

malic acid  
min. 99,5%, fine granular  
25 kg bags, 875 kg per pallet

Data Sheet-No.: 14323



Last Changes by: JG

Date: 01.10.2012

Time: 09:52:51

## Description

Malic Acid is a white crystal fine granulated powder without or only little odour. It is free flowing, stable and non-hygroscopic.

Synonym:	Hydroxy Succinic Acid, Common Malic Acid
CAS-No.	617-48-1
EINECS-No.	210-514-9
Chem. Formula:	$C_4H_6O_5$

## Specification

Assay	99.5 % min.
Colour - 10% solution APHA	10 max.
Heavy Metals (as Pb)	20 ppm max.
Arsenic (as $As_2O_3$ )	0.5 ppm max.
Chloride	30 ppm max.
Ash	0.05 wt/% max.
Melting point	127 - 132 °C
Particle size general type through 12 mesh	

## Packaging

25-kg bags on pallets à 875 kg and 1000 kg big bags

## Transport and Storage:

The relevant legal requirements and safety regulations (see EU-Safety Data Sheet) have to be followed. The Safety Data Sheet informs you of further product properties, it contains directions for hazardous classification as well as the regulations to be respected and describes the necessary measurements for product handling to protect mankind and environment.

No guarantee, warranty, or representation is made, intended, or implied as to the correctness or sufficiency of any information, or as to the suitability of any chemical compounds for any particular use. Each user should conduct a sufficient investigation to establish the suitability of any product for his intended use.

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 02.05.2012

Version number 6

Revision: 02.05.2012

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

- **Date of issue:** 13.10.2006
- **1.1 Product identifier**
- **Trade name:** DL-Malic acid
- **Article number(s):** 364, 4078, 6564, 6614
- **Synonym(s):**  
DL-malic acid  
malic acid  
Hydroxybutanedioic acid  
Hydroxysuccinic acid
- **CAS Number:**  
617-48-1
- **EC number:**  
210-514-9
- **Registration number:** 01-2119552463-40-XXXX
- **1.2 Relevant identified uses of the substance or mixture and uses advised against** no data available
- **Application of the substance / the preparation:**  
Chemicals for various applications  
Food additive
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer / Supplier:**  
HARKE Chemicals GmbH  
Xantener Straße 1  
D-45479 Mülheim an der Ruhr  
Germany  

Phone: +49 208 / 3069 - 0  
Fax: +49 208 / 3069 - 1280
- **E-mail address of the competent person responsible for the Safety Data Sheet:** sds@harke.com
- **Informing department:** Abt. Gefahrgut
- **1.4 Emergency telephone number:**  
For Germany: Giftinformationszentrum Universitätsklinik Mainz  
Phone: +49 6131 / 19 24 0

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



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Eye Irrit. 2 H319 Causes serious eye irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Xi; Irritant

R36: Irritating to eyes.

- **2.2 Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

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**· Hazard pictograms**

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**· Signal word Warning****· Hazard statements***H319 Causes serious eye irritation.***· Precautionary statements***P280 Wear protective gloves/protective clothing/eye protection/face protection.**P264 Wash thoroughly after handling.**P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**P337+P313 If eye irritation persists: Get medical advice/attention.***· 2.3 Other hazards***Risk of dust explosion.**In case of dust forming organic products the possibility of dust explosion is generally to be expected.***· Results of PBT and vPvB assessment****· PBT:** Not applicable.**· vPvB:** Not applicable.**SECTION 3: Composition/information on ingredients****· 3.1 Chemical characterization: Substances****· CAS No. Designation:***617-48-1 DL-Malic acid***· Identification number(s):****· EC number:** 210-514-9**SECTION 4: First aid measures****· 4.1 Description of first aid measures****· General information:** *Remove contaminated clothing.***· After inhalation:** *Supply fresh air; consult doctor in case of symptoms.***· After skin contact:***Wash with soap and water.**If skin irritation continues, consult a doctor.***· After eye contact:** *Rinse opened eye for several minutes under running water. Then consult doctor.***· After swallowing:***Rinse out mouth and then drink plenty of water.**Do not induce vomiting!**In case of persistent symptoms consult doctor.***· 4.2 Most important symptoms and effects, both acute and delayed** *No further relevant information available.***· 4.3 Indication of any immediate medical attention and special treatment needed***No further relevant information available.***SECTION 5: Firefighting measures****· 5.1 Extinguishing media****· Suitable extinguishing agents***Carbon dioxide (CO<sub>2</sub>), extinguishing powder or water spray/fog. Fight larger fires with water spray/fog or alcohol-resistant foam.***· For safety reasons unsuitable extinguishing agents** *Water with a full water jet.*

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- **5.2 Special hazards arising from the substance or mixture**  
Risk of dust explosion if enriched with fine dust in presence of air.  
Carbon monoxide (CO) and Carbon dioxide (CO<sub>2</sub>)
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained breathing apparatus.
- **Additional information** Collect contaminated fire fighting water separately. It must not enter drains.

### SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation.  
Remove all ignition sources.  
Avoid contact with skin and eyes.  
Avoid causing dust.
- **6.2 Environmental precautions:**  
Damp down dust with water spray jet.  
Do not allow to enter drainage system, surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**  
Ensure adequate ventilation.  
Collect mechanically.  
Send for recovery or disposal in suitable containers.  
Dispose of the material collected according to regulations.
- **6.4 Reference to other sections**  
See Section 8 for information on personal protection equipment.

### SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Avoid contact with skin and eyes.  
Prevent formation of dust.  
Any deposit of dust which cannot be avoided must be removed regularly.  
Do not breathe dust.  
Make sure that all applicable workplace limits are observed.
- **Information about protection against explosions and fires:**  
Dust can combine with air to form an explosive mixture.  
Protect against electrostatic charges.  
Keep ignition sources away - Do not smoke.  
Protect from heat.  
Dust explosion class: stage 1
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and containers:**  
Observe all local and national regulations for storage of water polluting products.
- **Information about storage in one common storage facility:**  
Do not store together with alkalis (caustic solutions).  
Store away from oxidizing agents.  
Store away from metals.
- **Further information about storage conditions:**  
Store container in a well ventilated position.  
Store in cool, dry conditions in well sealed containers.  
Protect from direct sunlight

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· 7.3 Specific end use(s) No further relevant information available.

### SECTION 8: Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- 8.1 Control parameters
- Components with critical values that require monitoring at the workplace:
  - Observe all workplace limits for dust.
  - DNELs no data available
  - PNECs no data available
  - Additional information: The lists that were valid during the compilation were used as basis.
- 8.2 Exposure controls
- Personal protective equipment
- General protective and hygienic measures
  - Avoid contact with the eyes.
  - Avoid close or long term contact with the skin.
  - Do not breathe dust.
  - Use skin protection cream for preventive skin protection.
  - Wash hands during breaks and at the end of the work.
  - Do not eat, drink or smoke while working.
  - Keep away from foodstuffs, beverages and food.
- Breathing equipment: Use breathing protection in case of dust formation.
- Recommended filter device for short term use: Partikelfilter EN 143 Type P2 or P3
- Protection of hands:
  - Protective gloves
  - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
  - Check the permeability prior to each renewed use of the glove.
  - To avoid skin problems reduce the wearing of gloves to the required minimum.
- Material of gloves
  - Following data apply to aqueous, satisfied solutions of the material.
  - Polychloroprene
  - Recommended thickness of the material:  $\geq 0.65$  mm
  - Nitrile rubber - NBR
  - Recommended thickness of the material:  $\geq 0.4$  mm
  - e.g. KCL Camapren®; Camatril® Profi;
  - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- Penetration time of glove material
  - Penetration time:  $\geq 8$  hours
  - Protective gloves should be replaced at first signs of wear.
- Eye protection:
  - Tightly sealed safety glasses
  - Do not wear contact lenses.
- Body protection:
  - Light weight protective clothing
  - Protective clothing should be selected specifically for the working place.

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## SECTION 9: Physical and chemical properties

### · 9.1 Information on basic physical and chemical properties

#### · General Information

#### · Appearance:

**Form:** fine crystals  
granular

**Colour:** white

**Smell:** odourless

**Odour threshold:** not applicable

· pH-value (50 g/l) at 20°C: ~2

#### · Change in condition

**Melting point/Melting range:** 129°C

**Boiling point/Boiling range:** 150°C

· Flash point: 203°C

· Ignition temperature: 349°C

· Decomposition temperature: not determined

· Self-inflammability: Product is not selfigniting.

· Danger of explosion: Formation of ignitable/explosive dust/air mixtures possible.

#### · Critical values for explosion:

**Oxidizing properties** not applicable

· Vapor pressure at 25°C: 0.0004 Pa

· Density at 20°C: 1.6 g/cm<sup>3</sup>

· Bulk density at 20°C: 700 ~ 800 kg/m<sup>3</sup>

#### · Solubility in / Miscibility with

**Water at 25°C:** 500 g/l

· Alcohols: soluble

· Organic solvents: not determined

· 9.2 Other information Further informations please refer to technical data sheet.

## SECTION 10: Stability and reactivity

### · 10.1 Reactivity

### · 10.2 Chemical stability

#### · Thermal decomposition / conditions to be avoided:

Avoid impact, friction, heat, sparks, electrostatic charges.

Temperature over 80°C

Protect from moisture.

### · 10.3 Possibility of hazardous reactions

Risk of dust explosion.

Corrosive action on metals

### · 10.4 Conditions to avoid No further relevant information available.

### · 10.5 Incompatible materials:

Strong oxidizing agents

Nitric acid

Sulfuric acid

Sodium nitrate

Alkaline materials

Amines

Alkali metals

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· 10.6 Hazardous decomposition products: Carbon monoxide (CO) and Carbon dioxide (CO<sub>2</sub>)

### SECTION 11: Toxicological information

## · 11.1 Information on toxicological effects

## · Acute toxicity:

## · LD/LC50 values that are relevant for classification:

Oral	LD50	2000 mg/kg (rat)
Dermal	LD50	> 2000 mg/kg (rat)

## · Primary irritant effect:

· on the skin: Slightly irritating

· on the eye: Irritant effect

· Sensitization: No sensitizing effect known.

### SECTION 12: Ecological information

## · 12.1 Toxicity

## · Aquatic toxicity:

No further relevant information available.

EC50/48 h	> 240 mg/l (daphnia)
ErC50/72 h	≥ 100 mg/l (algae)
LC50/96 h	> 100 mg/l (fish)
NOEC/72 h	≥ 100 mg/l (algae)

· 12.2 Persistence and degradability Easily biodegradable

· 12.3 Bioaccumulative potential No further relevant information available.

· 12.4 Mobility in soil No further relevant information available.

## · Additional ecological information:

· Chemical Oxygen Demand (COD-value): not determined

· Biochemical Oxygen Demand (BOD5-value): not determined

· General notes: Water hazard class 1 (Assessment by list): slightly hazardous for water

## · 12.5 Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

· 12.6 Other adverse effects No further relevant information available.

### SECTION 13: Disposal considerations

## · 13.1 Waste treatment methods

· Recommendation Disposal must be made according to official regulations.

· Waste disposal key number: According to local/national regulations.

## · European waste catalogue:

Waste disposal key numbers from EWC have to be assigned depending on origin and processing.

## · Uncleaned packagings:

· Recommendation: Disposal must be made according to official regulations.

· Recommended cleaning agent: Water

### SECTION 14: Transport information

## · 14.1 UN-Number

· ADR, IMDG, IATA

Void

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|--|--|
| · 14.2 UN proper shipping name   |  |
| · ADR, IMDG, IATA  | Void   |
| · 14.3 Transport hazard class(es)  |  |
| · ADR, IMDG, IATA  |  |
| · Class  | Void   |
| · 14.4 Packing group   |  |
| · ADR, IMDG, IATA  | Void   |
| · 14.6 Special precautions for user  | Not applicable.                                      |
| · 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable.                                      |
| · Transport/Additional information:  | Not dangerous according to the above specifications. |
| · UN "Model Regulation":   | -  |

#### SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- Labelling according to Regulation (EC) No 1272/2008  
The substance is classified and labelled according to the CLP regulation.
- Hazard pictograms



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- Signal word Warning
- Hazard statements  
H319 Causes serious eye irritation.
- Precautionary statements  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P264 Wash thoroughly after handling.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313 If eye irritation persists: Get medical advice/attention.
- National regulations
- Information about limitation of use: Employment restrictions concerning young persons must be observed.
- Decree to be applied in case of technical fault: Directive 96/82/EC does not apply.
- Water hazard class:  
Water hazard class 1 (Assessment by list): slightly hazardous for water  
ID-Number: 2210
- 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

#### SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Reasons for changes:  
Changes in classification and labelling

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The Material Safety Data Sheet has been revised. Changes in the respective chapters are characterized in the left side edge by \*.

· **Department issuing MSDS:**

C.S.B. GmbH                      Phone: +49 - 2151 - 652086-0  
Parkstraße 29                      Fax: +49 - 2151 - 652086-9  
D-47829 Krefeld  
Germany

· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
ICAO: International Civil Aviation Organization  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
DNEL: Derived No-Effect Level (REACH)  
PNEC: Predicted No-Effect Concentration (REACH)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent

· **Sources:** These data are based on information submitted by pre-suppliers.

· **\* Data compared to the previous version altered.**

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