Mercaptoacetic acid

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Description: Mercaptoacetic acid
Cat No. B20391
Synonyms: Thioglycolic acid
CAS No: 68-11-1
Molecular Formula: C2 H4 O2 S

Supplier:
Alfa Aesar
Avocado Research Chemicals, Ltd.
Shore Road
Port of Heysham Industrial Park
Heysham, Lancashire LA3 2XY
United Kingdom
Office Tel: +44 (0) 1524 850506
Office Fax: +44 (0) 1524 850608

Emergency Telephone Number: Call Carechem 24 at
+44 (0) 1865 407333 (English only);
+44 (0) 1235 239670 (Multi-language)

E-mail address: uktech@alfa.com
www.alfa.com

Product Safety Department

Recommended Use: Laboratory chemicals.
Uses advised against: No Information available

SECTION 2. HAZARD IDENTIFICATION

Physical State: Liquid
Appearance: Colorless
Odor: Stench

Emergency Overview:
Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Stench.

Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Oral Toxicity</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute Dermal Toxicity</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute Inhalation Toxicity - Vapors</td>
<td>Category 3</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>Category 1 B</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Skin Sensitization</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label Elements
Signal Word

Danger

Hazard Statements
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H301 + H311 + H331 - Toxic if swallowed, in contact with skin or if inhaled

Precautionary Statements
Prevention
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P272 - Contaminated work clothing should not be allowed out of the workplace
P280 - Wear protective gloves/protective clothing/eye protection/face protection

Response
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to
do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P330 - Rinse mouth
P331 - Do NOT induce vomiting
P363 - Wash contaminated clothing before reuse

Storage
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up

Disposal
P501 - Dispose of contents/ container to an approved waste disposal plant

Physical and Chemical Hazards
None identified.

Health Hazards
Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled. Harmful if inhaled. Corrosive. Causes skin and eye burns. Causes serious eye damage. May cause an allergic skin reaction.

Environmental hazards
Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Will likely be mobile in the environment due to its water solubility. The product is water soluble, and may spread in water systems.

Other Hazards
Stench. Toxic to terrestrial vertebrates.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioglycolic acid</td>
<td>68-11-1</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General Advice
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation
If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove to fresh air. Immediate medical attention is required.

Ingestion
Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects
Causes burns by all exposure routes. May cause allergic skin reaction. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Self-Protection of the First Aider
Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

Notes to Physician
Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
CO₂, dry chemical, dry sand, alcohol-resistant foam.

Extinguishing media which must not be used for safety reasons
Water may be ineffective.

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Cool containers with flooding quantities of water until well after fire is out. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental Precautions
Should not be released into the environment. See Section 12 for additional Ecological Information.

Methods for Containment and Clean Up
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.
Refer to protective measures listed in Sections 8 and 13.

SECTION 7. HANDLING AND STORAGE

Handling
Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.

Storage
Keep refrigerated or Keep at temperatures below 10°C. Protect from direct sunlight. Keep container tightly closed. Corrosives area.

Specific Use(s)
Use in laboratories

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>China</th>
<th>Taiwan</th>
<th>Hong Kong</th>
<th>The United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioglycolic acid</td>
<td>-</td>
<td>TWA: 1 ppm</td>
<td>-</td>
<td>STEL: 3 ppm 15 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 3.8 mg/m³</td>
<td></td>
<td>STEL: 11.4 mg/m³ 15 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TWA: 1 ppm 8 hr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TWA: 3.8 mg/m³ 8 hr</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
<th>European Union</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioglycolic acid</td>
<td>TWA: 1 ppm</td>
<td>(Vacated)</td>
<td>TWA: 1 ppm</td>
<td>(Vacated)</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
<td>(Vacated)</td>
<td>Skin</td>
<td>TWA: 1 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 mg/m³</td>
<td></td>
<td>TWA: 4 mg/m³</td>
</tr>
</tbody>
</table>

Exposure Controls

Engineering Measures
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

Personal protective equipment

Eye Protection
Goggles (European standard - EN 166)

Hand Protection
Protective gloves

<table>
<thead>
<tr>
<th>Glove material</th>
<th>Breakthrough time</th>
<th>Glove thickness</th>
<th>EU standard</th>
<th>Glove comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural rubber</td>
<td>See manufacturers</td>
<td>-</td>
<td>EN 374</td>
<td>(minimum requirement)</td>
</tr>
<tr>
<td>Butyl rubber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrile rubber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neoprene PVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly
Large scale/emergency use

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended Filter type:** Particulates filter conforming to EN 143 Acid gases filter Type E Yellow conforming to EN14387

Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141

When RPE is used a face piece Fit Test should be conducted

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls

No information available.

---

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Stench</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>1.5</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>-16 °C / 3.2 °F</td>
</tr>
<tr>
<td>Softening Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>220 °C / 428 °F</td>
</tr>
<tr>
<td>Flash Point</td>
<td>126 °C / 258.8 °F</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosion Limits</td>
<td>Lower 5.9 vol%</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>0.1 hPa @ 20 °C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>3.18 (Air = 1.0)</td>
</tr>
<tr>
<td>Specific Gravity / Density</td>
<td>1.325</td>
</tr>
<tr>
<td>Buil Density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Soluble</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No information available</td>
</tr>
<tr>
<td>Partition Coefficient (n-octanol/water)</td>
<td></td>
</tr>
</tbody>
</table>

**Component**

| Thiglycolic acid                          | log Pow -2.99                  |
| Autoignition Temperature                  | 350 °C / 662 °F                |
| Decomposition Temperature                 | ~85 °C                         |
| Viscosity                                 | 6.55 Pa.s @ 20 °C              |
| Explosive Properties                      | No information available       |
| Oxidizing Properties                      | No information available       |

**Molecular Formula**

C2 H4 O2 S

**Molecular Weight**

92.11

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**SECTION 10. STABILITY AND REACTIVITY**

**Stability**

Stable up to approximately 30°C. Decomposes. Hydrogen sulfide (H2S).

**Hazardous Reactions**

None under normal processing.

**Hazardous Polymerization**

Hazardous polymerization does not occur.

**Conditions to Avoid**

Incompatible products. Heat. Temperatures above 40°C.


SECTION 11. TOXICOLOGICAL INFORMATION

Product Information

(a) acute toxicity:

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral (Rat)</th>
<th>LD50 Dermal (Rabbit)</th>
<th>LC50 Inhalation (Rat) 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioglycolic acid</td>
<td>LD50 = 73 mg/kg</td>
<td>LD50 = 848 mg/kg</td>
<td>LC50 = 56.7 ppm</td>
</tr>
</tbody>
</table>

(b) skin corrosion/irritation: Category 1 B

(c) serious eye damage/irritation: Category 1

(d) respiratory or skin sensitization:

Respiratory: Based on available data, the classification criteria are not met Category 1

Skin: May cause sensitization by skin contact

(e) germ cell mutagenicity: Based on available data, the classification criteria are not met

(f) carcinogenicity: Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity: Based on available data, the classification criteria are not met

(h) STOT-single exposure: Based on available data, the classification criteria are not met

(i) STOT-repeated exposure: Based on available data, the classification criteria are not met

Target Organs: None known.

(j) aspiration hazard: Based on available data, the classification criteria are not met

Symptoms / effects, both acute and delayed: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects: This product contains the following substance(s) which are hazardous for the environment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Fish</th>
<th>Water Flea</th>
<th>Freshwater Algae</th>
<th>Microtox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioglycolic acid</td>
<td>Leuciscus idus: LC50 = 103 mg/L 96h</td>
<td>Pimephales promelas:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Persistence and Degradability
Persistence Expected to be biodegradable
Persistence is unlikely.

Bioaccumulative Potential
Bioaccumulation is unlikely

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
<th>Bioconcentration factor (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioglycolic acid</td>
<td>-2.99</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Mobility in soil
The product is water soluble, and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils.

Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors.

Persistent Organic Pollutant
This product does not contain any known or suspected substance.

Ozone Depletion Potential
This product does not contain any known or suspected substance.

SECTION 13. DISPOSAL CONSIDERATIONS
Waste from Residues/Unused Products
Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging
Dispose of this container to hazardous or special waste collection point.

Other Information
Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not flush to sewer. Large amounts will affect pH and harm aquatic organisms. Solutions with low pH-value must be neutralized before discharge.

SECTION 14. TRANSPORT INFORMATION
Road and Rail Transport

UN-No UN1940
Proper Shipping Name THIOGLYCOLIC ACID
Hazard Class 8
Packing Group II

IMDG/IMO

UN-No UN1940
Proper Shipping Name THIOGLYCOLIC ACID
Hazard Class 8
Packing Group II

IATA

UN-No UN1940
Proper Shipping Name THIOGLYCOLIC ACID
Hazard Class 8
Packing Group II

Special Precautions for User
No special precautions required

SECTION 15. REGULATORY INFORMATION
International Inventories
X = listed.

<table>
<thead>
<tr>
<th>Component</th>
<th>The Inventory of Hazardous Chemicals (2015 Edition)</th>
<th>List of dangerous goods GB 12266 - 2012</th>
<th>TCSI</th>
<th>IECSC</th>
<th>EINECS</th>
<th>TSCA</th>
<th>DSL</th>
<th>PICCS</th>
<th>ENCS</th>
<th>ISHL</th>
<th>AICS</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiglycolic acid</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>200-677-4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-3376</td>
<td></td>
</tr>
</tbody>
</table>

National Regulations

SECTION 16. OTHER INFORMATION

Prepared By
Health, Safety and Environmental Department

Creation Date
21-Oct-2009

Revision Date
07-Sep-2021

Revision Summary
SDS sections updated.

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.

Legend

CAS - Chemical Abstracts Service
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

CAS - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NSDL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances

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IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
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OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

Key literature references and sources for data
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS
Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet