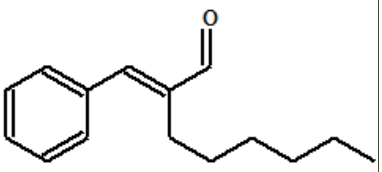
alpha-Hexyl cinnamic aldehyde

CAS N°:	101-86-0	**Empirical formula:**	$C_{15}H_{20}O$
		Structure:	
Synonyms:	2-Benzylideneoctanal Hexyl cinnamal α-Hexyl cinnamaldehyde Hexyl cinnamic aldehyde α-n-Hexylcinnamic aldehyde Hexyl cinnamyl α-n-Hexyl-β-phenylacrolein Octanal, 2-(phenylmethylene)- Jasmonal H (commercial name)		

History:	Initial reviews:	April 2007	
	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)	0.7 %	Category 7	1.8 %
Category 2	0.9 %	Category 8	2.0 %
Category 3	3.6 %	Category 9	5.0 %
Category 4	10.7 %	Category 10	2.5 %
Category 5	5.6 %	Category 11	See Note box (2)
Category 6	17.1 %		

Note box:

(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.iofiorg.org)
(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

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CONTRIBUTION FROM OTHER SOURCES:

See **Annex II**

CRITICAL EFFECT: SENSITIZATION

RIFM SUMMARIES:

LLNA weighted mean EC3 values (µg/cm²) [no. studies]	Potency Classification Based on Animal Data[2]	Human Data			WoE NESIL[3] (µg/cm²)
		NOEL – HRIPT (induction) (µg/cm²)	NOEL – HMT (induction) (µg/cm²)	LOEL[1] (induction) (µg/cm²)	
2372 [>5]	Weak	23622	NA	NA	23600

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

[1]Data derived from HRIPT or Human Max tests
[2]Gerberick *et al.*, 2001
[3]WoE NESIL limited to two significant figures

REXPAN RATIONALE / CONCLUSION:

The RIFM Expert Panel reviewed the critical effect data for alpha-hexyl cinnamic aldehyde and, based on the weight of evidence, established the No Expected Sensitization Induction Level (NESIL) as 23600 µg/cm². They recommend the limits for the 11 different product categories, which are the acceptable use levels of alpha-hexyl cinnamic aldehyde 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:

Basketter, D.A., Lea, L.J., Dickens, A., Briggs, D., Pate, I, Dearman, R.J., Kimber, I., 1999. A comparison of statistical approaches to the derivation of EC3 values from local lymph node assay dose responses. Journal of Applied Toxicology, 19(4), 261-266. Basketter, D.A., Wright, Z.M., Warbrick, E.V., Dearman, R.J., Kimber, I., Ryan, C.A., Gerberick, G.F., White, I.R., 2001. Human potency predictions for aldehydes using the local lymph node assay. Contact Dermatitis, 45(2), 89-94.

Basketter, D.A., Gilmour, N., Dearman, R.J., Kimber, I., Ryan, C.A., and Gerberick, F., 2003. Classification of skin sensitisation potency using the Local Lymph Node Assay. The Toxicologist, 72(S-1), 101.

Dearman, R.J., Hilton, J., Evans, P., Harvey, P., Basketter,D.A., Kimber, I., 1998. Temporal stability of local lymph node assay responses to hexyl cinnamic aldehyde. Journal of Applied Toxicology, 18(4), 281-284.

Dearman, R.J., Wright, Z.M., Basketter, D.A., Ryan, C.A., Gerberick, G.F., Kimber, I, 2001. The suitability of hexyl cinnamic aldehyde as a calibrant for the murine local lymph node assay. Contact Dermatitis, 44(6), 357-361.

Gerberick, GF. et. al. (2001) Contact allergenic potency: Correlation of human and local lymph node assay data. American Journal of Contact Dermatitis, 12(3), 156-161.

QRA Expert Group (AM Api, DA Basketter, PA Cadby, M-F Cano, G Ellis, GF Gerberick, P Griem, PM McNamee, CA Ryan and R Safford), Dermal Sensitization Quantitative Risk Assessment (QRA) for Fragrance Ingredients, Technical Dossier, March 15, 2006, http://www.rifm.org/pub/publications.asp.

RIFM (Research Institute for Fragrance Materials, Inc.), 2005. Repeated Insult Patch Test on alpha-hexylcinnamaldehyde. RIFM report number 51047, November 11. (RIFM, Woodcliff Lake, NJ, USA).