

**Safety Data Sheet**  
**According to Regulation (EC) No 1907/2006, Annex II,**  
**Amended by REGULATION (EU) No 453/2010,**  
**According to Regulation (EC) No 1272/2008**  
DL-malic acid

SDS Record Number: CSSS-TCO-010-112188  
Version 1.1      Revision date: 24/10/2012

Printing date: 24/10/2012

**Section 1 Identification of the substance and of the company/undertaking**

**1.1 Product identifier:**

Identification on the label/Trade name: DL-malic acid  
Additional identification: DL-Hydroxysuccinic acid  
Identification of the product: CAS# 617-48-1; EC# 210-514-9  
Index Number: Not available  
REACH registration No.: 17-2119384584-28-0000

**1.2 Relevant identified uses of the substance and uses advised against:**

**1.2.1 Identified uses:**

DL-Malic acid can be used as an acidulant in cool drinks (including lactobacillus drinks, milk drinks, carbonated drinks, cola), frozen foods (including sherbet and ice cream), processed foods (including wine and mayonnaise). It is used as color-keeper and antiseptic of juice. It is also used as emulsion stabilizer of egg yolk. DL-Malic acid also can be used as pharmaceutical intermediate, cosmetic, rinse, metal cleaner, buffering agent, retarder in textile industry, fluorescent whitening agent of polyester fibre.

**1.2.2 Uses advised against:**

Not available.

**1.3 Details of the supplier of the safety data sheet:**

Supplier(Only representative): -  
Supplier(Manufacturer): Changmao Biochemical Engineering Co.,Ltd  
Address: No.1228, North Changjiang Road, Changzhou City, P.R.China  
Contact person(E-mail): gxy@cmbec.com  
Telephone: +86-519-85776832  
Fax: +86-519-85776803

**1.4 Emergency telephone Number:**

+86-519-85776832

Available outside office hours?      YES            NO     

**Section 2 Hazards Identification**

**2.1 Classification of the substance**

**2.1.1 Classification:**

The substance is classified as following according to 67/548/EEC and REGULATION (EC) No 1272/2008:

REGULATION (EC) No 1272/2008	
Hazard classes/Hazard categories	Hazard statement
Eye Irrit. 2	H319
<i>For full text of H- phrases: see section 2.2.</i>	
67/548/EEC	
Hazards characteristics	R-Phrases
Xi	R36

*For full text of R- phrases: see section 16.*

**2.1.2 The most important adverse effects**

**2.1.2.1 The most important adverse physicochemical effects:**

Not applicable.

**2.1.2.2 The most important adverse human health effects:**

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Causes serious eye irritation.

**2.1.2.3 The most important adverse environmental effects:**

Not applicable.

**2.2 label elements**

**Hazard Pictograms:**



**Signal Word(S):**

Warning

**Hazard Statement:**

H319: Causes serious eye irritation.

**Precautionary Statement:**

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

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**

Not available (PBT,vPvB, Substance is an endocrine disruptor etc.)

**Section 3 Composition/information on ingredients**

**Substance/Mixture:** Substance

**Ingredient(s):**

Chemical Name	Registration No.	CAS No.	EC No.	Concentration
DL-malic acid	17-2119384584-28-0000	617-48-1	210-514-9	≥99.0%

**Section 4 First aid measures**

**4.1 Description of first aid measures:**

In all cases of doubt, or when symptoms persist, seek medical attention.

**4.1.1 In case of inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**4.1.2 In case of skin contact:**

Wash off thoroughly with plenty of water. If irritation persists, seek medical attention.

**4.1.3 In case of eyes contact:**

Wash affected eyes for at least 15 minutes under running water with eyelids held open. Seek medical attention.

**4.1.4 In case of ingestion:**

Rinse mouth immediately and then drink plenty of water. If large quantities of this material are swallowed, call a physician immediately.

**4.2 Most important symptoms and effects, both acute and delayed**

Causes serious eye irritation.

**4.3 Indication of any immediate medical attention and special treatment needed**

If skin irritation or rash occurs, get medical advice/attention.

**Section 5 Fire-Fighting measures**

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**5.1 Extinguishing media:**

**Suitable extinguishing media:** Small fire: use dry chemical powder. Large fire: Use water spray, fog or foam.

**Unsuitable extinguishing media:** Do not use water jet.

**5.2 Special hazards arising from the substance or mixture**

In case of fire, the following can be released: carbon monoxide, carbon dioxide. Fine dust dispersed in air in sufficient concentrations, and in the presences of an ignition source is a potential dust explosion hazard.

**5.3 Advice for fire-fighters:**

As in any fire, wear self-contained breathing apparatus pressure-demand. MSHA/NIOSH (approved or equivalent) and full protective gear.

**Section 6 Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures:**

**6.1.1 For non-emergency personnel:**

Wear protective equipment. Keep unprotected persons away. Avoid formation of dust. Use respiratory protective device against the effects of fumes/dust/aerosol. Wear protective clothing. Avoid contact with eyes and skin.

**6.1.2 For emergency responders:**

Wear an appropriate NIOSH/MSHA approved respirator if mist, vapor or dust is generated.

**6.2 Environmental Precautions:**

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Do not allow material to be released to the environment without proper governmental permits.

**6.3 Methods for Containment and Cleaning up:**

Clean up spills immediately, using the appropriate protective equipment. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation. Clean up affected area.

**6.4 Reference to other sections:**

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

**6.5 Additional information:**

Not applicable.

**Section 7 Handling and storage**

**7.1 Precautions for safe handling:**

**7.1.1 Protective measures:**

Keep away from heat. Keep away from sources of ignition. Wash thoroughly after handling. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.

**7.1.2 Advice on general occupational hygiene:**

Do not eat, drink and smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.

**7.2 Conditions for safe storage, including any incompatibilities:**

Kept airtightly in a light-proof, dry and cool place. Store away from incompatible materials such as oxidizing agents, alkalis.

**7.3 Specific end use(s):**

Not applicable.

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**Section 8 Exposure control/personal protection**

**8.1 Control parameters:**

- 8.1.1 Occupational exposure limits: Not available.
- 8.1.2 Additional exposure limits under the conditions of use: Not available.
- 8.1.3 DNEL/DMEL and PNEC-Values: Not available.

**8.2 Exposure controls**

**8.2.1 Appropriate engineering controls:**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**8.2.2 Individual protection measures, such as personal protective equipment:**

Eye/face protection	Safety glasses.
Hand protection	Handle with gloves. Type of gloves recommended: Nitrile rubber. Minimum breakthrough time / gloves: 480 min. Glove thickness: 0.11mm.
Body protection	Protective clothing. Protective boots, if the situation requires.
Respiratory protection	Dust respirator.
Thermal hazards	Wear suitable protective clothing to prevent heat.

**8.2.3 Environmental exposure controls:**

Avoid discharge into the environment.  
According to local regulations, Federal and official regulations.

**Section 9 Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

Appearance:	Crystals or crystalline powder
Colour:	White
Odour:	Sour odour
Odour threshold:	Not available
pH:	Acidity
Melting point/range (°C):	131-132 °C
Boiling point/range (°C) :	150 °C (ca. 1 atm)
Flash point (°C) :	Not available
Evaporation rate:	Not available
Flammability (solid, gas):	Product is not flammable.
Ignition temperature (°C) :	Not available
Upper/lower flammability/explosive limits:	Not available
Vapour pressure (25°C) :	0.00000293 mm Hg (Calc)
Vapour density:	Not available
Relative Density :	1.6012 g/cm <sup>3</sup> (25 °C)
Bulk density (kg/m <sup>3</sup> ) :	Not available
Water solubility (g/l) at 20°C :	> 500 g/L (Calc)
n-Octanol/Water (log Po/w) :	log Pow=-1.68(Calc)
Auto-ignition temperature:	> 150 °C
Decomposition temperature:	Not available
Viscosity, dynamic (mPa s) :	Not available
Explosive properties:	Not available
Oxidising properties:	Not available
Molecular Formula:	C <sub>4</sub> H <sub>6</sub> O <sub>5</sub>
Molecular Weight:	134.09

**9.2. Other information:**

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Fat solubility(solvent– oil to be specified) etc:	Not available
Surface tension:	Not available
Dissociation constant in water(pKa):	Not available
Oxidation-reduction Potential:	Not available
Specific Rotation:	-0.10° ~-0.10°
Arsenic [as As] :	2mg/kg Max
Lead:	2mg/kg Max
Residue on ignition:	0.10% Max
Fumaric Acid:	1.0% Max
Maleic Acid:	0.05% Max
Water-insoluble Matter	0.1%Max

### **Section 10 Stability and reactivity**

#### **10.1 Reactivity:**

The substance is stable under normal storage and handling conditions.

#### **10.2 Chemical stability:**

Stable at room temperature in closed containers under normal storage and handling conditions.

#### **10.3 Possibility of hazardous reactions:**

No dangerous reactions known.

#### **10.4 Conditions to avoid:**

Incompatible materials. Dust generation, excess heat, sources of ignition.

#### **10.5 Incompatible materials:**

Oxidizing agents, alkalis.

#### **10.6 Hazardous decomposition products:**

Carbon monoxide, carbon dioxide.

### **Section 11 Toxicological information**

#### **11.1 Toxicokinetics, metabolism and distribution**

**Non-human toxicological data:** Not available

#### **11.2 Information on toxicological effects**

##### **Acute toxicity:**

LD50( Oral, Rat): 10700 mg/kg bw(male), 9300 mg/kg bw(female)

LD50(Dermal, Rabbit): Not available

LC50(Inhalation, Rat): Not available

**Skin corrosion/Irritation:** Not classified

**Serious eye damage/irritation:** Causes serious eye irritation.

**Respiratory or skin sensitization:** Not classified

**Germ cell mutagenicity:** Not classified

**Carcinogenicity:** Not classified

**Reproductive toxicity:** Not classified

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**STOT- single exposure:** Not classified  
**STOT-repeated exposure:** Not classified  
**Aspiration hazard:** Not classified

**Section 12 Ecological information**

**Toxicity:**

Acute toxicity		Time	Species	Method	Evaluation	Remarks
LC50	N/A	96h	Fish	OECD 203	N/A	N/A
EC50	N/A	48h	Daphnia	OECD 202	N/A	N/A
EC50	N/A	72h	Algae	OECD 201	N/A	N/A

**Persistence and degradability:** Not available.  
**Bioaccumulative potential:** Not available.  
**Mobility in soil:** Not available.  
**Results of PBT&vPvB assessment:** Not available.  
**Other adverse effects:** Do not empty into drains.

**Section 13 Disposal considerations**

**13.1 Waste treatment methods**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**13.2 Product / Packaging disposal:**

If empty container retains product residues, all label precautions must be observed. Return for reuse or dispose according to national or local regulations.

**Section 14 Transport information**

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO/IATA)
<b>UN-Number:</b>	Not regulated	Not regulated	Not regulated
<b>UN Proper shipping name:</b>	Not regulated	Not regulated	Not regulated
<b>Transport hazard Class:</b>	Not regulated	Not regulated	Not regulated
<b>Packaging group:</b>	Not regulated	Not regulated	Not regulated
<b>Environmental hazards:</b>	No	No	No
<b>Special precautions for user:</b>	See section 2.2	See section 2.2	See section 2.2
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not regulated	Not regulated	Not regulated

**Section 15 Regulation information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Relevant information regarding authorization:** Not applicable.  
**Relevant information regarding restriction:** Not applicable.  
**Other EU regulations:** Employment restrictions concerning young person must be observed. For use only by technically qualified individuals.

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**Other National regulations:**

Not applicable

**Chemical Safety Assessment has been carried out?**

YES

NO

**Section 16 Other information**

**16.1 Indication of changes**

Version 1.1 Amended by EU No 453/2010

**16.2 Relevant R- phrases (number and full text):**

R36: Irritating to eyes.

**16.3 Training instructions:**

Not applicable.

**16.4 Further information:**

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

**16.5 Notice to reader:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees.

This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.