

Acetyl hexamethyl indan (AHMI)

CAS-No.:	15323-35-0	Molecular formula:	C ₁₇ H ₂₄ O
	The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	Structure:	
Synonyms:	5-Acetyl-1,1,2,3,3,6-hexamethyl indan 6-Acetyl-1,1,2,3,3,5-hexamethylindane 1-(2,3-Dihydro-1,1,2,3,3,6-hexamethyl-1h-inden-5-yl)ethanone Ethanone, 1-(2,3-dihydro-1,1,2,3,3,6-hexamethyl-1H-inden-5-yl)- 1,1,2,3,3,6-Hexamethylindan-5-yl methylketone Phantolid (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 1987 2001 2015
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Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:
RESTRICTION
RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

Category 1	2.0 %	Category 7A	No Restriction
Category 2	2.0 %	Category 7B	2.0 %
Category 3	2.0 %	Category 8	2.0 %
Category 4	2.0 %	Category 9	No Restriction
Category 5A	2.0 %	Category 10A	No Restriction

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Category 5B	2.0 %	Category 10B	2.0 %
Category 5C	2.0 %	Category 11A	No Restriction
Category 5D	2.0 %	Category 11B	2.0 %
Category 6	2.0 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
 The Standard is set due to the phototoxic effects of Acetyl hexamethyl indan (AHMI). For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FLAVOR REQUIREMENTS: Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: PHOTOTOXICITY

RIFM SUMMARIES:

Human studies – phototoxicity
 The IFRA Standard is based upon two photoirritation studies in humans. In the first study, 10 volunteers were treated with 10% solution of Acetyl hexamethyl indan (AHMI) in 75% ethanol plus 25% diethyl phthalate on each forearm. Twenty-four hours later, one arm was irradiated

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(UVA) and the other served as a control. Observations immediately after radiation, at 24 hrs, and at 48 hours showed no phototoxic effects (RIFM, 1986). In the second study, 10 volunteers were treated with a 10% solution in 75% ethanol plus 25% diethyl phthalate on the back. After 30 minutes, the site was irradiated (UVA and UVB). Observations at 5 minutes after irradiation, and at 3, 24, 48, and 72 hours showed no phototoxic effects (RIFM, 1987).

Animal studies – phototoxicity

- 5, 20, 50 % in guinea pigs, photoirritation observed 20 and 50% (RIFM, 1978a).
- 5, 20% in rabbits, photoirritation observed at 5 and 20% (RIFM, 1978a).
- 1, 5, 10, 20% in guinea pigs and rabbits, photoirritation observed in guinea pigs and rabbits at 5, 10, and 20% (Ogoshi et al., 1980; Ohkoshi et al., 1981).
- 10% in guinea pigs, no photoirritation observed (Guillot et al., 1985).
- 1% in rabbits, photoirritation observed (RIFM, 1978).
- 1, 2, 4 % in rabbits, photoirritation observed (RIFM, 1985a; 1985b).
- 0.01, 1, 10, 25, 50% in hairless mice, photoirritation observed at 10, 25, 50% (RIFM, 1978c).

Animal studies – photoallergy

2% in guinea pigs, no photoallergy observed, 1/10 showed sensitization (RIFM, 1985c).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl hexamethyl indan (AHMI) and recommends the limits for the 12 different product categories, which are the acceptable use levels of Acetyl hexamethyl indan (AHMI) in the various product categories.

REFERENCES:

The IFRA Standard on Acetyl hexamethyl indan (AHMI) is based on at least one of the following publications:

- The RIFM Safety Assessment on Acetyl hexamethyl indan (AHMI) is available at the RIFM Safety Assessment Sheet Database:
<http://fragrancematerialsafetyresource.elsevier.com/>.
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. *Food Chem Toxicol.* 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).
- IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (<http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf>).
- Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials

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for aquatic risk assessment. *Environ Toxicol Chem.* 2002;21:1301-1308. (<https://www.ncbi.nlm.nih.gov/pubmed/12069318>).

- Guillot, J.P., Gonnet, J.F., Loquerie, J.F., Martini, M.C., Convert, P., and Cotte, J. (1985). A new method for the assessment of phototoxic and photoallergic potentials by topical applications in the albino guinea pig. *J. Toxicol.-Cut. Ocu. Toxicol.*, 4(2), 117-133.
- Ogoshi, K., Tanaka, N., and Sekine, A. (1980). A study on the phototoxicity of musk type fragrances. Unpublished. Presented at Society of Cosmetic Chemists, Japan. Report number 7465, 17 November.
- Ohkoshi, K., Watanabe, A., and Tanaka, N. (1981). Phototoxicity of musks in perfumery. *J. Society Cosmetic Chemists, Japan*, 15(3), 207-213.
- Research Institute for Fragrance Materials, Inc. (1978a). Phototoxicity of synthetic musks. Unpublished report from Shiseido laboratories. Report number 4415, 26 August.
- Research Institute for Fragrance Materials, Inc. (1978b). Phototoxicity tests with 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from Quest International. Report number 8055, 1 January.
- Research Institute for Fragrance Materials, Inc. (1978c). Phototoxicity studies. RIFM report number 2042, 12 May.
- Research Institute for Fragrance Materials, Inc. (1985a). Photosensitization test with 2% and 4% 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from PFW Aroma Chemicals. Report number 29705, 1 November.
- Research Institute for Fragrance Materials, Inc. (1985b). Photosensitization test with 1% 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from PFW Aroma Chemicals. Report number 29706, 1 November.
- Research Institute for Fragrance Materials, Inc. (1985c). Photosensitization test with 5-acetyl-1,1,2,3,3,6-hexamethylindan (17179) in guinea pigs. Unpublished report from PFW Aroma Chemicals. Report number 29704, 1 November.
- Research Institute for Fragrance Materials, Inc. (1986). Phototoxicity testing in human subjects. RIFM report number 5748, 19 December.
- Research Institute for Fragrance Materials, Inc. (1987). Phototoxicity testing in human subjects. RIFM report number 5743, 23 January.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.