

Safety Data Sheet

1. Chemical product and company identification

Product name : Chloromethyloxirane

Company information

Name of manufacturer : KANTO CHEMICAL CO., INC.
 Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
 Name of section : Business Administration Department, Reagent Division
 Telephone number : +81-3-6214-1090
 Facsimile number : +81-3-3241-1047
 Mail address : BC32@kanto.co.jp
 Reference No : 14004
 Recommended use : For research use only
 Restrictions on use : Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity (oral)	Category 3
	Acute toxicity (dermal)	Category 3
	Acute toxicity (inhalation:vapors)	Category 2
	Skin corrosion/irritation	Category 1C
	Serious eye damage/eye irritation	Category 1
	Skin sensitization	Category 1
	Germ cell mutagenicity	Category 2
	Carcinogenicity	Category 1B
	Reproductive toxicity	Category 2
	Specific target organ toxicity (single exposure)	Category 1 (respiratory organs, liver, kidney)
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs, kidney)
Environmental hazards	Aquatic acute	Category 3

Hazard pictograms



Signal word : Danger

Hazard statements : Flammable liquid and vapor
 Toxic if swallowed or in contact with skin
 Causes severe skin burns and eye damage
 May cause an allergic skin reaction
 Fatal if inhaled



Suspected of causing genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
Causes damage to organs (respiratory organs, liver, kidney)
Causes damage to organs (respiratory organs, kidney) through prolonged or repeated exposure
Harmful to aquatic life

Precautionary statements

- Prevention : Do not handle until all safety precautions have been read and understood.
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 only non-sparking tools.
Take action to prevent static discharges.
Do not breathe mist/vapors.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
[In case of inadequate ventilation] wear respiratory protection.
- Response : IF SWALLOWED: Immediately call a POISON CENTER or doctor.
IF SWALLOWED: Rinse mouth. Do not induce vomiting.
IF ON SKIN: Wash with plenty of water.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Call a POISON CENTER or doctor.
IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER or doctor.
Call a POISON CENTER or doctor if you feel unwell.
Get medical advice/attention if you feel unwell.
Rinse mouth.
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.
- Storage : Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
- Disposal : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.



3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Synonyms : 1-Chloro-2,3-epoxypropane, 3-Chloropropylene oxide, Epichlorohydrin

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Chloromethyloxirane	≥ 98	C3H5ClO	Listed	203-439-8	106-89-8

4. First aid measures

First aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately get medical treatment.

First-aid measures after skin contact : Wash the affected areas under running water, get medical treatment as soon as possible.

First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. Get medical treatment.

First-aid measures after ingestion : Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.

Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

Most Important Symptoms/Effects

Symptoms/effects : If inhaled, burning sensation, cough, sore throat, headache, breathlessness, nausea, shortness of breath, vomiting, tremors. Symptoms may be delayed. Symptoms of pulmonary edema often do not appear until 2-3 hours have passed and will worsen if rest is not maintained. Therefore, rest and observation are essential.

5. Fire fighting measures

Suitable extinguishing media : Dry chemical, CO₂, dry sand, or alcohol-resistant foam

Unsuitable extinguishing media : Water spray, Foam extinguisher

Firefighting instructions : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Fight fire from windward.

Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Alcohol-resistant foam extinguisher is effective for a large scale fire.

Personal protection (Emergency response) : Wear breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Remove all sources of ignition. Keep away personnel except for authorized ones from spillage area by



stretching ropes.

Environmental precautions

Environmental precautions : Attention should be given to avoid damage to the environment by flowing of spillage to rivers.

Methods and Equipment for Containment and Cleaning up

For containment : Absorb spill with inert material (e.g, diatomaceous earth, sand) and flush spillage area with copious amounts of water.

Prevention Measures for Secondary Accidents : Remove nearby sources of ignition and prepare extinguishing media.

7. Handling and storage

Handling

Technical measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Fire is strictly prohibited.
Ventilate well at working places.

Precautions for safe handling : Avoid formation of vapor and aerosols.
Do not allow contact with oxidizing substances.

Storage

Storage conditions : Store in a dark, cool place and tightly closed.

Material used in packaging/containers : Glass, fluorine resin, stainless steel.
Do not use vinyl chloride resin, polycarbonate.

8. Exposure controls / Personal protection equipment

ACGIH TWA	0.5 ppm
Remark (ACGIH)	Skin

Appropriate engineering controls : Use with an enclosed system or a local exhaust ventilation.

Protective equipment

Respiratory protection : Chemical cartridge respirator with an organic vapor cartage or airline respirator

Hand protection : Impervious protective gloves

Eye protection : Safety goggles

Skin and body protection : Protective clothing, protective boots

9. Physical and chemical properties

Physical state : Liquid

Color : Colorless.

Odor : Odor similar to chloroform

pH : No data available

Melting point : -57.2 ° C

Freezing point : No data available

Boiling point : 117.9 ° C

Flash point : 31 ° C (C.C.)

Auto-ignition temperature : 385 ° C



Decomposition temperature	: No data available
Flammability	: Flammable
Vapor pressure	: 16 hPa (20°C)
Relative density	: No data available
Density	: 1.178 - 1.186 g/cm ³ (20°C)
Relative gas density	: 3.19
Solubility	: Organic solvents: Soluble in ethanol, diethyl ether. Water: 6.2 % (25°C) (Hydrolyze)
Partition coefficient n-octanol/water (log Pow)	: 0.45
Explosive limits (vol %)	: 3.8 - 21 vol %
Viscosity, kinematic	: 0.88 mm ² /s (25°C)
Particle characteristics	: No data available

10. Stability and reactivity

Reactivity	: Reacts with water to produce 3-chloro-1,2-propanediol. Polymerize with catalysts such as hydrogen fluoride and boron fluoride. It reacts with a compound having active hydrogen to produce a ring-opening adduct. Reacts with phenols or metal salts of organic acids to produce glycidyl ethers or esters. May react with oxidizing substances.
Chemical stability	: Stable under normal conditions. Hydrolyzes with moisture to produce hydrochloric acid.
Possibility of hazardous reactions	: Stable under normal conditions of use.
Conditions to avoid	: Light, heat, moisture.
Incompatible materials	: Water, oxidizing substances.
Hazardous decomposition products	: Carbon monoxide, chlorine, hydrogen chloride.

11. Toxicological information

Acute toxicity (oral)	: Toxic if swallowed rat LD50=90mg/kg
Acute toxicity (dermal)	: Toxic in contact with skin rat LD50=591.5mg/kg
Acute toxicity (inhalation)	: No classification (gas) Fatal if inhaled (vapor) rat LC50=251.1ppm/4h Classification not possible (dust, mist)
Skin corrosion/irritation	: Causes severe skin burns In a rabbit skin irritation test, in which a stock solution of the substance was applied for 2 - 24-hour, severe irritation and necrosis were observed. In accidental cases of occupational exposure, effects such as skin ulcer, erosion and burns are reported. The substance is classified into C; R34 in EU classification. Based on these information, the substance was classified into category 1C.



Serious eye damage/irritation	: Causes serious eye damage In a rabbit eye irritation test (cottonseed oil was used as vehicle), severe irritation accompanied by corneal disorder was observed following application of a 80% solution, and mild irritation was observed following application of a 10% solution. Although this data corresponds to category 2A, the substance is classified into category 1C for skin irritation, not skin corrosive. Therefore, the substance was classified into category 1.
Respiratory sensitization	: Classification not possible In a case report of an accidental massive exposure in humans, chronic asthmatic bronchitis is reported. Since this information is not sufficient as evidence for classification, classification was not possible due to lack of other data.
Skin sensitization	: May cause an allergic skin reaction There is a report of allergic contact dermatitis in 6 workers who showed dermatitis following occupational exposure. In a patch test of epoxy resin factory workers who showed dermatitis, positive response to this substance was observed in 8 of 19 participants. In a patch test of contact dermatitis for epoxy resin workers, positive reaction to this substance was observed in 5 workers (duration engaged in work: 1 - 5 years. There is additional information reporting skin sensitizing property of this substance. The substance was classified into category 1.
Germ cell mutagenicity	: Suspected of causing genetic defects Based on a positive result in a mouse bone marrow chromosomal aberration test (in vivo somatic cell mutagenicity test), the substance was classified into category 2. A negative result is reported in a mouse dominant lethal test (in vivo heritable germ cell mutagenicity test). From in vitro mutagenicity tests, there are reports of a positive Ames test and a positive chromosomal aberration test. The substance is recognized to have mutagenicity by the Ministry of Health, Labor and Welfare.
Carcinogenicity	: May cause cancer IARC classifies the substance into group 2A (probably carcinogenic to humans).
Reproductive toxicity	: Suspected of damaging fertility or the unborn child Male rats received oral or inhalation exposure to the substance. When the exposed males were mated with untreated females, male infertility was evident. The infertility effect was permanent at higher dose levels. Additionally, reduced sperm motility and decreases in the number of fertilized ovum and implantations in mated females were observed. When treated females mated with untreated males, no reproductive effects were observed. The parental toxicity was not described. Based on male infertility and the decreased number of implantations, the substance was classified into category 2.



STOT-single exposure	: Causes damage to organs (respiratory organs, liver, kidney) In inhalation tests, necrosis and ulceration in the respiratory tract and olfactory epithelium were observed following 6-hour exposure of 697 ppm in mice. Pulmonary edema and hemorrhage were observed following 6-hour exposure of 283 - 445 ppm in rats. Based on the data, the substance was classified into category 1 (respiratory organs). In oral tests in rats, polyuria, increased kidney weight and changes in urine component were observed at 7 - 350 mg/kg, and renal failure was noted in approximately 80% of animals at 125 mg/kg. Nephropathy accompanied by vacuolization is reported at 325 - 500 mg/kg following oral exposure in rats and mice. Since adverse effects were noted at dose levels within the guidance value range for category 1 with the inhalation and oral routes, the substance was classified into category 1 (kidney). In the oral tests in rats and mice (325 - 500 mg/kg) reported above, fatty degeneration in the liver was also observed. There is a case report of an accidental massive systemic exposure, where an enlarged liver with jaundice is reported, and fatty degeneration together with functional disturbances of the liver persisted for more than two years. Based on the data, the substance was classified into category 1 (liver).
STOT-repeated exposure	: Causes damage to organs (respiratory organs, kidney) through prolonged or repeated exposure In rats, dilation of the renal tubules was observed at 50 ppm following a 13-week inhalation exposure period. Focal degeneration of the renal tubules was observed at 50 ppm following a 10-week inhalation exposure period. Degeneration and dilation of the renal tubules were observed at 30 ppm following a life-time inhalation exposure. Since these findings were noted at dose levels within the guidance value range for Category 1, the substance was classified into category 1 (kidney). Inflammation, focal erosion, hyperplasia and squamous metaplasia in the turbinate airway epithelium were observed at 25 ppm and higher concentrations following a 13-week inhalation exposure period in rats and mice. Lung disorders, mainly edema, congestion and pneumonia were observed at a dose of 100 ppm following a 30-day inhalation exposure period in rats. Purulent rhinitis, sinusitis and pneumonia were observed at 25 ppm and higher concentrations following a 10-week inhalation exposure period in rabbits. Since these findings were noted at dose levels within the guidance value range for Category 1, the substance was classified into category 1 (respiratory organs).
Aspiration hazard	: Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	: Harmful to aquatic life Pimephales promelas LC50=10.6mg/L/96h
Aquatic chronic	: No classification Pseudokirchneriella subcapitata

Persistence and degradability

Readily biodegradable
BOD : 67.9% (as 3-chloro-1,2-propanediol)



Bioaccumulative potential

Low bioconcentration
log Pow : 0.45

Mobility in soil

High mobility
Koc : 123

Hazardous to the ozone layer

Ozone : Classification not possible

13. Disposal considerations

Ecological waste information : Burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.
The incinerator should be suitable for burning organic halogen compounds.
Alkaline solution should be used for cleaning liquid of the scrubber.

Contaminated container and packaging : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information**International Regulations****Transport by sea (IMDG)**

UN-No. (IMDG) : 2023
Proper Shipping Name (IMDG) : EPICHLOROHYDRIN
Packing group (IMDG) : II
Transport hazard class(es) (IMDG) : 6.1 (3)

Air transport (IATA)

UN-No. (IATA) : 2023
Proper Shipping Name (IATA) : Epichlorohydrin
Packing group (IATA) : II
Transport hazard class(es) (IATA) : 6.1 (3)

Marine pollutant : Applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollutant category : Y
MFAG-No : 131P

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources : NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.
Solvents Handbook, T, Asahara el, Kodansha Scientific Ltd. (1976) .
Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .



Handbook of dangerous and hazardous chemicals, Japan
Industrial Safety & Health Association. (2000-2001) .

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253.

