



Safety Data Sheet

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

Product identifier:

Product name: Piperazine, anhydrous

SDS No. : 6255E-2

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

HEALTH HAZARDS

Acute toxicity (Dermal): Category 4

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 (nervous system)

Specific target organ toxicity – single exposure: Category 3 (Respiratory tract irritation)

Specific target organ toxicity – repeated exposure: Category 1 (nervous system; respiratory system)

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment (Acute): Category 3

Label elements



Signal word: Danger

HAZARD STATEMENT

Harmful 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 (nervous system)

May cause respiratory irritation

Causes damage to organs through prolonged or repeated exposure (nervous system; respiratory system)

Harmful to aquatic life

PRECAUTIONARY STATEMENT

**Prevention**

- Avoid release to the environment.
- 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 or face protection.
- Wear eye protection/face protection.
- Do not eat, drink or smoke when using this product.

Response

- 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 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: Rinse mouth. Do NOT induce vomiting.

Storage

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

Disposal

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

3. Composition/information on ingredients**Mixture/Substance selection:****Substance**

- Ingredient name:Piperazine
- Content (%):99(min)
- Chemical formula:NH(C₂H₄)₂NH
- Chemicals No, Japan:5-953
- CAS No.:110-85-0
- MW:86.14
- ECNO:203-808-3

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

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.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.

Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

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.

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

Sweep up, place in a bag and hold for waste disposal.

Preventive measures for secondary accident

Collect spillage.

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.

(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 or face protection.
- Wear 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 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.

Container and packaging materials for safe handling

- Glass
- Polyethylene

8. Exposure controls/personal protection

Control parameters

Adopted value

- (Piperazine)
- ACGIH(2014) TWA: 0.03ppm(IFV) (Resp sens; asthma)

Notation

- (Piperazine)
- DSEN; RSEN

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.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

- Physical state: Crystalline to small lump, or flakes
- Color: Colorless to white
- Odor: Pungent odor
- Melting point/Freezing point: 106°C
- Boiling point or initial boiling point: (Piperazine)146°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: 4 vol %
Upper explosion limit: 14 vol %
Flash point: (Piperazine)65°C
Auto-ignition temperature: (Piperazine)320°C
Decomposition temperature data is not available.
pH data is not available.
Kinematic viscosity data is not available.
Solubility:
Solubility in water: 15 g/100 ml (20°C)
n-Octanol/water partition coefficient: log Pow-1.17
Vapor pressure: 21 Pa (20°C)
Density and/or relative density: 1.1 g/cm³
Relative vapor density (Air=1): 3
Relative density of the Vapor/air - mixture at 20°C (Air = 1): 1
Particle characteristics data is not available.

10. Stability and Reactivity

Reactivity

Not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

Decomposes on burning. This produces toxic and corrosive gases including nitrogen oxides.
The solution in water is a medium strong base. Reacts with acid anhydrides, strong acids and strong oxidants. This generates fire hazard. Attacks many metals. This produces flammable/explosive gas (hydrogen). (ICSC 1032)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Strong acids, Strong oxidizing agents, Acid anhydrides, Metals

Hazardous decomposition products

Carbon oxides, Nitrogen oxides, Hydrogen

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]

(Piperazine)

rat LD50=2050-3000mg/kg (PATTY 6th, 2012)

Acute toxicity (Dermal)

[GHS Cat. Japan, base data]

(Piperazine)

rabbit LD50=1590mg/kg (NITE Initial Risk Assessment Report, 2005)

Acute toxicity (Inhalation)

[GHS Cat. Japan, base data]

(Piperazine)

mist: mouse LC50=2.7mg/L/4hr (DFGOT vol. 9, 1998)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]



(Piperazine)
rabbit severe erythema and necrosis (EU-RAR, 2005)

Serious eye damage/irritation
[GHS Cat. Japan, base data]
(Piperazine)
rabbit corneal necrosis (EU-RAR, 2005)

Sensitization

Respiratory sensitization
[GHS Cat. Japan, base data]
(Piperazine)
cat. 1; ACGIH 7th, 2014

Skin sensitization
[GHS Cat. Japan, base data]
(Piperazine)
cat. 1; ACGIH 7th, 2014

Mutagenic effects data is not available.

Carcinogenicity
[ACGIH]
(Piperazine)
A4(as Piperazine)(2014) : Not Classifiable as a Human Carcinogen

Reproductive toxicity
[GHS Cat. Japan, base data]
(Piperazine)
cat. 2; ACGIH 7th, 2014

STOT

STOT-single exposure
[cat.1]
[GHS Cat. Japan, base data]
(Piperazine)
nervous system (HSDB, 2015)

[cat.3 (resp. irrit.)]
[GHS Cat. Japan, base data]
(Piperazine)
respiratory tract irritation (PATTY 6th, 2012)

STOT-repeated exposure
[cat.1]
[GHS Cat. Japan, base data]
(Piperazine)
nervous system; respiratory system (PATTY 6th, 2012)

Aspiration hazard data is not available.

12. Ecological Information

Ecotoxicity

Aquatic toxicity

Harmful to aquatic life

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]

(Piperazine)

Crustacea (Daphnia magna) EC50=21mg/L/48hr (EU-RAR, 2005)

Hazardous to the aquatic environment (Long-term)

[GHS Cat. Japan, base data]

(Piperazine)

Crustacea (Daphnia magna) NOEC=12.5mg/L/21days (EU-RAR, 2005)

**Water solubility**

(Piperazine)

15 g/100 ml (20°C) (ICSC, 2003)

Persistence and degradability

(Piperazine)

Not degrade rapidly (BOD_Degradation : 1.4%/14 days; TOC_Degradation : 1.0%/14 days;

GC_Degradation: 2.8%/14 days (MITI official bulletin))

Bioaccumulative potential

(Piperazine)

log Pow=-1.17 (ICSC, 2003)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

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.

14. Transport Information

UN No. or ID No.: 2579

UN Proper Shipping Name :

PIPERAZINE

Class or division (Transport hazard class) : 8

Packing group : III

ERG GUIDE No.: 153

IMDG Code (International Maritime Dangerous Goods Regulations)

UN No.: 2579

Proper Shipping Name :

PIPERAZINE

Class or division : 8

Packing group : III

IATA Dangerous Goods Regulations

UN No.: 2579

Proper Shipping Name :

PIPERAZINE

Class or division : 8

Hazard labels : Corrosive

Packing group : III

Special provisions No.: A803

Environmental hazards**MARPOL Annex III – Prevention of pollution by harmful substances**

Marine pollutants (yes/no) : no

MARPOL Annex V – Prevention of pollution by garbage discharge

Specific target organ toxicity – repeated exposure: cat.1

Piperazine



15. Regulatory Information

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

Chemicals listed in TSCA Inventory

Piperazine

Other regulatory information

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

16. Other information

GHS classification and labelling

Acute Tox. 4: H312 Harmful in contact with skin

Acute Tox. 4: H332 Harmful if inhaled

Skin Corr. 1: H314 Causes severe skin burns and eye damage

Eye Dam. 1: H318 Causes serious 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 SE 3: H335 May cause respiratory irritation

STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure

Aquatic Acute 3: H402 Harmful to aquatic life

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).