

## MATERIAL SAFETY DATA SHEET

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Version 1.2

## Section 1 - Product and Company Information

Product Name MALIC ACID, USP  
Product Number M8304  
Brand SIGMA

Company Sigma-Aldrich Canada, Ltd  
Street Address 2149 Winston Park Drive  
City, State, Zip, Country Oakville ON L6H 6J8 CA  
Technical Phone: 9058299500  
Emergency Phone: 800-424-9300  
Fax: 9058299292

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
DL-MALIC ACID, USP	6915-15-7	No

Formula C4H6O5  
Synonyms Butanedioic acid, hydroxy- (9CI) \* Deoxytetraric acid \* Hydroxybutanedioic acid \* Hydroxysuccinic acid \* alpha-Hydroxysuccinic acid \* Kyselina hydroxybutandiova (Czech) \* Kyselina jablecna (Czech) \* Pomalus acid \* Succinic acid, hydroxy-  
RTECS Number: ON7175000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Harmful.

Harmful if swallowed. Risk of serious damage to eyes. Irritating to respiratory system and skin.

## HMIS RATING

HEALTH: 2

FLAMMABILITY: 0

REACTIVITY: 0

## NFPA RATING

HEALTH: 2

FLAMMABILITY: 0

REACTIVITY: 0

For additional information on toxicity, please refer to Section 11.

## Section 4 - First Aid Measures

## ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

## INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give

artificial respiration. If breathing is difficult, give oxygen.

#### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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### Section 5 - Fire Fighting Measures

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#### EXPLOSION DATA

Dust Potential: This material, like most materials in powder form, is capable of creating a dust explosion.

#### FLASH POINT

N/A

#### AUTOIGNITION TEMP

340 °C

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Emits toxic fumes under fire conditions.

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### Section 6 - Accidental Release Measures

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#### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

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### Section 7 - Handling and Storage

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#### HANDLING

User Exposure: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Suitable: Keep tightly closed.

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### Section 8 - Exposure Controls / PPE

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#### ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

#### GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

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### Section 9 - Physical/Chemical Properties

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Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
Molecular Weight	134.09 AMU	
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	131 - 133 °C	
Freezing Point	N/A	
Vapor Pressure	< 0.1 mmHg	20 °C
Vapor Density	4.6 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.6 g/cm <sup>3</sup>	20 °C
Bulk Density	1,000 kg/l	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	340 °C	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

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### Section 10 - Stability and Reactivity

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#### STABILITY

Stable: Stable.

Conditions to Avoid: Heat.

Materials to Avoid: Bases, Oxidizing agents, Reducing agents, Alkali metals.

#### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

#### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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### Section 11 - Toxicological Information

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#### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: Causes severe eye irritation.  
Inhalation: Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.  
Ingestion: Harmful if swallowed.

#### SIGNS AND SYMPTOMS OF EXPOSURE

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

#### TOXICITY DATA

Intraperitoneal  
Rat  
100 MG/KG  
LD50

Oral  
Mouse  
1600 mg/kg  
LD50

Intraperitoneal  
Mouse  
50 MG/KG  
LD50

#### IRRITATION DATA

Skin  
Rabbit  
20 mg  
24H  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
0.75 mg  
24H  
Remarks: Severe irritation effect

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#### Section 12 - Ecological Information

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No data available.

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#### Section 13 - Disposal Considerations

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#### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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#### Section 14 - Transport Information

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#### DOT

Proper Shipping Name: None

Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

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Section 15 - Regulatory Information

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EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xn

Indication of Danger: Harmful.

R: 22 37/38 41

Risk Statements: Harmful if swallowed. Irritating to respiratory system and skin. Risk of serious damage to eyes.

S: 26 36

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful.

Risk Statements: Harmful if swallowed. Risk of serious damage to eyes. Irritating to respiratory system and skin.

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Wear suitable protective clothing and eye/face protection.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

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Section 16 - Other Information

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DISCLAIMER

For R&D or manufacturing use. Not for prescription compound or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.