



## Safety Data Sheet

### 1. Identification of the substance/mixture and of the company/undertaking

#### Product identifier:

Product name: Ethylenediamine, anhydrous

SDS No. : 2905E-3

#### Details of the supplier of the safety data sheet

Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.

Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN

Division: Chemical Safety Management Department

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### 2. Hazards identification

#### GHS classification and label elements of the product

#### Classification of the substance or mixture

##### PHYSICAL AND CHEMICAL HAZARDS

Flammable liquids: Category 3

##### HEALTH HAZARDS

Acute toxicity (Oral): Category 4

Acute toxicity (Dermal): Category 3

Acute toxicity (Inhalation): Category 4

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

Respiratory sensitization: Category 1

Skin sensitization: Category 1

Reproductive toxicity: Category 2

Specific target organ toxicity – single exposure: Category 1(respiratory system)

Specific target organ toxicity – repeated exposure: Category 2(liver; kidney; organ of vision)

##### ENVIRONMENT HAZARDS

Hazardous to the aquatic environment (Acute): Category 2

Hazardous to the aquatic environment (Long-term): Category 3

#### Label elements



Signal word: Danger

#### HAZARD STATEMENT

Flammable liquid and vapor

Harmful if swallowed

Toxic in contact with skin

Harmful if inhaled

Causes severe skin burns and eye damage

May cause allergy or asthma symptoms or breathing difficulties if inhaled

May cause an allergic skin reaction

Suspected of damaging fertility or the unborn child

Causes damage to organs(respiratory system)



May cause damage to organs through prolonged or repeated exposure(liver; kidney; organ of vision)

Toxic to aquatic life

Harmful to aquatic life with long lasting effects

#### PRECAUTIONARY STATEMENT

##### Prevention

Avoid release to the environment.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Keep container tightly closed.

Ground and bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use non-sparking tools.

Take action to prevent static discharges.

Do not breathe dust/fume/gas/mist/vapors/spray.

In case of inadequate ventilation wear respiratory protection.

Use only outdoors or in a well-ventilated area.

Wash contaminated parts thoroughly after handling.

Contaminated work clothing should not be allowed out of the workplace.

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

Do not eat, drink or smoke when using this product.

##### Response

In case of fire: Use appropriate media other than water to extinguish.

Get medical advice/attention if you feel unwell.

IF exposed or concerned: Get medical advice/attention.

Call a POISON CENTER/doctor/physician if you feel unwell.

IF exposed or concerned: Call a POISON CENTER/doctor/physician.

If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF ON SKIN: Wash with plenty of soap and water.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

If skin irritation or rash occurs: Get medical advice/attention.

Take off immediately all contaminated clothing and wash it before reuse.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

##### Storage

Store in a well-ventilated place. Keep cool.

##### Disposal

Dispose of contents/container in accordance with local/national regulation.

##### Specific Physical and Chemical hazards

Flammable liquid. Vapor/air mixture may explode.

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### 3. Composition/information on ingredients

#### Mixture/Substance selection:

##### Substance

Ingredient name:Ethylenediamine

Content (%):98(min)

Chemical formula:NH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>

Chemicals No, Japan:2-150

CAS No.:107-15-3



MW:60.10

ECNO:203-468-6

Note : The figures shown above are not the specifications of the product.

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#### 4. First-aid measures

##### Descriptions of first-aid measures

###### General measures

Get medical advice/attention if you feel unwell.

###### IF INHALED

Remove person to fresh air and keep comfortable for breathing.

If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician.

Call a POISON CENTER/doctor/physician if you feel unwell.

###### IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water or shower.

Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice/attention.

###### IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

###### IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

Call a POISON CENTER/doctor/physician if you feel unwell.

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#### 5. Fire-fighting measures

##### Extinguishing media

###### Suitable extinguishing media

In case of fire, use water mist, foam, dry powder, CO2 to extinguish.

###### Unsuitable extinguishing media

Indoor firefighting equipment or outdoor firefighting equipment

Sprinkler equipment

Dry-powder firefighting equipment – except for phosphate etc.,hydrogen carbonate etc.

Straight stream water extinguisher

Water mist extinguisher

Reinforcing liquid jet extinguisher

Dry-powder extinguisher – except for phosphate etc.,hydrogen carbonate etc.

Bucket of water or tank of water

##### Specific hazards arising from the substance or mixture

Containers may explode when heated.

Fire may produce irritating, corrosive and/or toxic gases.

##### Advice for firefighters

###### Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

###### Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

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

Firefighters should wear self-contained breathing apparatus with full face piece operated positive pressure mode.



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## 6. Accidental release measures

### Personnel precautions, protective equipment and emergency procedures

Ventilate area until material pick up is complete.

Wear proper protective equipment.

### Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

### Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.

### Preventive measures for secondary accident

Collect spillage.

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## 7. Handling and storage

### Precautions for safe handling

#### Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Ground and bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use non-sparking tools.

Take action to prevent static discharges.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

#### Safety Measures

Use only outdoors or in a well-ventilated area.

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

When using do not eat, drink or smoke.

#### Any incompatibilities

See "10. Stability and Reactivity"

#### Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Contaminated work clothing should not be allowed out of the workplace.

Take off immediately all contaminated clothing and wash it before reuse.

### Storage

#### Conditions for safe storage

Keep container tightly closed.

Store in a cool, dry place. Do not store in direct sunlight.

Keep under lock and key.

#### Container and packaging materials for safe handling

Glass

Polyethylene



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## 8. Exposure controls/personal protection

### Control parameters

#### Adopted value

(Ethylenediamine)

ACGIH(1996) TWA: 10ppm

#### Notation

(Ethylenediamine)

Skin

#### OSHA-PEL

(Ethylenediamine)

TWA: 10ppm, 25mg/m<sup>3</sup>

### Exposure controls

#### Appropriate engineering controls

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

#### Individual protection measures

##### Respiratory protection

Wear respiratory protection.

##### Hand protection

Wear protective gloves.

##### Eye protection

Wear eye/face protection.

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## 9. Physical and Chemical Properties

### Information on basic physical and chemical properties

Physical state: Liquid

Color: Colorless to pale yellow

Odor: Pungent odor

Melting point/Freezing point: 8.5°C

Boiling point or initial boiling point: (Ethylenediamine)117°C

Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 2.5 vol %

Upper explosion limit: 16.6 vol %

Flash point: (Ethylenediamine)(C.C.) 34°C

Auto-ignition temperature: (Ethylenediamine)385°C

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: MiscibleMiscible

n-Octanol/water partition coefficient: log Pow-1.2

Vapor pressure: 1.4 kPa (20°C)

Density and/or relative density: 0.9

Relative vapor density (Air=1): 2.1

Relative density of the Vapor/air - mixture at 20°C (Air = 1): 1.01

Particle characteristics data is not available.



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## 10. Stability and Reactivity

### Reactivity

Not available.

### Chemical stability

Hygroscopic (absorbs moisture from the air).

### Possibility of hazardous reactions

Decomposes on burning. This produces toxic fumes of nitrogen oxides. Reacts with chlorinated organic compounds, strong oxidants and acids. This produces toxic gases and vapours (ammonia, nitrogen oxides, carbon monoxide) and flammable vapours. This generates toxic, fire and explosion hazard. Attacks many metals, rubber and plastics. (ICSC 0269)

### Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

### Incompatible materials

Acids, Strong oxidizing agents, Chlorinated organic compounds

### Hazardous decomposition products

Carbon oxides, Nitrogen oxides, Ammonia

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## 11. Toxicological Information

### Information on toxicological effects

#### Acute toxicity

##### Acute toxicity (Oral)

[GHS Cat. Japan, base data]

(Ethylenediamine)

rat LD50=637-1200mg/kg (SIDS, 2001)

##### Acute toxicity (Dermal)

[GHS Cat. Japan, base data]

(Ethylenediamine)

rabbit LD50=560mg/kg (SIDS, 2003)

##### Acute toxicity (Inhalation)

[GHS Cat. Japan, base data]

(Ethylenediamine)

vapor: rat LD50=2000-5656ppm/4hr (ACGIH, 2001)

#### Irritant properties

##### Skin corrosion/irritation

[GHS Cat. Japan, base data]

(Ethylenediamine)

rabbit necrosis (NITE Initial Risk Assessment Report ver.1.0, 55, 2007)

##### Serious eye damage/irritation

[GHS Cat. Japan, base data]

(Ethylenediamine)

rabbit necrosis, highly corrosive (NITE Initial Risk Assessment Report ver.1.0, 55, 2007)

#### Sensitization

##### Respiratory sensitization

[GHS Cat. Japan, base data]

(Ethylenediamine)

cat. 1; JSOH, 2010

##### Skin sensitization

[GHS Cat. Japan, base data]

(Ethylenediamine)

cat. 1; Contact Dermatitis 5th, 2011

Mutagenic effects data is not available.

**Carcinogenicity**

(Ethylenediamine)

ACGIH-A4(1996) : Not Classifiable as a Human Carcinogen

**Reproductive toxicity**

[GHS Cat. Japan, base data]

(Ethylenediamine)

cat. 2; NITE Initial Risk Assessment Report ver.1.0 55, 2007

**STOT**

STOT-single exposure

[cat.1]

[GHS Cat. Japan, base data]

(Ethylenediamine)

respiratory system (MOE risk assessment, 2004)

STOT-repeated exposure

[cat.2]

[GHS Cat. Japan, base data]

(Ethylenediamine)

liver; kidney; organ of vision (NITE primary risk assessment, 2007)

Aspiration hazard data is not available.

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**12. Ecological Information****Ecotoxicity****Aquatic toxicity**

Toxic to aquatic life

Harmful to aquatic life with long lasting effects

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]

(Ethylenediamine)

Crustacea (Daphnia magna) LC50=3mg/L/48hr (SIDS, 2003)

[Company proprietary data]

(Ethylenediamine)

Crustacea (Daphnia magna) LC50=3mg/L/48hr (SIDS, 2003)

**Water solubility**

(Ethylenediamine)

miscible (ICSC, 2003)

**Persistence and degradability**

(Ethylenediamine)

BOD(NO2)\_Degradation : 39%/4weeks, BOD(NO2)\_Degradation : 94%/4weeks (METI Existing

Chemical Substances Safety Inspections Data, 1991)

**Bioaccumulative potential**

(Ethylenediamine)

log Pow=-2.04 (PHYSPROP DB, 2005)

**Mobility in soil**

Mobility in soil data is not available.

**Other adverse effects**

Ozone depleting chemical data is not available.

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**13. Disposal considerations**

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

**Waste treatment methods**

Avoid release to the environment.



Dispose of contents/container in accordance with local/national regulation.

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#### 14. Transport Information

UN No. or ID No.: 1604  
UN Proper Shipping Name :  
ETHYLENEDIAMINE  
Class or division (Transport hazard class) : 8  
Subsidiary hazard(s) : 3  
Packing group : II  
ERG GUIDE No.: 132

#### IMDG Code (International Maritime Dangerous Goods Regulations)

UN No.: 1604  
Proper Shipping Name :  
ETHYLENEDIAMINE  
Class or division : 8  
Subsidiary hazard(s) : 3  
Packing group : II

#### IATA Dangerous Goods Regulations

UN No.: 1604  
Proper Shipping Name :  
ETHYLENEDIAMINE  
Class or division : 8  
Subsidiary hazard(s) : 3  
Hazard labels : Corrosive & Flamm.liquid  
Packing group : II

#### Environmental hazards

MARPOL Annex III – Prevention of pollution by harmful substances  
Marine pollutants (yes/no) : no

#### Maritime transport in bulk according to IMO instruments

Noxious Liquid ; Cat. Y  
Ethylenediamine

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#### 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Chemicals listed in TSCA Inventory

Ethylenediamine

#### Other regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

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#### 16. Other information

##### GHS classification and labelling

Flam. Liq. 3: H226 Flammable liquid and vapor  
Acute Tox. 4: H302 Harmful if swallowed  
Acute Tox. 3: H311 Toxic in contact with skin  
Acute Tox. 4: H332 Harmful if inhaled  
Skin Corr. 1: H314 Causes severe skin burns and eye damage  
Resp. Sens. 1: H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
Skin Sens. 1: H317 May cause an allergic skin reaction  
Repr. 2: H361 Suspected of damaging fertility or the unborn child





STOT SE 1: H370 Causes damage to organs

STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure

Aquatic Acute 2: H401 Toxic to aquatic life

Aquatic Chronic 3: H412 Harmful to aquatic life with long lasting effects

#### Reference Book

Globally Harmonized System of classification and labelling of chemicals, UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 21th edit., 2019 UN

IMDG Code, 2018 Edition (Incorporating Amendment 39-18)

IATA Dangerous Goods Regulations (62nd Edition) 2021

2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)

2021 TLVs and BEIs. (ACGIH)

Supplier's data/information

#### General Disclaimer

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2020).