



## MATERIAL SAFETY DATA SHEET

### Lactic Acid

#### 1. Product Identification

**Synonyms:** 1-Hydroxyethanecarboxylic acid; 2-hydroxypropanoic acid, Ethylidenelactic acid

**CAS No.:** 50-21-5

**Molecular Weight:** 90.08

**Chemical Formula:** C<sub>3</sub>H<sub>6</sub>O<sub>3</sub>

**Product Codes:** L102

#### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Lactic Acid	50-21-5	85%	Yes

#### 3. Hazards Identification

##### EMERGENCY OVERVIEW

**DANGER!! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.**

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Health Rating: 3 - Severe (Poison)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: White (Corrosive)

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##### Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

##### **Inhalation:**

Inhalation of dust or vapors may be corrosive to the mucous membranes. Symptoms may include sore throat, coughing, and shortness of breath.

**Ingestion:**

Corrosive. Causes burns in the mouth, throat, and stomach. May cause diarrhea, nausea, vomiting, perspiration, and shortness of breath. Severe cases may produce cyanosis and vascular collapse.

**Skin Contact:**

Causes severe irritation. May have corrosive effects, producing skin burns.

**Eye Contact:**

Causes severe irritation. May cause redness, pain, blurred vision, and eye damage.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

**Aggravation of Pre-existing Conditions:**

No information found.

**4. First Aid Measures****Inhalation:**

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

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Check for and remove any contact lenses. Get medical attention immediately.

**5. Fire Fighting Measures****Fire:**

Flash point: > 112C (> 234F)

Burns when exposed to heat or flame.

**Explosion:**

Not considered to be an explosion hazard.

**Special Remarks on Explosion Hazards:**

Not available.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Products of Combustion:**

These products are carbon oxides (CO, CO<sub>2</sub>).

**Fire Hazards in Presence of Various Substances:**

Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

**Special Information on Fire Hazards:**

Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

**6. Accidental Release Measures****Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

**Large Spill:**

Corrosive liquid. Stop leak if without risk. If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container. If the product is in its liquid form: Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate.

**7. Handling and Storage****Precautions:**

Keep locked up. Keep container dry. Keep away from heat. 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 ingest. Do not breathe gas/ fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

**Storage:**

Keep container tightly closed. Keep container in a cool, well-ventilated area.

**8. Exposure Controls/Personal Protection****Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor 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.

**Personal Respirators:**

For conditions of use where exposure to the substance is apparent and engineering controls are not feasible, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING:

Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or a full-face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

**9. Physical and Chemical Properties****Appearance:**

Colorless to slightly yellow, syrupy liquid.

**Odor:**

Slight acrid odor.

**Solubility:**

Miscible in water

**Density:**

1.2.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0.

**Boiling Point:**

122C (252F) @ 15 mm Hg.

**Melting Point:**

17C (63F).

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Molecular Weight:**

90.08

**Evaporation Rate (BuAc=1):**

No information found.

**10. Stability and Reactivity****Stability:**

Stable under ordinary conditions of use and storage.

**Conditions to Avoid:**

Heat, incompatibles.

**Conditions of Instability:**

Excess heat, incompatible materials.

**Incompatibilities:**

Hydrofluoric acid, nitric acid plus hydrofluoric acid, oxidizing agents, iodides, albumin.

**Hazardous Decomposition**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Special Remarks on Reactivity:**

Not available.

**Corrosivity:**

Slightly corrosive in presence of aluminum, of copper, of stainless steel (304), of stainless steel (316). Non-corrosive in presence of glass

**Special Remarks on Corrosivity:**

Caustic in concentrated solutions. Severe corrosive effect on brass. Minor corrosive effect on bronze.

**Hazardous Polymerization:**

Will not occur.

**11. Toxicological Information****Routes of Entry:**

Absorbed through skin. Eye contact.

**Toxicity to Animals:**

Acute oral toxicity (LD50): 3543 mg/kg [Rat]. Acute dermal toxicity (LD50): 2000 mg/kg [Rabbit].

**Chronic Effects on Humans:**

MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.

**Other Toxic Effects on Humans:**

Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (irritant), of ingestion. Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive).

**Special Remarks on Chronic Effects on Humans:**

May affect genetic material. May cause adverse reproductive effects and birth defects based on animal data.

**Special Remarks on other Toxic Effects on Humans:****Acute Potential Health Effects:*****Skin:***

Causes severe skin irritation. Possible burns or ulcerations upon prolonged overexposure. May cause skin rash (in milder cases). It may be absorbed by the skin.

***Eyes:***

Causes severe irritation and possible burns. May cause chemical conjunctivitis and corneal damage.

***Inhalation:***

Causes severe respiratory tract and mucous membrane irritation with possible burns. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Aspiration may lead to pulmonary edema. Other symptoms may include shortness of breath, coughing, and sore throat.

***Ingestion:***

May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea, and possible burns (in the throat, mouth, and stomach). May cause severe and permanent damage to the digestive tract. May cause perforation of the digestive tract. May also cause shortness of breath and in severe cases may produce cyanosis and vascular collapse.

**Chronic Potential Health Effects:**

Skin: Prolonged or repeated skin contact/absorption may affect the brain, urinary system and blood.

**12. Ecological Information****Ecotoxicity:**

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:**

The products of degradation are less toxic than the product itself.

**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**Waste Disposal:**

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

## 14. **Transport Information**

### **DOT Classification:**

Class 8: Corrosive material.

### **Identification:**

Corrosive liquid, acidic, organic, n.o.s. (Lactic acid) UNNA: 3265 PG: III

### **Special Provisions for Transport:**

Not available.

### **Protective Equipment:**

Gloves (impervious). Synthetic apron. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## 15. **Other Information**

**NFPA Ratings:** Health: **3** Flammability: **1** Reactivity: **0**

### **Label Hazard Warning:**

DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

### **Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Store in a tightly closed container.

Use only with adequate ventilation.

Keep away from heat and flame.

Wash thoroughly after handling.

### **Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE

VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

### **Product Use:**

Laboratory Reagent.

### **Revision Information:**

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.*



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