

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.	Molecular formula:	C ₁₀ H ₁₂ O ₂
		Structure:	
Synonyms:	4-Allylcatechol-2-methyl ether 1-Allyl-4-hydroxy-3-methoxybenzene 4-Allyl-2-methoxyphenol Caryophyllin 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)- Eugenol Allylguaiacol 4-Allylguaiacol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2004 2006 2007 2008
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Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	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

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

Category 1	0.45 %	Category 7A	1.4 %
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Category 2	0.14 %	Category 7B	1.4 %
Category 3	1.4 %	Category 8	0.21 %
Category 4	2.5 %	Category 9	4.9 %
Category 5A	0.64 %	Category 10A	4.9 %
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	0.64 %	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 I

ANNEX I

Natural Complex Substances (NCS) containing Eugenol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
69	97-53-0	Allspice oil	<i>Pimenta officinalis</i> Lindl.	8006-77-7	G2.12
41.4	97-53-0	Allspice oleoresin	<i>Pimenta officinalis</i> Lindl.	8006-77-7	G2.21
1	97-53-0	Armoise vulgaris oil	<i>Artemisia vulgaris</i> L.	68991-20-8	E2.12
0.9	97-53-0	<i>Artemisia arborescens</i> extract	<i>Artemisia arborescens</i> L.	92113-09-2	E2.12
0.03	97-53-0	Balsam oil, Peru	<i>Myroxylon balsamum</i> (L.) Harms var. <i>pereirae</i> (Royle)	8007-00-9	K2.9

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			Harms		
0.5	97-53-0	Basil oil, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.12
7.9	97-53-0	Basil oil, chemotype linalool	Ocimum basilicum L.	8015-73-4	E2.12
0.2	97-53-0	Basil oleoresin, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.21
73	97-53-0	Bay leaf oil, terpeneless	Pimenta acris Kostel	68916-05-2	E2.29
40	97-53-0	Bay leaf, West Indian, extract	Pimenta acris Kostel	8006-78-8	E2.13
51	97-53-0	Bay leaf, West Indian, oil	Pimenta racemosa (Mill.) J.W. Moore	8006-78-8	E2.12
0.2	97-53-0	Calamus oil	Acorus calamus L.	8015-79-0	A2.12
0.4	97-53-0	Cananga oil	Cananga odorata (Lam.) Hook. f. & Thomson (forma macrophylla Steenis)	68606-83-7	F2.12
18	97-53-0	Carnation absolute	Dianthus caryophyllus L.	8021-43-0	F2.1
0.4	97-53-0	Cascarilla bark oil	Croton eleuteria (L.) W.Wright	8007-06-5	C2.12
0.03	97-53-0	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
0.1	97-53-0	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.06	97-53-0	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
1	97-53-0	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
2	97-53-0	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
74	97-53-0	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.4	97-53-0	Cistus oil	Cistus ladaniferus L.	8016-26-0	E2.12
0.2	97-53-0	Citronella oil, Ceylon type	Cymbopogon nardus (L.) Rendle	8000-29-1	E2.12
0.9	97-53-0	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
82	97-53-0	Clove bud extract	Syzygium aromaticum L.	8000-34-8	F2.13
82	97-53-0	Clove bud oil	Syzygium aromaticum L.	8000-34-8	F2.12
85.3	97-53-0	Clove leaf oil	Syzygium aromaticum L.	8000-34-8	E2.12
88	97-53-0	Clove stem oil	Syzygium aromaticum L.	8000-34-8	L2.12
1	97-53-0	Flouve oil	Anthoxanthum odoratum L.	68916-09-6	E2.12

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0.02	97-53-0	Genet absolute	Spartium junceum L.	90131-21-8	E2.1
0.2	97-53-0	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
1	97-53-0	Jasmine concrete	Jasminum grandiflorum L.	8022-96-6	F2.7
2	97-53-0	Jasmine officinale absolute	Jasminum officinale L.	8024-43-9	F2.1
1.1	97-53-0	Laurel leaf oil	Laurus nobilis L.	8007-48-5	E2.12
0.2	97-53-0	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
0.2	97-53-0	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
0.7	97-53-0	Mace oil	Myristica fragrans Houtt.	8007-12-3	G2.12
0.2	97-53-0	Nutmeg oil	Myristica fragrans Houtt.	8008-45-5	H2.12
0.2	97-53-0	Origanum oil (extractive)	Thymus capitatus L. Hoffmanns & Link	8007-11-2	E2.13
0.07	97-53-0	Osmanthus absolute	Osmanthus fragrans Lour.	68917-05-5	F2.1
0.06	97-53-0	Osmanthus concrete	Osmanthus fragrans Lour.	68917-05-5	F2.7
83	97-53-0	Pimenta leaf oil	Pimenta officinalis Lindl.	8006-77-7	E2.12
2.3	97-53-0	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
1	97-53-0	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
1.2	97-53-0	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
1	97-53-0	Snakeroot oil	Asarum canadense L.	8016-69-1	A2.12
0.6	97-53-0	Tarragon oil	Artemisia dracunculus L.	8016-88-4	E2.12
0.05	97-53-0	Thyme absolute	Thymus vulgaris L.	8007-46-3	E2.1
0.1	97-53-0	Thyme oil, red	Thymus vulgaris L.	8007-46-3	E2.12
0.1	97-53-0	Thyme oil, white	Thymus vulgaris L.	8007-46-3	E2.12
0.12	97-53-0	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
0.02	97-53-0	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16
0.5	97-53-0	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
0.48	97-53-0	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
1	97-53-0	Turmeric oil	Curcuma longa L.	8024-37-1	A2.12

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0.55	97-53-0	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
0.5	97-53-0	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. & Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
0.5	97-53-0	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. & Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
0.5	97-53-0	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. & Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
0.5	97-53-0	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. & Thomson oil (forma genuine Steenis)	8006-81-3	F2.12 X

This is a non-exhaustive indicative list of typical natural presence for Eugenol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard. For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY
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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 Eugenol, which can be downloaded from the RIFM Safety Assessment Sheet Database: <http://fragrancematerialsafetyresource.elsevier.com/>.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Eugenol

The Expert Panel for Fragrance Safety reviewed all the available data for Eugenol and recommends the limits for the 12 different product categories, which are the acceptable use levels 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 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 (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>).

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