

## Product Description and Handling Guide Maleic acid Di (2-ethylhexyl) Ester (DOM)

# Maleic Acid Di (2-ethylhexyl) Ester

**Diethyl maleate**

CAS no. 142-16-5

EC no. 205-524-5



### Product description

Maleic acid di (2-ethylhexyl) ester is a clear, virtually colourless liquid with an ester-like odour. It is miscible with, for example, methanol, ethanol, acetone, diethyl ether, N,N-dimethyl formamide and toluene but not with water and aliphatic hydrocarbons.

Maleic acid di (2-ethylhexyl) ester contains about 1-5% fumaric acid di (2-ethylhexyl) ester and 1-2% alkoxysuccinic acid di (2-ethylhexyl) ester. Under the action of heat and in the presence of acids or bases, Maleic acid di (2-ethylhexyl) ester transposes into the corresponding fumaric acid dialkyl ester.

### Possible applications

Maleic acid di (2-ethylhexyl) ester is a suitable intermediate for use in the production of paints and adhesives, copolymers and films. As co-monomer used with Vinylacetate (VAM) in emulsion polymers (latexes) DOM leads to the following performance improvements:

- Lower the glass transition temperature (T<sub>g</sub>) and the minimum film forming temperature (MFFT)
- Reduce the excessive hardness and brittleness of VAM homopolymers
- Improve flexibility of the final films
- Improve the hydrolytic stability

To reduce the T<sub>g</sub> of a VAM based latex to 7°C, about 21 % of DOM related to VAM is used.

DOM can be a substitute for Acrylates Esters or VeoVa esters as co-monomers.

Maleic acid di (2-ethylhexyl) ester permits the addition reactions normally possible with compounds having olefinic double bonds and is suitable, for example, as a dienophile for diene syntheses using the Diels-Alder reaction. By hydrogenation or acetylation, valuable intermediates can be obtained, e.g. derivatives of succinic acid, which are employed in many different areas of organic synthesis.

### Characteristic data

<i>Typical Properties</i>	<i>Unit</i>	
Molar mass	g/mol	340.56
Boiling point at 9 hPa	°C	156
at 30 hPa		229-239
at 1013 hPa		345
Melting temperature	°C	-60
Density at 20°C	g/cm <sup>3</sup>	0.94
Refractive index n <sub>D</sub> at 20 °C (DIN 51 423, part 2)		1.445 – 1.456
Viscosity at 20°C (calculated)	mPas	8.29
Vapour pressure at 20°C	Pa	0.00022
at 50°C		0.0096

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Vapour density (Air = 1)	11.7
Water Solubility at 20 °C	g/l insoluble

*These characteristic data are intended for the purpose of product description and are not the subject of continuous monitoring.*

*Further physical properties and characteristic data as well as information on safety and handling are listed in the material safety data sheet and the sales specifications. Please consult [www.celanese.com](http://www.celanese.com)*

### Shelf life

The shelf life of DOM is one year.

The shelf life dates from the day of packaging, for bulk deliveries this is the day of loading. This period is in general applicable to material stored under conditions recommended by Celanese Chemicals.

### Storage

Recommended Blanketing	Dry Air <sup>1,2</sup> or Dry Nitrogen <sup>1,2,3</sup>
Recommended Temperature Maximum	100 °F (37.8 °C)
Recommended pressure	Atmospheric
Bulk Quantities	Outside, detached tanks
Small Containers	Cool, dry, well ventilated area

### Handling

- Thoroughly review Material Safety Data Sheet before handling product.
- Keep containers closed when not in use.
- Open containers slowly to allow any excess pressure to vent.
- Keep away from heat, sparks, flame or other sources of ignition.
- Protect small containers from physical damage.
- Use proper electrical grounding and bonding procedures when loading, unloading and transferring<sup>1</sup>.
- Refer to the Material Safety Data Sheet for more information on materials to avoid.
- Use spark-resistant tools.
- Electrical equipment and circuits in all storage and handling areas must conform to requirements of national electrical code (Articles 500 and 501) for hazardous location.

1. Refer to NFPA #77 “Static Electricity” for proper electrical grounding procedures.
2. See the National Fire Protection Agency (NFPA) #30 “Flammable and Combustible Liquids Code” and consult with qualified fire protection specialists to determine specific storage tank design requirements.
3. Blanketing may be used to retain quality in long-term storage conditions.

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DOM is available from Celanese Chemicals as bulk material.

### *Materials for storage and transport*

Unit / element	Acceptable Material	Alternate Material
Tank	Carbon Steel (rust free)	Stainless Steel <sup>1</sup> , Aluminum, Lined Carbon Steel <sup>2</sup>
Piping	Carbon Steel	Stainless Steel <sup>1</sup> , Aluminum
Valves	Carbon Steel	Stainless Steel <sup>1</sup> , Aluminum
Pumps	Cast Iron, Carbon Steel	Stainless Steel <sup>1</sup>
Relief Valves	Carbon Steel	Stainless Steel <sup>1</sup>
Gaskets	Glass filled PTFE <sup>3</sup>	PTFE <sup>3</sup>
Pump Seals	Single Mechanical Seal: Stainless Steel / Hastelloy C-276 metallic components, Kalrez O-rings	–
Valve Packing	PTFE <sup>3</sup>	Braided PTFE <sup>3</sup>
Pipe End Connections	Welded and flanged system	Threaded with PTFE <sup>3</sup> tape thread lubricant
Heat Exchanger	Product side: Carbon Steel	Product side: Stainless Steel <sup>1</sup>
Hoses	Stainless Steel <sup>1</sup>	Butyl Rubber, Aluminum
Tank Truck	Stainless Steel <sup>1</sup>	Aluminum
Tank Car	Carbon Steel	Aluminum, Stainless Steel <sup>1</sup>
ISO Tank	Carbon Steel	Stainless Steel <sup>1</sup>
Barge	Zinc Silicate or Epoxy Lined Carbon Steel	Stainless Steel <sup>1</sup> , Carbon Steel
Ship Tank	Zinc Silicate or Epoxy Lined Carbon Steel	Stainless Steel <sup>1</sup>

1. Type 304 or 316 Stainless Steel
2. Lining refers to a high baked phenolic resin
3. Polytetrafluoroethylene

For further information on safety and handling, please use the following link: <http://www.celanese.com/>

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### *Other Product Information:*

#### ***Kosher***

DOM manufactured by Celanese is Kosher certified. Certificate is available on request.

### *Contact Information:*

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