METHYL N-METHYLANTHRANILATE

CAS Nº: 85-91-6 **Empirical formula:** $C_9H_{11}NO_2$

Synonyms: Benzoic acid, 2-(methylamino)-, methyl ester
Dimethyl anthranilate
2-Methylamino methyl benzoate
N-Methylanthranilic acid, methyl ester
Methyl 2-(methylamino)benzoate
Methyl 2-methylaminobenzoate
Methyl *o*-methylaminobenzoate

History:

Initial reviews:	October 1978, April 2001, January 2002, May 2006 (40th Amendment)	
Current revision date:	2009	
Implementation date:	for new submissions*:	August 7, 2009
	for existing fragrance compounds*:	August 7, 2010
Next review date:	2014	

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

Standard: **RESTRICTED**

RESTRICTIONS:

Limits in the finished product:

Skin-contact products:

Leave-on products: 0.1% Rinse-off products: No restriction
including household cleaning products

Non skin-contact products: No restriction

Note box: The Standard is set due to the phototoxic effects of the material. The limit only applies to applications on skin, excluding rinse-off products.

If combinations of phototoxic fragrance ingredients are used, the use levels have to be reduced accordingly. The sum of the concentrations of all phototoxic ingredients, expressed in % of their recommended maximum level in the consumer product shall not exceed 100.

The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential to be able to consider adequate protective measures.

Fragrance material specification: N/A

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Contribution from other sources: See **Annex I**

Critical effect: **Phototoxicity and potential for nitrosamine formation**

RIFM Summary:

A human phototoxicity study at 0.5% in 75% ethanol/25% diethyl phthalate (DEP) resulted in 0/26 reactions (RIFM, 2001). Another human phototoxicity study with concentrations of 0.1, 0.3, and 0.5% resulted in 0/29 reactions (RIFM, 1998). Several other phototoxicity studies showed phototoxic reactions at 1% and 5% (Kaidbey and Kligman, 1980; Letizia and Api, 2003; RIFM, 1999).
A human photosensitization study at 0.5% in 75% ethanol/25% DEP resulted in 0/26 reactions (RIFM, 2001). Another human photosensitization study at 5.0% resulted in no photoallergic reactions. However, 14/18 phototoxic reactions were observed (RIFM, 1978a).

A phototoxicity study at 50% in methanol and 100% on hairless mice produced reactions at both dose levels (RIFM, 1978b).

An *in vitro* phototoxicity assay using a human skin model (Skin2®) with concentrations of methyl N-methylanthranilate ranging from 0.05% to 25% in corn oil showed that the material was phototoxic at dose levels above 5% (Api, 1997).

REXPAN Rationale / Conclusion:

IFRA measures regarding potential nitrosamine formation noted - REXPAN April 2009.

References:

Api A.M. (1997). In vitro assessment of phototoxicity. In Vitro Toxicology: Journal of Molec. Cell. Toxicol., 10(3), 339-350.

Kaidbey K.H. and Kligman A.M. (1980). Identification of contact photosensitizers by human assay. In Current Concepts In Cutaneous Toxicity, Academic Press, New York, pages 55-68.

Letizia C.S. and Api A.M. (2003). Evaluation of the phototoxic and photoallergenic potential of methyl N-methyl anthranilate. The Toxicologist, 72(S1), 378-379.

Research Institute for Fragrance Materials, Inc. (1978a). Phototoxicity and contact photoallergy testing in human subjects. RIFM report number 1788, 18 January.

Research Institute for Fragrance Materials, Inc. (1978b). Phototoxicity and irritation studies of mice and pigs with fragrance materials. RIFM report number 2042, 13 April.

Research Institute for Fragrance Materials, Inc. (1998). Evaluation of phototoxicity of dimethyl anthranilate in humans. RIFM report number 34768, 8 December.

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Research Institute for Fragrance Materials, Inc. (1999). Evaluation of phototoxicity of dimethyl anthranilate in humans. RIFM report number 34769, 20 July.

Research Institute for Fragrance Materials, Inc. (2001) Evaluation of human photoallergy by repeated insult patch test. RIFM report number 36789, 1 March.

Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.