

# OTTO CHEMIE PVT LTD

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ISO 9001: 2015

## MATERIAL SAFETY DATA SHEET

### 1 Product identifiers

Product name : DL-Malic acid, 99%

Product Code : M 1375

CAS-No. : 617-48-1

### Hazard identification

#### 2.1 Classification of the substance or mixture

Eye irritation, Category 2

#### 2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word

Warning

Hazard statement(s)

H319 Causes serious eye irritation

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.

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

Response

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.

Storage

none

Disposal

none

#### 2.3 Other hazards which do not result in classification

none

### 3. Composition/information on ingredients

#### 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
dl-Hydroxybutanedioic acid	dl-Hydroxybutanedioic acid	617-48-1	none	100%

### 4. First-aid measures

#### 4.1 Description of necessary first-aid measures

##### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

##### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

##### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

##### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

##### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

#### 4.2 Most important symptoms/effects, acute and delayed

no data available

#### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

/SRP:/ Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Organic acids and related compounds/

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## 5.Fire-fighting measures

### 5.1Extinguishing media

#### Suitable extinguishing media

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.2Specific hazards arising from the chemical

no data available

### 5.3Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

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## 6.Accidental release measures

### 6.1Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

### 6.2Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### 6.3Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

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## 7.Handling and storage

### 7.1Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

### 7.2Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Non Combustible Solids.

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## 8.Exposure controls/personal protection

### 8.1Control parameters

#### Occupational Exposure limit values

no data available

#### Biological limit values

no data available

### 8.2Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 8.3Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

Wear dust mask when handling large quantities.

#### Thermal hazards

no data available

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## 9.Physical and chemical properties

<b>Physical state</b>	White to nearly white crystals or crystal powder
<b>Colour</b>	Colorless crystals
<b>Odour</b>	Characteristic
<b>Melting point/ freezing point</b>	130-132\u00baC
<b>Boiling point or initial boiling point and boiling range</b>	306.4\u00baC at 760 mmHg
<b>Flammability</b>	no data available
<b>Lower and upper explosion</b>	no data available

<b>limit / flammability limit</b>	
<b>Flash point</b>	203\00baC
<b>Auto-ignition temperature</b>	no data available
<b>Decomposition temperature</b>	no data available
<b>pH</b>	pH of a 0.001% aqueous solution is 3.80, that of 0.1% solution is 2.80, and that of a 1.0% solution is 2.34
<b>Kinematic viscosity</b>	6.5 mPa.s (= cP) 50% aqueous solution at 25\00b0C
<b>Solubility</b>	In water, 55.8 g/100 g water at 20\00b0C
<b>Partition coefficient n-octanol/water (log value)</b>	log Kow = -1.26
<b>Vapour pressure</b>	3.28X10 <sup>-8</sup> mm Hg at 25\00b0C (extrapolated)
<b>Density and/or relative density</b>	1.641 g/cm <sup>3</sup>
<b>Relative vapour density</b>	no data available
<b>Particle characteristics</b>	no data available

## 10. Stability and reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

no data available

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Bases, oxidizing agents, reducing agents, alkali metals.

### 10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

## 11. Information on toxicological effects

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Toxicity to Animals:

Oral LD50 Rat: 1500 mg/kg; Dermal LD50 Rabbit: 2000mg/kg

Inhalation LC50 Rat: > 50mg/L.

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified None. by NTP, None. by OSHA, None. by NIOSH.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of inhalation (lung irritant).

Special Remarks on Toxicity

to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

## 12. Ecological information

### 12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

### 12.2 Persistence and degradability

**AEROBIC:** In an aerobic closed bottle screening study using activated sludge and soil inoculum, malic acid had 5-, 15- and 30-day theoretical BODs of 68, 81 and 100% respectively(1). In a Warburg respirometer study using an activated sludge inoculum, theoretical BODs of 6.0-9.6% and 20.8-55.5% were observed over respective incubation periods of 4 and 24 hrs(2). In a Warburg respirometer study using a sewage sludge inoculum, a theoretical BOD of 47.2% was observed over an incubation period of 5 days(3). A theoretical BOD of 56.3% was observed in a standard BOD dilution test using a sewage inoculum(4). In a Warburg respirometer study using a phenol acclimated activated sludge inoculum, a theoretical BOD of 46% was observed over an incubation period of 12 hrs(5). Using C14-radio-labeled malic acid and a 1-hr incubation period, a 6.7% CO<sub>2</sub> evolution was observed in a natural soil degradation study(6); when the soil was sterilized via autoclaving, the CO<sub>2</sub> evolution was only 0.1%(6). DL-Malic acid, present at 100 mg/L, reached 73% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test which classified the compound as readily biodegradable(7).

### 12.3 Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for malic acid(SRC), using a log Kow of -1.26(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### 12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of malic acid can be estimated to be 1(SRC). According to a classification scheme(2), this estimated Koc value suggests that malic acid is expected to have very high mobility in soil. The pKa values of malic acid are 3.51 and 5.03(3), indicating that this compound will exist partially in anion form in the environment and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(4).

### 12.5 Other adverse effects

no data available

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**13. Disposal considerations****13.1 Disposal methods****Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

**Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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**14. Transport information****14.1 UN Number**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**14.2 UN Proper Shipping Name**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**14.3 Transport hazard class(es)**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**14.4 Packing group, if applicable**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**14.5 Environmental hazards**

ADR/RID: no

IMDG: no

IATA: no

**14.6 Special precautions for user**

no data available

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

no data available

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**15. Regulatory information****15.1 Safety, health and environmental regulations specific for the product in question**

Chemical name	Common names and synonyms	CAS number	EC number
dl-Hydroxybutanedioic acid	dl-Hydroxybutanedioic acid	617-48-1	none
<b>European Inventory of Existing Commercial Chemical Substances (EINECS)</b>			Listed.
<b>EC Inventory</b>			Listed.
<b>United States Toxic Substances Control Act (TSCA) Inventory</b>			Not Listed.
<b>China Catalog of Hazardous chemicals 2015</b>			Not Listed.
<b>New Zealand Inventory of Chemicals (NZIoC)</b>			Not Listed.
<b>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</b>			Not Listed.
<b>Vietnam National Chemical Inventory</b>			Listed.
<b>Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)</b>			Listed.

**Section 16: Other Information**

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.