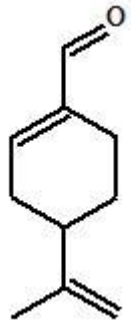
p-Mentha-1,8-dien-7-al (Perilla aldehyde)

CAS N°:	2111-75-3	**Empirical formula:**	$C_{10}H_{14}O$
		Structure:	
Synonyms:	1-Cyclohexene-1-carboxaldehyde, 4-(1-methylethenyl)- Dihydrocuminic aldehyde 4-Isopropenylcyclohex-1-ene-1-carbaldehyde 4-Isopropenyl-1-cyclohexene-1-carboxaldehyde p-Mentha-1,8-dien-7-al Perilla aldehyde Perillaldehyde		

History:	Initial reviews:	Oct. 1979, July 1994	
	Current revision date:	June 2013	
	Implementation date:	For new submissions*:	August 10, 2013
		For existing fragrance compounds*:	August 10, 2014
	Next review date	2018	

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

RECOMMENDATION:	**RESTRICTED**

RESTRICTIONS:

Limits in the finished product:			
Category 1 See Note box (1)	0.02 %	Category 7	0.05 %
Category 2	0.03 %	Category 8	0.1 %
Category 3	0.1 %	Category 9	0.1 %
Category 4	0.1 %	Category 10	0.1 %
Category 5	0.1 %	Category 11	See Note Box (2)
Category 6	0.5 %		

Note box:

For this material, for pragmatic reasons, the restricted levels allowed by the QRA for certain categories that are actually higher than those that were in place before applying the QRA, will not be implemented for now. This position will be reevaluated as appropriate in the future.

(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) (http://www.iofiorg.org/).

p-Mentha-1,8-dien-7-al (Perilla aldehyde)

(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.	
Fragrance material specifications:	N/A

CONTRIBUTION FROM OTHER SOURCES:

See **Annex I**

CRITICAL EFFECT:	**SENSITIZATION**

RIFM SUMMARIES:

LLNA weighted mean EC3 values ($\mu g/cm^2$) [no. studies]	Potency Classification Based on Animal Data[1]	Human Data			WoE NESIL[3] ($\mu g/cm^2$)
		NOEL – HRIPT (induction) ($\mu g/cm^2$)	NOEL – HMT (induction) ($\mu g/cm^2$)	LOEL[2] (induction) ($\mu g/cm^2$)	
2175 [2]	Moderate	709[4]	690[4]	2760	700

NOEL = No observed effect level; HRIPT = Human Repeat Insult Patch Test; HMT = Human Maximization Test;
LOEL = lowest observed effect level; NA = Not Available

[1] Based on animal data using classification defined in ECETOC, Technical Report No. 87, 2003
[2] Data derived from HRIPT or HMT
[3] WoE NESIL limited to three significant figures
[4] MT-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

REXPAN RATIONALE / CONCLUSION:

The RIFM Expert Panel reviewed the critical effect data for p-Mentha-1,8-dien-7-al and, based on the weight of evidence, established the No Expected Sensitization Induction Level (NESIL) as 700 µg/cm². They recommend the limits for the 11 different product categories, which are the acceptable use levels of p-Mentha-1,8-dien-7-al 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 QRA Expert Group Technical Dossier of June 22, 2006.

REFERENCES:

RIFM (Research Institute for Fragrance Materials, Inc.), 1978. Human Maximization Tests. RIFM report number 1698, August 25 and November 21a (RIFM, Woodcliff Lake, NJ, USA).

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RIFM (Research Institute for Fragrance Materials, Inc.), 2007. Human Repeated Insult Patch Test. RIFM report number 53802, October 3 (RIFM, Woodcliff Lake, NJ, USA).

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Roberts, D.W., Patlewicz, G., Kern, P.S., Gerberick, F., Kimber, I., Dearman, R.J., Ryan, C.A., Basketter, D.A., Aptula, A.O., 2007. Mechanistic applicability domain classification of a local lymph node assay dataset for skin sensitization. *Chemical Research in Toxicology* 20, 1019-1030.