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# Safety Data Sheet

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

Product identifier:
- Product name: Propylene oxide
- SDS No. : 6498E-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
- Telephone number: +81-6-6946-8061
- FAX: +81-6-6946-1607
- e-mail address: kagakuhinanzenkanri@kishida.co.jp

## 2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL AND CHEMICAL HAZARDS
- Flammable liquids: Category 1
- Self-reactive substances and mixtures: Type G

HEALTH HAZARDS
- Acute toxicity (Oral): Category 4
- Acute toxicity (Dermal): Category 3
- Acute toxicity (Inhalation): Category 4
- Skin corrosion/irritation: Category 2
- Serious eye damage/eye irritation: Category 1
- Skin sensitization: Category 1
- Germ cell mutagenicity: Category 2
- Carcinogenicity: Category 2
- Reproductive toxicity: Category 2
- Specific target organ toxicity - single exposure: Category 3 (Respiratory tract irritation)
- Specific target organ toxicity - single exposure: Category 3(Narcosis)

ENVIRONMENT HAZARDS
- Hazardous to the aquatic environment (Acute): Category 3

Label elements

Signal word: Danger

HAZARD STATEMENT
- Extremely flammable liquid and vapor
- Harmful if swallowed
- Toxic in contact with skin
- Harmful if inhaled
- Causes skin irritation
- Causes serious eye damage
- May cause an allergic skin reaction
- Suspected of causing genetic defects
- Suspected of causing cancer

Suspected of damaging fertility or the unborn child
May cause respiratory irritation
May cause drowsiness or dizziness
Harmful to aquatic life

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.
Avoid breathing dust/fume/gas/mist/vapors/spray.
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.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER/doctor/physician if you feel unwell.
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.
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: Call a POISON CENTER/doctor/physician if you feel unwell.
IF SWALLOWED: Rinse mouth.

Storage

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

Disposal

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

Specific Physical and Chemical hazards

Highly flammable liquid. Vapor/air mixture may explode.

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## 3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Ingredient name:Propylene oxide
Content (%):99(min)
Chemical formula:C3H6O
Chemicals No, Japan:2-219
CAS No.:75-56-9
MW:58.08
ECNO:200-879-2

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

## 4. First-aid measures

### Descriptions of first-aid measures

#### General measures

IF exposed or concerned: Get medical advice/attention.

#### IF INHALED

Remove person to fresh air and keep comfortable for breathing.
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.
Call a POISON CENTER/doctor/physician if you feel unwell.

## 5. Fire-fighting measures

### Extinguishing media

#### Suitable extinguishing media

In case of fire, use 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 peace 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

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)

Avoid breathing 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.

Container and packaging materials for safe handling

Glass

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8. Exposure controls/personal protection

Control parameters

Adopted value

(Propylene oxide)

ACGIH(2014) TWA: 2ppm (Eye & URT irr)

Notation

(Propylene oxide)

DSEN

OSHA-PEL

(Propylene oxide)

TWA: 100ppm, 240mg/m3

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: Liquid
Color: Colorless, Clear
Odor: Characteristic odor
Melting point/Freezing point: −112℃
Boiling point or initial boiling point: (Propylene oxide)34℃
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: 1.9 vol %
Upper explosion limit: 36.3 vol %
Flash point: (Propylene oxide)−37℃
Auto-ignition temperature: (Propylene oxide)430℃
Decomposition temperature data is not available.
pH data is not available.
Kinematic viscosity: 0.34 $mm^2/s$ (25℃)
Solubility:
Solubility in water: 40 g/100 ml (20℃)
n-Octanol/water partition coefficient: log Pow0.03
Vapor pressure: 59 kPa (20℃)
Density and/or relative density: 0.83
Relative vapor density (Air=1): 2
Relative density of the Vapor/air - mixture at 20℃ (Air = 1): 1.6
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
The vapour is heavier than air and may travel along the ground; distant ignition possible.
As a result of flow, agitation, etc., electrostatic charges can be generated.
The substance may violently polymerize under the influence of bases, acids and metal chlorides. This generates fire and explosion hazard. Reacts violently with chlorine, ammonia, strong oxidants and acids. This generates fire or explosion hazard. (ICSC 0192)
Conditions to avoid
Contact with incompatible materials.
Contact with fire source.

Incompatible materials
Acids, Bases, Strong oxidizing agents, Metal chlorides, Chlorine, Ammonia
Hazardous decomposition products
Carbon oxides

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11. Toxicological Information
Information on toxicological effects
Acute toxicity
Acute toxicity (Oral)
[GHS Cat. Japan, base data]
(Propylene oxide)
rat LD50=520mg/kg (EHC 56, 1985)
Acute toxicity (Dermal)
[GHS Cat. Japan, base data]
(Propylene oxide)
rabbit LD50=950mg/kg (EU-RAR 23, 2002)
Acute toxicity (Inhalation)
[GHS Cat. Japan, base data]
(Propylene oxide)
vapor: rat LC50=4000ppm/4hr (EHC 56, 1985)
Irritant properties
Skin corrosion/irritation data is not available.
Serious eye damage/irritation
[GHS Cat. Japan, base data]
(Propylene oxide)
rabbit severe burns (EHC 56, 1985)
Sensitization
Skin sensitization
[GHS Cat. Japan, base data]
(Propylene oxide)
cat. 1; NITE Initial Risk Assessment Report, 2007
Germ cell mutagenicity
[GHS Cat. Japan, base data]
(Propylene oxide)
cat. 2; NITE Initial Risk Assessment Report, 2007
Carcinogenicity
[GHS Cat. Japan, base data]
(Propylene oxide)
cat.2; IARC Gr. 2B (IARC, 1994 et al.)
(Propylene oxide)
IARC-Gr.2B : Possibly carcinogenic to humans
(Propylene oxide)
ACGIH-A3(2014) : Confirmed Animal Carcinogen with Unknown Relevance to Humans
(Propylene oxide)
EU-Category 1B; Substances presumed to have carcinogenic potential for humans
Reproductive toxicity
[GHS Cat. Japan, base data]
(Propylene oxide)
cat. 2; rat : EU-RAR 23, 2002
STOT
STOT-single exposure
[cat.3 (resp. irrit.)]
[GHS Cat. Japan, base data]

(Propylene oxide)
respiratory tract irritation (NITE primary risk assessment, 2007)
[cat.3 (drow./dizz.)]
[GHS Cat. Japan, base data]
(Propylene oxide)
narcotic effect (NITE primary risk assessment, 2007)
STOT-repeated exposure data is not available.
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]
(Propylene oxide)
Fish (rainbow trout) LC50=52mg/L/96hr (EU-RAR, 2002)
Water solubility
(Propylene oxide)
40.5 g/100 ml (20℃) (ICSC, 1995)
Persistence and degradability
(Propylene oxide)
BOD_Degradation : 96% (METI existing chemical safety inspections)
Bioaccumulative potential
(Propylene oxide)
log Kow=0.03 (PHYSPROP DB, 2005)
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.: 1280
UN Proper Shipping Name :
PROPYLENE OXIDE
Class or division (Transport hazard class) : 3
Packing group : I
ERG GUIDE No.: 127P
IMDG Code (International Maritime Dangerous Goods Regulations)
UN No.: 1280
Proper Shipping Name :
PROPYLENE OXIDE
Class or division : 3
Packing group : I

IATA Dangerous Goods Regulations
UN No.: 1280
Proper Shipping Name :
PROPYLENE OXIDE
Class or division : 3
Hazard labels : Flamm.liquid
Packing group : I
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
Propylene oxide

## 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
Chemicals listed in TSCA Inventory
Propylene oxide
Other regulatory information
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

## 16. Other information

GHS classification and labelling
Flam. Liq. 1: H224 Extremely flammable liquid and vapor
Self-react. G
Acute Tox. 4: H302 Harmful if swallowed
Acute Tox. 3: H311 Toxic in contact with skin
Acute Tox. 4: H332 Harmful if inhaled
Skin Irrit. 2: H315 Causes skin irritation
Eye Dam. 1: H318 Causes serious eye damage
Skin Sens. 1: H317 May cause an allergic skin reaction
Muta. 2: H341 Suspected of causing genetic defects
Carc. 2: H351 Suspected of causing cancer
Repr. 2: H361 Suspected of damaging fertility or the unborn child
STOT SE 3: H335 May cause respiratory irritation
STOT SE 3: H336 May cause drowsiness or dizziness
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).