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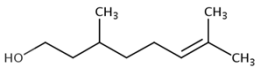
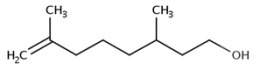
CAS-No.:	106-22-9 1117-61-9 26489-01-0 6812-78-8 141-25-3 7540-51-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{20}O$
		Structure:	α-Citronellol:  β-Citronellol: 
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)-		

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

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	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

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	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 Citronellol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.15	106-22-9	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
6	106-22-9	Citronella oil, Ceylon type	Cymbopogon nardus (L.) Rendle	8000-29-1	E2.12
11	106-22-9	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
3	106-22-9	Citrus hystrix extract	Citrus hystrix DC	91771-50-5	G2.5
10	106-22-9	Eucalyptus citriodora oil	Corymbia citriodora (Hook.) K.D. Hill & L.A. Johnson	85203-56-1	E2.12
10.6	7540-51-4	Geranium absolute	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.1
21.1	7540-51-4	Geranium oil	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.12
33	7540-51-4	Geranium oil African	Pelargonium odoratissimum L'Heritier	8000-46-2	E2.12
40	7540-51-4	Geranium oil, terpene-free	Pelargonium graveolens l'Hertier ex Aiton	68916-44-9	E2.29
0.6	106-22-9	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
0.15	106-22-9	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
0.1	106-22-9	Marjoram oil, Spanish	Origanum mastichina L.	8016-33-9	E2.12
0.1	106-22-9	Niaouli oil	Melaleuca viridiflora Sol. ex Gaertn.	8014-68-4	E2.12
0.2	106-22-9	Petitgrain bergamot oil	Citrus bergamia (Risso) Wright & Arn.	8007-75-8	E2.12
6	106-22-9	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1

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4.7	106-22-9	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
34	106-22-9	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
1.2	106-22-9	Rose water stronger	Rosa x centifolia L.	8007-01-0	F2.54
0.2	106-22-9	Spruce oil, Black	Picea mariana (Mill.) Britton	8008-80-8	E2.12
0.28	106-22-9	Spruce oil, White	Picea abies (L.) H.Karst.	91770-69-3	E2.12
0.45	106-22-9	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
2.5	106-22-9	Verbena oil	Lippia citriodora (L.) Kunth	8024-12-2	E2.12
0.1	106-22-9	Zanthoxylum piperitum extract	Zanthoxylum piperitum	102242-62-6	G2.13

This is a non-exhaustive indicative list of typical natural presence for Citronellol 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

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 Citronellol, 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 Citronellol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Citronellol in the various product categories.

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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 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.