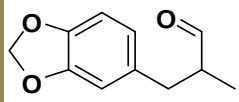
alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHA)

CAS N°:	1205-17-0	**Empirical formula:** **Structure:**	$C_{11}H_{12}O_3$ 
Synonyms:	Heliofolal, Heliogan, Helional, Tropional (commercial names) 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		

History:	Initial reviews:	June 11, 2012	
	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)	0.34%	Category 7	0.89%
Category 2	0.43%	Category 8	2.0%
Category 3	1.78%	Category 9	5.0%
Category 4	5.3%	Category 10	2.5%
Category 5	2.8%	Category 11	See Note box (2)
Category 6	8.6%		

Note box:

(1) See the IFRA Code of Practice (Appendix 8, Introduction to the IFRA Standards) regarding the Note on Oral Care Products and other products with the potential of ingestion.
(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

alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHA)

CONTRIBUTION FROM OTHER SOURCES:

See **Annex II**

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) ($\mu g/cm^2$)	
4100 [1][4]	Weak	11,811	13,800	15,000	11,800

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.

[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 two significant figures.
[4]EC3 value from one LLNA, not the mean.

REXPAN RATIONALE / CONCLUSION:

The RIFM Expert Panel reviewed the critical effect data for α-methyl-1,3-benzodioxole-5-propionaldehyde and, based on the weight of evidence, established the No Expected Sensitization Induction Level (NESIL) as 11800 $\mu g/cm^2$. They recommend the limits for the 11 different product categories, which are the acceptable use levels of α-methyl-1,3-benzodioxole-5-propionaldehyde 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 AM, Basketter DA, Cadby PA, Cano M-F, Ellis G, Gerberick GF, et al. Dermal Sensitization Quantitative Risk Assessment (QRA) For Fragrance Ingredients. *Regulatory Toxicology and Pharmacology* 2008;52(1): 3-23.

RIFM (Research Institute for Fragrance Materials, Inc.), 2009. Human repeated insult patch test. RIFM report number 57514, July 16. (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2005. Local Lymph Node Assay. RIFM report number 50886, November 7. (RIFM, Woodcliff Lake, NJ, USA).

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RIFM (Research Institute for Fragrance Materials, Inc.), 1985. Maximization study in humans. RIFM report number 1919, January 7c. (RIFM, Woodcliff Lake, NJ, USA).