

## Acetic acid, anhydride, reaction products with 1,5,10-trimethyl-1,5,9-cyclododecatriene

<b>CAS N°:</b>	144020-22-4 28371-99-5*	<b>Empirical formula:</b>	C <sub>17</sub> H <sub>26</sub> O
<b>Structure:</b>			
<b>Synonyms:</b>	Trimofix O (commercial name) Fixamber (commercial name)		

\* This substance was previously erroneously identified as CAS 28371-99-5, however this CAS number is still used on certain commercial qualities today and as such this Standard is also applicable to that CAS number, which is an isomer of CAS 144020-22-4.

<b>History:</b>	<b>Initial reviews:</b>	New Standard		
	<b>Current revision date:</b>	2015		
	<b>Implementation date:</b>	<b>For new submissions**:</b>	August 10, 2015	
		<b>For existing fragrance compounds**:</b>	August 10, 2016	
	<b>Next review date</b>	2020		

\*\* 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)	0.16 %	Category 7	0.42 %
Category 2	0.20 %	Category 8	2.00 %
Category 3	0.83 %	Category 9	5.00 %
Category 4	2.49 %	Category 10	2.50 %
Category 5	1.31 %	Category 11	See Note box (2)
Category 6	3.99 %		
<b>Note box:</b>			
(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 - <a href="http://www.iofi.org">www.iofi.org</a> )			
(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.			
<b>Fragrance material specifications:</b>		N/A	

### CONTRIBUTION FROM OTHER SOURCES:

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

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**CRITICAL EFFECT:** **DERMAL SENSITIZATION**

**RIFM SUMMARIES:**

LLNA weighted mean EC3 values ( $\mu\text{g}/\text{cm}^2$ ) [no. studies]	Potency Classification Based on Animal Data <sup>1</sup>	Human Data			WoE NESIL <sup>3</sup> ( $\mu\text{g}/\text{cm}^2$ )
		NOEL – HRIPT (induction) ( $\mu\text{g}/\text{cm}^2$ )	NOEL – HMT (induction) ( $\mu\text{g}/\text{cm}^2$ )	LOEL <sup>2</sup> (induction) ( $\mu\text{g}/\text{cm}^2$ )	
5177 [1]	Weak	5510	NA	NA	5500

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.

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

<sup>2</sup>Data derived from HRIPT or HMT.

<sup>3</sup>WoE NESIL limited to two significant figures.

**REXPAN RATIONALE / CONCLUSION:**

The RIFM Expert Panel reviewed the critical effect data for Acetic acid, anhydride, reaction products with 1,5,10-trimethyl-1,5,9-cyclododecatriene and, based on the weight of evidence, established the No Expected Sensitization Induction Level (NESIL) as 5500  $\mu\text{g}/\text{cm}^2$ . They recommend the limits for the 11 different product categories, which are the acceptable use levels of Acetic acid, anhydride, reaction products with 1,5,10-trimethyl-1,5,9-cyclododecatriene 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.), 2007. Acetic acid, anhydride, reaction products with 1,5,10-trimethyl-1,5,9-cyclododecatriene (Trimofix O): Assessment of skin sensitization potential using the local lymph node assays in the mouse. Unpublished study from I.F.F., Report number 56699 (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2011. Repeated insult patch test with acid, anhydride, reaction products with 1,5,10-trimethyl-1,5,9-cyclododecatriene. Unpublished study from I.F.F., Report number 63990 (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2011. Repeated insult patch test with acid, anhydride, reaction products with 1,5,10-trimethyl-1,5,9-cyclododecatriene. Unpublished study from I.F.F., Report number 63992 (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2012. Repeated insult patch test with acid, anhydride, reaction products with 1,5,10-trimethyl-1,5,9-cyclododecatriene (Trimofix O). Unpublished study from I.F.F., Report number 64145 (RIFM, Woodcliff Lake, NJ, USA).