

MATERIAL SAFETY DATA SHEET**SDS / MSDS**

Product Name: DL - Malic Acid

Revision Date: 05.01.2024

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1. Manufacturer and Substance Identification

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Chemical Name	: DL-MALIC ACID
CAS Number	: 6915-15-7 / 617-48-1 (Old CAS No.)
EC Number	: 230-022-8 / 210-514-9
Molecular Formula	: C ₄ H ₆ O ₅
Molecular Weight	: 134.09
Synonyms	: Hydroxybutanedioic acid, Hydroxysuccinic acid
Identified uses	: Used as Technical additives, chemical preservatives. Food additives (GRAS substance) used for processing in food industry. Used in protective coatings, dyestuff, adhesives, polymer & resins, pharmaceutical applications, construction, fertilizers (Agro) and for laboratory use

2. Hazard Identification**2.1. Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

For Physico-Chemical properties : Not Classified

For Human health hazards

- | | |
|---|--------------------|
| 1. Acute Toxicity oral | : Not Classified |
| 2. Skin corrosion / irritation | : Not Classified |
| 3. Serious damage / eye irritation | : Category 2, H319 |
| 4. Respiration sensitization | : Not Classified |
| 5. Skin sensitization | : Not Classified |
| 6. Specific target Toxicity single (SPOT) | : Not Classified |

For Environmental hazards : Not Classified

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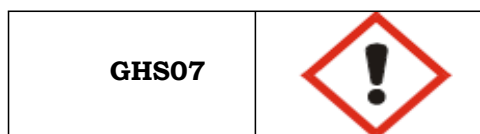
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2.2. Label elements

Labeling according to Regulation (EC) No 1272/2008

Hazard pictogram:



Signal word : **Warning**

Hazard Statement:

H319 - Causes serious eye irritation

Precautionary statement(s):

P264 - Wash hands thoroughly after handling.

P280 - Wear Protective gloves / protective clothing / eye protection / face protection

P305 + P 351 + P 338: IF IN EYES: Rinse cautiously with water for several minutes. Remove Contact lenses, if present and easy to do. Continue rinsing.

P337 + P 313: If eye irritation persists: Get medical advice / attention

3. 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 / 617-48-1	More than 99.5%	230-022-8/210-514-9
Maleic Acid	110-16-7	Less than 0.05%	203-742-5

4. First Aid Measures

Inhalation	: Remove to fresh air and keep at rest. Monitor respiratory function. If breathing is difficult, give oxygen. If necessary, give artificial respiration
Skin Contact	: Remove contaminated clothing and shoes. Wash with plenty of soap and Water.
Eye Contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Ingestion	: In mouth of victim with plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek Medical attention. Movement of the exposed individual from the area to fresh air is recommended.
Other	: Personal protective equipment for first aid responders is recommended

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5. Fire Fighting Measures

- Flash Point : 245 ° C
- Lower Explosion Limit : 2.8 % (V)
- Upper Explosion Limit : 16.8 % (V)
- Flammable Limits : Not Applicable
- Extinguishing Media : Carbon dioxide (CO₂) foam, dry powder, sand for small fires.
For large fires use water jet or alcohol resistant foam.
- 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 firefighting turnout gear.

Unusual fire explosion hazard: Dust can form explosive mixtures with air.

6. Accidental Release Measures

- Personal precautions : Avoid inhalation, Use personal protective equipment (gloves, safety goggles and protective clothing). 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.
-

7. Handling and Storage**Handling**

- General advice : Avoid inhalation, contact with skin and eyes. Do not handle near incompatible materials. Use proper personal protective equipment. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash hands before eating, drinks, smoking or going to the toilet. Take off all contaminated clothing and wash before reuse.
- 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.

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Storage

General advice : Store away from alkaline materials, oxidizers and strong acids.
Copper oxide, nitric acid and sulfuric acid, sodium nitrite
Avoid static electricity discharges.
Keep in original container, in a cool dry, well-ventilated place.
Keep away from food. Store locked up; keep out of reach of children.

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 (Latex or PVC Gloves)
Eyes : Safety glass with side shields, chemical goggles if contact likely.
Hair : Some form of hat or hair covering
Other Devices : Maintain eyewash facility in work area.

9. Physical and Chemical Properties

Form : Crystalline Granules/Fine granules/podwer
Color : White
Odour : Odorless
Odour threshold : No data
pH : Acidic
Melting Point/ Freezing point °C : 129 at 1013 hPa
Boiling Point°C : Decomposes at 150
Relative Density g/cm³at 20° C : 1.60
Vapor Density : No data
Vapor Pressure mmHg at 25° C : 0.00000293
Flash Point °C : Not Applicable -Solid
Evaporation Rate : No data
Flammability : Not Classified as Flammable
Upper/Lower Flammability Limited: Not Applicable
Solubility in water g/L at 25° C : 500
Solubility in other Solvents : No data
Partition Co-efficient : Log Kow -0.46
Auto ignition Temperature : Not Applicable
Decomposition Temperature : No Decomposition Reported below Boiling Point
Viscosity : Not Applicable
Explosive properties : Not classified as Explosive
Oxidizing properties : Not classified as Oxidizing

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10. Stability and Reactivity

- Stability : Stable at normal conditions of storage and handling
Polymerization will not occur
- 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
- Reactivity : Stability and reactivity of Malic acid is not considered Critical.

11. Toxicological Information

- Acute Toxicity : LD₅₀ (oral, rats): 1600 mg/kg
: LC₅₀ (inhalation, rats) : >1.306 mg/L for 4 Hrs
- Skin corrosion/irritation : Slightly irritating
- Serious eye damage/irritation : Moderately Irritating
- Respiratory or skin sensitisation : Not Sensitizing
- Germ cell mutagenicity : Not Mutagenic
- Carcinogenicity : Non carcinogenic
- Reproductive toxicity : Non toxic to reproduction.

12. Ecological Information

Toxicity

Aquatic Toxicity

Short-term toxicity to fish

Brachydanio rerio (new name: Danio rerio)/fresh water/semi-static LC50 (96 hrs):
>100 mg/L test mat

Long-term toxicity to fish : No hazard was identified

Short-term toxicity to aquatic invertebrates

Daphnia magna/fresh water/static EC50 (48 h): 240 mg/L test mat.

Long-term toxicity to aquatic invertebrates: No hazard was identified

Algae and aquatic plants

Pseudokirchnerella subcapitata (algae)/freshwater/static NOEC (72 h): >= 100 mg/L test mat.

Toxicity to sediment: No hazard was identified

Toxicity to soil macro-organisms : No hazard was identified

Persistence and degradability : No information Available

Bioaccumulative potential: Substance has a low potential for bioaccumulation
(i.e a log Kow<3)

Mobility in soil : Malic acid is readily biodegradable in water and mobility is not expected to be of concern.

Results of PBT and VpVb assessment:

Malic acid is soluble and is readily biodegradable. The log Kow is well below levels of concern. It

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is not expected to persist or bio accumulate in the environment

Endocrine Disruptive Properties: None

Other Adverse effects: None

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

14. Transport Information

Road transport ADR / RID

Maritime transport IMDG

Air transport ICAO/IATA

UN-Number ·

DOT, ADR/RID/ADN, IMDG, IATA : Not regulated.

UN proper shipping name ·

DOT, ADR/RID/ADN, IMDG, IATA : Not regulated.

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.

Safety, health and environmental regulations/legislation specific for the substance or mixture ·
United States (USA) · SARA ·

Section 302 (extremely hazardous substances):

Substance is not listed. ·

Section 313 (Specific toxic chemical listings):

Substance is not listed. ·

TSCA (Toxic Substances Control Act)

All ingredients are listed or exempt. ·

Proposition 65 (California) · Chemicals known to cause cancer

Substance is not listed. ·

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Chemicals known to cause developmental toxicity for females:
Substance is not listed. .

Chemicals known to cause developmental toxicity for males:
Substance is not listed. .
Chemicals known to cause developmental toxicity:
Substance is not listed. .

EPA (Environmental Protection Agency):
Substance is not listed. .

IARC (International Agency for Research on Cancer):
Substance is not listed. .

Canadian Domestic Substances List (DSL):
All ingredients listed on DSL or NDSL.

16. Other Information

References: Prepared in accordance with Material Safety Data Sheet- Guideline-IS 17889-2022,
Current Extended Safety data Sheet for DL Malic Acid

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.

Abbreviations and acronyms:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

OSHA: Occupational Safety & Health Administration

vPvB very Persistent, very Bio accumulative

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