

Methyl ionone, mixed isomers

CAS N°:	1335-46-2	Empirical formula:	C ₁₄ H ₂₂ O
	127-42-4		Structure:
	127-43-5		
	127-51-5		
	7779-30-8		
	79-89-0		
Synonyms:	CAS 1335-46-2: Methyl ionone, mixture of isomers		
	CAS 127-42-4: Methyl-alpha-ionone alpha-Cetone alpha-Cyclocitrylidenebutanone alpha-Cyclocitrylidenemethyl ethyl ketone Methyl-a-ionone alpha-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		
	CAS 127-43-5: Methyl-beta-ionone Methyl-β-ionone beta-Methylionone beta-Cetone beta-Cyclocitrylidenebutanone beta-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		
	CAS 127-51-5: alpha-iso methylionone 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 alpha-Isomethyl ionone gamma-Methylionone Iraldeine gamma Isoraldeine 95		
	CAS 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)-		
	CAS 79-89-0: iso-Methyl-beta-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 δ-Iraldeine		

History:	Initial reviews:	2007		
	Current revision date:	2015		
	Implementation date:	For new submissions*:		August 10, 2015
		For existing fragrance compounds*:		August 10, 2016
	Next review date	2020		

* This date applies to the supply of fragrance compounds (formulas) only, not to the finished products in the marketplace.

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RECOMMENDATION:	RESTRICTED
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RESTRICTIONS:

Limits in the finished product:			
Category 1 See Note box (1)	2.00 %	Category 7	5.30 %
Category 2	2.59 %	Category 8	2.00 %
Category 3	10.56 %	Category 9	5.00 %
Category 4	31.67 %	Category 10	2.50 %
Category 5	16.67 %	Category 11	See Note box (2)
Category 6	50.72 %		
Note box:			
<p>(1) IFRA would recommend that any material used to impart perfume or flavour in products intended for human ingestion should consist of ingredients that are in compliance with appropriate regulations for foods and food flavourings in the countries of planned distribution and, where these are lacking, with the recommendations laid down in the Code of Practice of IOFI (International Organisation of the Flavor Industry - www.iofi.org)</p> <p>(2) Category 11 includes all non-skin contact or incidental skin contact products. Due to the negligible skin contact from these types of products there is no justification for a restriction of the concentration of this fragrance ingredient in the finished product.</p>			
The above limits apply to Methyl ionone isomers used individually or in combination.			
Fragrance material specifications:	Pseudo methyl ionones (CAS numbers 26651-96-7, 72968-25-3, 1117-41-5) should not be used as fragrance ingredient as such, but a level of up to 2% as an impurity in methyl ionones is accepted.		

CONTRIBUTION FROM OTHER SOURCES:

None to consider (see also the note on contributions from other sources in the **Introduction to the IFRA Standards**).

CRITICAL EFFECT:	DERMAL SENSITIZATION
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RIFM SUMMARIES:

LLNA weighted mean EC3 values (µg/cm ²) [no. studies]	Potency Classification Based on Animal Data ¹	Human Data			WoE NESIL ³ (µg/cm ²)
		NOEL – HRIPT (induction) (µg/cm ²)	NOEL – HMT (induction) (µg/cm ²)	LOEL ² (induction) (µg/cm ²)	
5450	Weak	70886 ⁴	NA	NA	70000

All data in this Table are available from RIFM and are listed in the RIFM Database.
 NOEL = No Observed Effect Level; HRIPT = Human Repeat Insult Patch Test; HMT = Human Maximization Test;
 LOEL = Lowest Observed Effect Level; NA = Not Available.

¹Based on animal data using classification defined in ECETOC, Technical Report No. 87, 2003.

²Data derived from HRIPT or HMT.

³WoE NESIL limited to two significant figures.

⁴MT-NOEL = Maximum Tested No Effect Level. No sensitization was observed in human predictive studies. Doses reported reflect the highest concentration tested, not necessarily the highest achievable NOEL.

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REXPAN RATIONALE / CONCLUSION:

The RIFM Expert Panel reviewed the critical effect data for Methyl ionone, mixed isomers and, based on the weight of evidence, established the No Expected Sensitization Induction Level (NESIL) as 70000 µg/cm². They recommend the limits for the 11 different product categories, which are the acceptable use levels of Methyl ionone, mixed isomers in the various product categories. These were derived from the application of the exposure-based quantitative risk assessment approach for fragrance ingredients, which is detailed in the publication by Api *et al.*, 2008.

REFERENCES:

Api, A. M., Basketter, D. A., Cadby, P. A., Cano, M-F., Ellis, G., Gerberick, G. F. *et al.*, 2008. Dermal Sensitization Quantitative Risk Assessment (QRA) For Fragrance Ingredients. *Regulatory Toxicology and Pharmacology* 52(1): 3-23.

RIFM (Research Institute for Fragrance Materials, Inc.), 2005. alpha-iso-Methylionone diluted with vehicle 1:3 EtOH:DEP: Local Lymph Node Assay. RIFM report number 48749, January 26 (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2004a. Repeated insult patch test with alpha-iso-methylionone. RIFM report number 47278, March 10 (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2004b. Repeated insult patch test with alpha-iso-methylionone. RIFM report number 47279, March 10 (RIFM, Woodcliff Lake, NJ, USA).