

**Diethyl maleate**

<b>CAS-No.:</b>	141-05-9 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.	<b>Molecular formula:</b>	C <sub>8</sub> H <sub>12</sub> O <sub>4</sub>
		<b>Structure:</b>	
<b>Synonyms:</b>	2-Butenedioic acid (2Z)-, diethyl ester Ethyl maleate Maleic acid, diethyl ester		

<b>History:</b>	Publication date:	2006 (Amendment 40)	Previous Publications:	1975 2002
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<b>Implementation dates:</b>	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

<b>RECOMMENDATION:</b>	<b>PROHIBITION</b>
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<b>FRAGRANCE INGREDIENT PROHIBITION:</b>	Diethyl maleate should not be used as a fragrance ingredient.
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<b>CONTRIBUTIONS FROM OTHER SOURCES:</b>	<b>NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)</b>
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<b>INTRINSIC PROPERTY MANAGEMENT:</b>	<b>DRIVING RISK</b>	<b>DERMAL SENSITIZATION</b>
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**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Diethyl maleate and recommends not to use Diethyl maleate as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Diethyl maleate is based on at least one of the following publications:

- The RIFM Safety Assessment on Diethyl maleate 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](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 for aquatic risk assessment. *Environ Toxicol Chem.* 2002;21:1301-1308. (<https://www.ncbi.nlm.nih.gov/pubmed/12069318>).
- Opdyke, D.L.J. (1976), *Food and Cosmetics Toxicology* 14, 443.

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](http://www.ifrafragrance.org).