

Safety Data Sheet

I. Identification of the Substance/ Preparation and Company

Product Information: Ethylenediamine

Other Information: 1,2-Diaminoethane

Suggested use and restricted use: Fungicides; Manufacturing Chelating Agents (EDTA); Chemical Intermediates; Solvents; Emulsifiers; Fabric Lubricants Antifreeze Inhibitors.

Information on Producer/Supplier Name, Addresses, Phone:

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II. Hazard Identification:

Hazard Category: Flammable liquids (Category 3) 、 Acute toxicity, Inhalation (Category 4) 、 Skin corrosion/irritation (Category 1B) 、 Serious eye damage/eye irritation (Category 1) 、 Respiratory sensitization(Sub-category 1B) 、 Skin sensitization (Sub-category 1B) 、 Short-term (acute) aquatic hazard (Category 3) 、 Long-term (chronic) aquatic hazard (Category 3)

Labeled Contents:



Symbols:

Warning sign: Danger

Hazard Warning Information: May cause an allergic skin reaction.

Causes severe skin burns and eye damage.

May cause allergy or asthma symptoms or breathing difficulties.

Harmful if inhaled.

Harmful to aquatic life with long lasting effects.

Flammable liquid and vapor.

Harmful if swallowed

Toxic in skin contact

Hazard Prevention Measures: In case of accident or feeling unwell, seek medical advice immediately.

Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

In case of contact with eyes, immediately wash with plenty of water and consult medical treatment.

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

Other Hazards: —

III. Composition / Information on Ingredients (Single)

English name: Ethylenediamine

Symitly name: 1,2-Diaminoethane anhydrous; Ethylenediamine solution; Ethylenediamine diacetate; Ethylenediamine and derivatives; 1,2-Diaminoethane; 1,2-ethylenediamine ; ethane-1,2-diamine; ethane-1,1-diamine; (E)-ethene-1,2-diamine; Ethylenediamineanhydrous

Chemical Abstracts Number (CAS No.): 107-15-3

Percentage for Chemical Ingredient (%):100%

IV. First Aid Measures

Emergency and First Aid Procedures:

Inhalation: After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

Skin Contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

Eye Contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

Swallowed: After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

The most important symptoms and harmful effects: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

First-Aid Personal Protection:

Move patients to a safe place, consult a doctor, and present SDS to first responders on the scene

Prompt to Doctor: —

Suitable for fire extinguishing agents: water, foam, dry powder or carbon dioxide

V. Fire Fighting Measure

Extinguishing media

Suitable extinguishing media

Water Foam Carbon dioxide (CO₂) Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture:

Carbon oxides

Nitrogen oxides (NO_x)

Flash back possible over considerable distance., Container explosion may occur under fire conditions.,

Vapors may form explosive mixture with air.

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapours possible in the event of fire.

Advice for firefighters:

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Special Protective Equipment: Firefighters must wear full-body chemical protective clothing, air respirator, and anti flash aluminum coating if necessary

VI. Accidental Release Measures

Personal Protection: Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

Environmental Protection: Take in leaks and avoid polluting the environment. Prevents leaks from entering sewers, surface water and groundwater

How to clean up: Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

VII. Handling and Storage

Disposal:

1. Use approved flammable liquid storage containers in the workplace.
2. The storage tank should be grounded, and the ground clip should be connected to the bare metal during transfer.
3. Keep away from sparks, open flames and ignition sources. Post a warning sign of no smoking I in the work area .
4. Avoid letting released vapors and mist droplets enter the air in the work area. Operate in a well-ventilated designated area with minimal use.
5. Emergency response equipment must be readily available for fire fighting and spill handling. The use of this material requires prior training in its hazards and safe use.
6. Keep walkways and exits clear. Large-scale operations, consider closed processing systems.
7. The ventilation system and electrical equipment that do not produce sparks and have grounding corrosion resistance shall be used to avoid the ignition source.

Save:

1. There may still be hazardous residues in empty storage containers. Store in a cool, dry, well ventilated place where direct sunlight cannot be reached.
2. Store away from heat, sources of ignition and incompatibilities such as acids, oxidants, halogenated hydrocarbons and monomers. Post warning signs where appropriate.
3. Store in appropriate labelled containers and in limited quantities. Unused containers and empty buckets should be tightly covered.
4. Avoid container damage and regularly inspect storage drums for defects such as breakage or spillage.
5. The storage area should be separated from the densely populated work area, and personnel access to the area should be restricted.
6. Fire-fighting equipment must be readily available in and near storage areas .
7. Store in properly qualified cabinets, storage tanks, storage rooms and buildings, and a small amount should be stored in qualified explosion-proof refrigerated rooms.
8. Consider installing leak detectors and alarm systems .

VIII. Exposure Control / Personal Protection:

Engineering control:

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance..

Control Factor			
TWA	STEL	CEILING	BEIs
10ppm	15ppm	—	—

Personal protective equipment:

Respiratory protection: required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system .

Hand protection: Wear rubber oil-resistant gloves.

Eye protection: Wear chemical protective glasses.

Skin and body protection: wear anti-toxic infiltration work clothes.

Sanitary measures:

1. Remove contaminated clothing as soon as possible after work, wash it and then wear or discard it.
2. Smoking or eating is strictly prohibited in the workplace.
3. Wash your hands thoroughly after handling the substance.
4. Keep the work place clean.

IX. Physical and Chemical Properties / Characteristics

Appearance: Deliquescence, colorless to yellow liquid with ammonia-like smell	Odor: Ammonia-like smell, tear-jerking
Odor threshold: 1~11ppm	Melting point: 8.5°C
PH: 11.9(25%aq)	Boiling Point / Boiling Range: 241~ 244°F · 116~ 118°C
Flammability: —	Flashfire: 33°C
Decomposition Temperature: —	Test Method: <input checked="" type="checkbox"/> Close Cup <input type="checkbox"/> Open Cup
Spontaneous Temperature: 385°C	Explosion Limits: 4.2~14.4(volume)
Vapor pressure: 10 mmHg(20°C)	Vapor density: 2.1 (air =1)
Density: 0.898 (25°C)(water=1)	Solubility: Soluble in water
Log kow: —	Percent volatile: 0.91(butyl acetate=1)

X. Stability and Reactivity

Reactivity: Vapor/air-mixtures are explosive at intense warming.

Chemical stability: The product is chemically stable under standard ambient conditions (room temperature) . Absorbs carbon dioxide (CO₂) from air

Possibility of hazardous reactions: No data available

Conditions to avoid: Air Exposure to moisture. Heating.

Incompatible materials: Aluminum, Lead, magnesium, Zinc, zinc alloys, Copper, Copper alloys, Iron, brass, bronze

Hazardous decomposition products: In the event of fire: see section 5

XI. Toxicological Information

Exposure path: skin, inhalation, ingestion, eyes

Symptoms: Irritation, nausea, vomiting, respiratory irritation, chemical burns, skin rash

Acute toxicity:

skin: 1. Liquid or mist droplets will irritate the skin, with symptoms such as redness and pain. Severe exposure may cause severe skin burns. May be absorbed through unbroken skin causing toxic effects.

2. In one incident, the worker was accidentally immersed in ethylenediamine. He quickly removed his clothes and washed them within 30 minutes to the hospital. Four hours later, his skin, including the immersed part, turned reddish-brown. Initial symptoms included rapid heartbeat and decreased red blood cells. , fever, cough, lower abdominal cramps, diarrhea, vomiting black, and died of heart failure 55 hours later.

Inhalation: 1. Vapors and mist droplets can irritate the nose, throat, and lungs with symptoms such as sore throat, cough, chest pain, shortness of breath and difficulty. High concentrations can cause pulmonary edema and can be fatal, with symptoms such as shortness of breath that may appear .

Ingestion: 1. Burns the mouth, throat and digestive tract, causing vomiting, severe stomach pain, weakness and death.

Eyes: 1. Can cause severe irritation or burns or permanent damage or blindness. Low-concentration vapor can cause visual disturbances such as "blue halo" or "blurred vision". This is due to temporary swelling on the surface of the eyes.

2. After 1-3 hours of exposure, the vision becomes foggy or blue. Disappears within a day without permanent damage. But such visual disturbances can lead to accidents.

LD50 Test animal, absorption route 500 mg/kg (rat, swallowed); 750 mg/kg (rabbit, skin)

LC50 Test animal, absorption route

Slow or long-term toxicity:

1. Long-term or repeated light exposure to corrosive substances may cause tooth erosion, oral inflammation and ulceration, and rarely, gangrene of the jaw. There may be multiple episodes of bronchial irritation, coughing, and bronchopneumonia. Gastrointestinal discomfort may also be present. Chronic exposure may cause dermatitis and/or conjunctivitis.

2. Long-term exposure to respiratory irritants may cause tracheal disease with dyspnea and related systemic symptoms.

3. Inhalation of this substance may cause allergic reactions in certain contacts.

4. Skin contact with this substance may cause allergic reactions in specific contacts.

5. Respiratory allergies may cause allergic asthmatic reactions; coughing, mild dyspnea, bronchitis and asthma may occur.

6. Sensitive persons may react at low doses and should avoid exposure to this substance.

3200mg/kg (female rats 6-13 days of pregnancy, swallowed) caused poisoning in newborn rats.

XII. Ecological Information

Ecotoxicity: LC50 (Fish): 230 mg/L /96 hour(s)
 EC50 (Aquatic Invertebrates): 0.88 mg/L /48 hour(s)(Daphnia)
 Bioconcentration Factor (BCF): —

Persistence and degradation:

1. After 48 hours, a large amount of ethylenediamine and its metabolites remained in different organs.
2. When released into water, biodegradation is expected.
3. When released into the atmosphere, it quickly reacts with hydroxyl radicals.

Half-life (air): —

half-life (water surface): —

half-life (groundwater): —

half-life (soil): —

Bioaccumulation: —

Mobility in the soil: When released into soil, it is expected to volatilize rapidly and penetrate into the ground.

Other adverse effects: —

XIII. Disposal Information

Waste disposal method: 1. Refer to relevant laws and regulations for processing.
 2. Store the waste to be treated according to the storage conditions.
 3. It can be treated by specific incineration or sanitary landfill method.

XIV. Transport Information

UN No. 1604

United Nations Transport Name:

ADR/RID: ETHYLENEDIAMINE

IMDG: ETHYLENEDIAMINE

IATA-DGR: Ethylenediamine

Classification of transport hazards: ADR/RID: 8 (3) IMDG: 8 (3) IATA-DGR: 8 (3)

Packing category: ADR/RID: II IMDG: II IATA-DGR: II

Marine Pollutants (Yes / No): No

Special shipping methods and notes: —

XV. Regulation Information

Applicable regulations:

1. Occupational Safety and Health Act
2. Regulation of Labelling and Hazard Communication of Hazardous Chemicals
3. Standards of Permissible Exposure Limits at Job Site
4. Traffic Safety Regulation
5. Criteria Governing Methods of and Facilities for Storage, Clearance and Disposal of Industrial Wastes
6. Establishment Standard and Safety Control Regulation for Manufacturing, Storing, Processing Public Hazardous Substances and Flammable Pressurized Gases Places
7. Hazardous Chemicals Assessment and Classification Management Measures
8. Regulations for the Occupational Safety and Health Equipments and Measures
9. Designation and Operational Management of Priority Management Chemicals

XVI. Other Information				
Reference	1. Ministry of Labour's Department of Occupational Safety and Health Administration Chemicals Global Reconciliation System(GHS)Chinese introduction website http://ghs.osha.gov.tw/CHT/masterpage/index_CHT.aspx 2.GENERIC EU MSDS according to Regulation (EC) No. 1907/2006 3.Merck- Merck Taiwan (sigmaaldrich.com)			
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Prepared by	Title	S.H.E Dept Senior Administrator	Name (Signature)	Emily Kuo
Date	2023/07/01			
Note	The "-" symbol in the text above indicates that there is no current available data while the "/" symbol indicates that this field is not applicable to this substance.			