

MATERIAL SAFETY DATA SHEET



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DL-MALIC ACID

Section 1: Chemical Product Identification

Product Name: DL-MALIC ACID.

Product Code: 363.

CAS#: 617-48-1.

Synonym: DL-Hydroxybutanedioic acid; (±)-2-Hydroxysuccinic acid; alpha-Hydroxysuccinic acid .

Chemical Name: DL-Hydroxybutanedioic acid.

Chemical Formula: C₄H₆O₅.

Formula Weight: 134.09.

Section 2: Composition and Information on Ingredients

Composition:

Name: DL-Malic Acid.

Toxicological Data on Ingredients:

Acute toxicity, Oral (Category 4), H302, R22.

Skin irritation (Category 2), H315, R38.

Serious eye damage (Category 1), H318, R41.

STOT – SE (Category 3) Inhalation - May cause respiratory irritation..

Section 3: Hazards Identification

Potential Acute Health Effects: Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting..

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact: Flush eyes with water as a precaution.

Skin Contact: Wash off with soap and plenty of water.

Serious Skin Contact: Not available.

Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration.

Serious Inhalation: Never give anything by mouth to an unconscious person. Rinse mouth with water.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: May be harmful if swallowed. Seek medical attention.

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Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Carbon monoxide. Carbon dioxide.

Fire Hazards in Presence of Various Substances: Slightly flammable to flammable in presence of heat.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks.

Fire Fighting Media and Instructions:

SMALL FIRE: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: As with most organic solids, fire is possible at elevated temperatures

Special Remarks on Explosion Hazards:

Fine dust dispersed in air in sufficient concentrations, and in the presences of an ignition source is a potential dust explosion hazard.

Section 6: Accidental Release Measures

Small Spill:

Use personal protective equipment. Sweep up and shovel. Keep in suitable, closed containers for disposal

Large Spill:

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Avoid breathing dust. Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

Section 7: Handling and Storage

Precautions:

Keep away from heat. Avoid formation of dust and aerosols. Keep away from sources of ignition. Empty containers pose a fire risk; evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents.

Storage:

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses, Lab coat, Dust respirator, Gloves. Be sure to use an approved/certified respirator or equivalent.

Personal Protection in Case of a Large Spill:

Splash goggles, Full suit, Dust respirator, Boots, Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid, crystals or crystalline powder.

Odor: Odourless.

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Taste: Not available.

Molecular Weight: 134.09.

Color: White.

pH: 3.0 - 5.0.

Boiling Point: 150 °C.

Melting Point: 129 – 131°C.

Critical Temperature: Not available.

Relative Density: ca. 1.60.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available

Solubility: Freely soluble in water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, dust generation

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Bases, Oxidizing agents, Reducing agents, Alkali metals.

Special Remarks on Corrosivity: Not available.

Polymerization: Not available.

Section 11: Toxicological Information

Routes of Entry: Inhalation, Ingestion.

Toxicity to Animals:

LD₅₀: oral – rat – 1600 mg/kg

Intraperitoneal - rat - 100 mg/kg

Intraperitoneal - mouse - 50 mg/kg

LC₅₀: Not available.

Chronic Effects on Humans: Causes skin and/or eye irritation.

Other Toxic Effects on Humans: May cause respiratory irritation.

Special Remarks on Toxicity to Animals: Skin - rabbit - Irritating to skin. - 24 h; Eyes - rabbit - Risk of damage to eyes. - 24 h.

Special Remarks on Chronic Effects on Humans: May be harmful if swallowed. Ingestion may cause nausea, vomiting, diarrhea. May cause weakness, respiratory distress, and cyanosis.

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

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD and COD: Not available.

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: Not available.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

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Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: DL-Malic Acid.

Other Regulations: Not available.

Other Classifications:

WHMIS (Canada): D2B Toxic materials.

DSCL (EEC):

This product is not classified according to the EU regulations. Not applicable.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard: Not Available.

Protective Equipment: Gloves, Lab coat, Safety glasses, Dust respirator - be sure to use an approved/certified respirator or equivalent.

Section 16: Other Information

References: Full text of H AND R-Statements.

H315, R38 – Causes skin irritation.

H319, R36 – Causes serious eye irritation.

H335, R37 – May cause respiratory irritation.

STOT- SE – Specific target organ toxicity - single exposure.

Other Special Considerations: Not available.

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