	0.0046 %	Category 10B	0.16 %
Category 5C	0.000010 %	Category 11A	0.0000033 %
Category 5D	0.0000033 %	Category 11B	0.0000033 %
Category 6	0.000010 %	Category 12	0.18 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of

Methoxycyclododecane

	fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methoxycyclododecane, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methoxycyclododecane and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methoxycyclododecane in the various product categories.

REFERENCES:

The IFRA Standard on Methoxycyclododecane is based on at least one of the following publications:

• The RIFM Safety Assessment on Methoxycyclododecane if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for

Methoxycyclododecane

aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Acetyl-2,5-dimethylfuran

CAS-No.:	10599-70-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	3-Acetyl-2,5-dimethylfuran 1-(2,5-Dimethyl-3-furyl)ethanone 2,5-Dimethyl-3-acetylfuran Ethanone, 1-(2,5-dimethyl-3-furanyl)-

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	August 30, 2023
	For existing creation*:	July 30, 2024
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	3-Acetyl-2,5-dimethylfuran should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**GENOTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The material 3-Acetyl-2,5-dimethylfuran has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it cannot be safely used as a fragrance ingredient. If the material is found as an impurity in other fragrance ingredients, leading to trace level presence in finished products, please check the latest version of the Guidance to the IFRA Standards for the respective IFRA procedure.

REFERENCES:

The IFRA Standard on 3-Acetyl-2,5-dimethylfuran is based on at least one of the following publications:

3-Acetyl-2,5-dimethylfuran

• The RIFM Safety Assessment on 3-Acetyl-2,5-dimethylfuran if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Takasu, S. et al. 2022, Comprehensive evaluation of general toxicity, genotoxicity, and carcinogenicity of 3 acetyl 2,5 dimethylfuran using gpt delta rats (P-70)

• Kamatsu, T et al. 2021. Development of a new quantitative structure-activity relationship model for predicting Ames mutagenicity of food flavor chemicals using StarDrop™ autoModeller™. Genes and Environment 43 (16).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org

2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-

CAS-No.:	358331-95-0 357650-26-1 847144-75-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.
Synonyms:	2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- (2E,5Z)-5,6,7-Trimethylocta-2,5-dien-4-one 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E,5Z)- 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E,5E)- (2E,5E)-5,6,7-Trimethylocta-2,5-dien-4-one Pomarose (commercial name)

History:	Publication date:	2023 (Amendment 51)	Previous Publications:	Not applicable

Implementation dates:	For new creation*:	March 30, 2024
	For existing creation*:	October 30, 2025
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):			
Category 1	0.019 %	Category 7A	0.22 %
Category 2	0.0057 %	Category 7B	0.22 %
Category 3	0.12 %	Category 8	0.011 %
Category 4	0.11 %	Category 9	0.21 %
Category 5A	0.027 %	Category 10A	0.75 %
Category 5B	0.027 %	Category 10B	0.75 %
Category 5C	0.027 %	Category 11A	0.42 %
Category 5D	0.027 %	Category 11B	0.42 %

2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-

Category 6	0.063 %	Category 12	No restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.
CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**
INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- in the various product categories.

REFERENCES:

The IFRA Standard on 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-

Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

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