

**MATERIAL SAFETY DATA SHEET**

Product Name: DL- MALIC ACID

Revision Date : 01.10.2014

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**1. Manufacturer and Substance Identification**

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Chemical Name	: DL Malic Acid
Molecular Formula	: C <sub>4</sub> H <sub>6</sub> O <sub>5</sub>
Molecular Weight	: 134.09
Synonyms	: Hydroxybutanedioic acid , Hydroxysuccinic acid

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**2. Composition /Information on ingredients**

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Content (W/W)</u>	<u>EINECS</u>
Malic Acid	6915-15-7	More than 99.5%	210-514-9
Maleic Acid	110-16-7	Less than 0.05%	203-742-5

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**3. Hazard Identification**

Hazard Symbol	: Xi - Irritant
R-Phrases	: R22, R37/38, R41
S-Phrases	: S26, S36

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**4. First Aid Measures**

Inhalation	: Remove person from the area of contamination to fresh air.
Skin Contact	: Wash affected body areas with large volumes of water, if irritation persists, see a physician.
Eyes	: Flush eyes with clean water, lifting eyelids occasionally, flush with water for 15 minutes.
Other	: Launder contaminated clothing before re-using.

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**5. Fire Fighting Measures**

- Flash Point : 245°C
- Lower Explosion Limit : 16.8 %(V)
- Upper explosion Limit : 2.8%(V)
- Flammable Limits : Not Applicable.
- Extinguishing Media : Use media that is appropriate to treat surrounding fire.
- Special Fire Fighting Procedures : Use fire-fighting procedure that is appropriate to treat Surrounding fire, all fire fighters should use self-contained breathing apparatus and full fire fighting turnout gear.
- Unusual fire explosion hazard: Dust can form explosive mixtures with air.

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**6. Accidental Release Measures**

- Personal precautions : Avoid Inhalation. Use personal protective equipment. Ensure adequate ventilation.
- Environmental precautions : Remove all sources of ignition. Avoid discharge into environment
- Methods for cleaning up : Use mechanical handling equipment. Avoid raising dust. Flush with plenty of water. Dispose of in compliance with local and national regulations.

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**7. Handling and Storage****Handling**

- General advice : Ensure thorough ventilation of stores and work areas. Take precautionary measures against static discharges. Keep away from sources of ignition - No smoking
- Protection against Fire and explosion : Avoid dust formation. Dust can form an explosive mixture with air. Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy. Electrical devices must meet the specified temperature class.

**Storage**

- General advice : Protect against moisture. Containers should be stored tightly sealed in a dry place.

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**8. Exposure Controls/Personal Protection**

Engineering Measures	:	Prevent dust buildup by providing adequate ventilation.
Hygiene Measures	:	Wash hands before consumption of food or drink.
Skin and Body	:	Wear approved protective work boots, work clothing.
Hands	:	Gloves - protective recommended.
Eyes	:	Safety glass with side shields, chemical goggles if contact likely.
Hair	:	Some form of hat or hair covering.
Other Devices	:	Maintain eye wash facility in work area.

**9. Physical and Chemical Properties**

Form	:	Crystalline Fine granules
Colour	:	White
Melting Point ° C	:	133
Boiling Point° C	:	Decomposes at 150
Density g/ml at 20° C	:	1.601
Vapor Density (air = 1)	:	4.6
Vapor Pressure mmHg at 20° C	:	<0.1
Flash Point ° C	:	245

**10. Stability and Reactivity**

Stability	:	Stable at normal temperatures.
Conditions to Avoid	:	Temperatures over 80°C and moisture.
Materials to Avoid	:	Strong oxidants, strong bases, alkali metals, amines, and Carbonates.
Decomposition Products	:	Maleic Acid, Maleic Anhydride, Carbon Monoxide, and Carbon Dioxide.

**11. Toxicological Information**

LD50/oral/mouse	:	1600-3200 mg/kg
Skin Irritation (Rabbit)	:	Moderate
Eye Irritation (Rabbit)	:	Severe

**12. Ecological Information**

Not Available

**13. Disposal Consideration**

Disposal method

Product	:	To be performed as per local regulations.
Contaminated packaging	:	Can be land filled or incinerated, in compliance with Local Regulations

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**14. Transport Information**Road transport ADR/RIDMaritime transport IMDG regulations } Not Classified as a dangerous good under transport  
Air transport ICAO/IATA**15. Regulatory Information**

## INTERNATIONAL REGULATIONS

Listed in EC : 296  
Brussels Nomenclature : 2918.19  
US Food and Drug Administration : 21 CFR 184.1069

Responsibility of the receiver to have the knowledge of the local and national regulations.

**16. Other Information**

The information provided in this Safety Data Sheet is given in good faith and is correct to the best of our knowledge and information at the date of publication. It is designed only as guidance for safe handling, storage, transportation, use and disposal. No warranty is expressed or implied.

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