# Safety Data Sheet

| Creation Date: 2021/11/04 | SDS NO.: 1391E |
|---|---|
| Product Name:<br><br>1-chloro-2,3-epoxypropane\|epichlorhydrin\|3-chloro-1,2-epoxypropane | Version: V2.1.0.1 |

## SECTION 1 Identification of the chemical and supplier

**Chemical Name:**
1-chloro-2,3-epoxypropane|epichlorhydrin|3-chloro-1,2-epoxypropane
**Synonyms:**
**CAS No.:** 106-89-8
**EC No.:** 203-439-8
**Molecular Formula:** C3H5ClO
**Recommended Uses:** Please consult manufacturer.
**Restrictions on Use:** Please consult manufacturer.

**Name of the company:** Wuxi High Mountain Hi-tech Development Co.,Ltd.
**Address of the company:** No.1406, Building 3, Calxon Fortune Center, Financial 3rd Street, Wuxi, P. R. of China
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## SECTION 2 Hazards identification

### | Emergency overview

Liquid. Flammable, its vapor and air mixture can form explosive mixture. Toxic if swallowed. Toxic in contact with skin. Causes skin burns. Risk of serious damage to eyes. SENSITISATION by skin contact. Risk of serious damage to eyes. Toxic by inhalation.

### | Hazard classification according to GHS

According to series standards of GB 30000-2013: Rules for classification and labelling of chemicals. (Please refer to 16th chapter of SDS), hazard classification as following: Flammable Liquids, Category 3; Acute Toxicity – Oral, Category 3; Acute Toxicity – Dermal, Category 3; Skin Corrosion/Irritation, Category 1B; Skin Sensitization, Category 1; Serious Eye Damage/Irritation, Category 1; Acute Toxicity – Inhalation, Category 3; Carcinogenicity, Category 1B.

### | Label elements

**Hazard pictograms**

**Signal word: Danger**

**Hazard statements:** Flammable liquid and vapour, Toxic if swallowed, Toxic in contact with skin, Causes severe skin burns and eye damage, May cause an allergic skin reaction, Causes serious eye damage, Toxic if inhaled, May cause cancer.

**Precautionary statements**

**Prevention:** Obtain special instructions before use.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 non-sparking tools.Take action to prevent static discharges.Do not breathe dust/fume/gas/mist/vapours/spray.Wash face and hands 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.Wear protective gloves/protective clothing/eye protection/face protection.

**Response:** Call a POISON CENTER/doctor, if you feel unwell.Specific treatment (see ... on this label).Specific treatment (see ... on this label).Rinse mouth.Take off immediately all contaminated clothing.Wash contaminated clothing before reuse.IF SWALLOWED: Immediately call a POISON CENTER/doctor.IF INHALED: Remove person to fresh air and keep comfortable for breathing.IF exposed or concerned: Get medical advice/ attention.If skin irritation or rash occurs: Get medical advice/attention.In case of fire: Use suitable fire extinguishing medium to extinguish.IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Storage:** Store locked up.Store in a well-ventilated place. Keep container tightly closed.Store in a well-ventilated place. Keep cool.

**Disposal:** Dispose of contents/container in accordance with local/regional/national/ international regulations.

## | Hazard description

### Physical and chemical hazards

Flammable liquids, its vapor and air mixture can form explosive mixture.

### Health hazards

Burning sensation.Cough.Sore throat.Headache.Laboured breathing.Nausea.Shortness of breath.Vomiting.Tremor.Symptoms may be delayed .Abdominal cramps.Burning sensation in the throat and chest.Diarrhoea.Headache.Nausea.Sore throat.Vomiting.Shock or collapse.MAY BE ABSORBED! Redness.Seriousskin burns.Burning sensation.Pain.Blisters.Pain.Redness.Permanentloss of vision.Severe deep burns.

### Environmental hazards

Please refer to 12th chapter of SDS.

# SECTION 3 Composition/information on ingredients

√Substance Mixture

| Component | Concentration/Range | CAS No. |
|---|---|---|

| | | |
|---|---|---|
| 1-Chloro-2,3-epoxypropane | >= 99 | 106-89-8 |

# SECTION 4 First aid measures

## | Description of first aid measures

**General advice:** Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.

**Skin contact:** Remove contaminated clothes.Rinse skin with plenty of water or shower.Refer for medical attention.

**Eye contact:** First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

**Inhalation:** Fresh air, rest.Half-upright position.Artificial respiration may be needed.Refer for medical attention.

**Ingestion:** Rinse mouth.Do NOT induce vomiting.Give plenty of water to drink.Rest.Refer for medical attention.

**Advice for protecting the rescuer:** Remove all sources of ignition and increase ventilation. Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Use personal protective equipment including respirator.

**Special note to the doctor:** Treat symptomatically. Symptoms may be delayed.

# SECTION 5 Firefighting measures

## | Hazard characteristics

Will form explosive mixtures with air. Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration. Vapours may travel to source of ignition and flash back. Liquid and vapour are flammable. May emit poisonous fumes on fire. Containers may explode when heated. May expansion or decompose explosively when heated or involved in fire.

## | Extinguishing method and media

Suitable extinguishing media: Dry chemical, carbon dioxide or alcohol-resistant foam.

Unsuitable extinguishing media: Do not use a solid water stream as it may scatter or spread fire.

## | Fire precautions and measures

As in any fire, wear self-contained breathing apparatus ( MSHA/NIOSH approved or equivalent) and full protective gear. Fight fire from a safe distance, with adequate cover. Prevent fire extinguishing water from contaminating surface water or the ground water system.

# SECTION 6 Accidental release measures

## | Personal precautions, protective equipment and emergency procedures

Avoid breathing vapours and contacting with skin and eye. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Emergency personnel wear positive pressure self-contained breathing apparatus. Wear protective and anti-static clothing. Wear chemical impermeable gloves. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not

touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment. Avoid breathing vapours, mist, gas or dust.

### | Environmental precautions

Prevent further leakage or spillage if safe to do so. Discharge into the environment must be avoided.

### | Methods and materials for containment and cleaning up

Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

## SECTION 7 Handling and storage

### | Precautions for handling

Avoid inhalation of vapors. Use only non-sparking tools. To prevent fire caused by electrostatic discharge steam, equipment on all metal parts should be grounded. Use explosion proof equipment. Handling is performed in a well ventilated place. Wear suitable protective equipment. Avoid contact with skin and eyes. Keep away from heat/sparks/open flames/ hot surfaces.

### | Precautions for storage

Keep containers tightly closed. Keep containers in a dry, cool and well-ventilated place. Keep away from heat/sparks/open flames/hot surfaces. Store away from incompatible materials and foodstuff containers. Storage temperature generally should not be higher than 32 ℃, relative humidity generally should not be higher than 80%.

## SECTION 8 Exposure controls/personal protection

### | Control parameters

#### Occupational Exposure limit values

| COMPONENT | STANDARD | TYPE | STANDARD VALUE | REMARK |
|---|---|---|---|---|
| 1-Chloro-2,3-epoxypropane | GBZ 2.1-2019 | PC-TWA | 1 mg/m3 | Skin , G2A |
| | | PC-STEL | 2 mg/m3 | |
| Skin——directly exposed to the skin, mucous membranes, and the eyes of the vapor, liquid and solid, causing the systemic effect to be absorbed through the skin.<br>G2A——May be human carcinogen. | | | | |

#### Biological limit values

No information available.

#### Monitoring methods

EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. GBZ/T 160.1~GBZ/T 160.81-2004 Determination of toxic substances in workplace air ( Series standard ) .

### | Engineering controls

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Set up emergency exit and necessary risk-elimination area.

### | Respiratory protection

If exposure limits are exceeded or if irritation or other symptoms are experienced, use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges.

### | Eye protection

Tightly fitting safety goggles (approved by EN 166(EU) or NIOSH (US).

### | Skin and body protection

Wear fire/flame resistant/retardant clothing and antistatic boots.

### | Hand protection

Wear protective gloves ( such as butyl rubber ) , passing the tests according to EN 374(EU), US F739 or AS/NZS 2161.1 standard.

### | Other protection

Smoking, eating and drinking water is forbidden in the workplace. After work, shower and change clothes. To maintain good health habits.

## SECTION 9 Physical and chemical properties

| | |
|---|---|
| **Appearance:** Colorless liquid | |
| **pH (Specified the concentration) :** No information available | **Odor:** Pungent odor |
| **Initial boiling point and boiling range(℃):** 116 | **Melting point/freezing point(℃):** -48 |
| **Vapor density(Air = 1):** 3.2 | **Density:** No information available |
| **Saturated vapor pressure (kPa):** 1.6kPa ( 0℃ ) | **Relative density(Water=1):** 1.18 ( 0℃ ) |
| **Evaporation rate:** No information available | **Viscosity(mm2/s):** No information available |
| **Flash point(℃):** 31 | **N-octanol/water partition coefficient:** 0.26 |
| **Decomposition temperature(℃):** 225 | **Auto-ignition temperature(℃):** 385 |
| **Upper/lower explosive limits[%(v/v)]:** Upper limit : 21 ; Lower limit : 3.8 | |
| **Solubility:** Miscible with water | **Flammability:** Flammable |

## SECTION 10 Stability and reactivity

### | Stability

Stable under proper operation and storage conditions.

### | Incompatible materials

Inorganic acids, covalent halides, inorganic alkali, amines, metal alkoxides, metal oxides and magnesium perchlorate.

### | 应 Conditions to avoid

Incompatible materials, heat, flame and spark.

### | Hazardous reactions

In contact with inorganic acids or magnesium perchlorate causes an explosion.

### | Decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11 Toxicological information

### | Acute toxicity

| COMPONENT | CAS NO. | $LD_{50}$(ORAL) | $LD_{50}$(DERMAL) | $LC_{50}$(INHALATION)-4H |
|---|---|---|---|---|
| 1-Chloro-2,3-epoxypropane | 106-89-8 | 90mg/kg(Rat) | 515mg/kg(Rabbit) | No information available |

### | Carcinogenicity

| ID | CAS NO. | COMPONENT | IARC | NTP |
|---|---|---|---|---|
| 1 | 106-89-8 | 1-Chloro-2,3-epoxypropane | Category 2A | Not Listed |

### | Skin irritation/corrosion

Causes severe skin burns and eye damage(Category 1B)

### | Eye irritation/corrosion

Causes serious eye damage(Category 1)

### | Skin sensitization

May cause an allergic skin reaction(Category 1)

### | Respiratory sensitization

No information available

### | Germ cell mutagenicity

No information available

### | Reproductive toxicity

No information available

### | STOT-single exposure

No information available

### | STOT-repeated exposure

No information available

### | Aspiration hazard

No information available

## SECTION 12 Ecological information

### | Acute aquatic toxicity

| COMPONENT | CAS NO. | FISH | CRUSTACEANS | ALGAE |
|---|---|---|---|---|
| 1-Chloro-2,3-epoxypropane | 106-89-8 | $LC_{50}$: 15.6mg/L (96h)(Fish) | No information available | No information available |

### | Chronic aquatic toxicity

No information available.

### | Persistence and degradability

No information available

### | Bioaccumulative potential

No information available

### | Mobility in soil

No information available

### | Other deleterious effect

No information available.

## SECTION 13 Disposal considerations

### | Disposal methods

Product: Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.

Contaminated packaging: Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.

### | Disposal considerations

Refer to section 13.1and 13.2.

## SECTION 14 Transport information

**| UN number:** 2023

**| UN proper shipping name:** EPICHLOROHYDRIN

**| Transport hazard class:** 6.1+3

**| Packing group:** Ⅱ

### | Label


### | Marine pollutant (Yes/No): 是

### | Methods of packing

Metal drum, removable head. Metal drum, removable head. Ampoule outside the ordinary wooden box. Threaded glass, metal cover pressure bottles, plastic bottles or metal (cans) outside the ordinary wooden box etc. Threaded glass, metal cover pressure bottles, plastic bottles or metal (cans) outside the ordinary wooden box etc. thread mouth glass bottles, plastic bottles or tinplate barrels (LP), full floor grille boxes, fibreboard or plywood box etc. Packaging as recommended by manufacturer.

### | Precautions for transport

Transit should be anti-exposure, rain, high temperature. Strictly prohibited shipping or transportation with acids, alkalis, oxidants, food and food additives etc. Shipment of the goods vehicle exhaust pipe must be equipped with fire retardant devices, prohibit using mechanical equipment and toolsof which easy to produce sparks . Transit should be anti-exposure, anti-rain, anti-high temperature. Transportation used tank (tank) cars should be grounded chain, tank can be installed to reduce the partition hole static electricity shocks. Strictly prohibited shipping or transportation withoxidants, acids, food and food additives etc. When bulk transport, Prohibit the use of cement or wooden boats. Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements.

## SECTION 15 Regulatory information

### | Regulatory information

| COMPONENT | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1-Chloro-2,3-epoxypropane | Listed | Not Listed | Not Listed | Not Listed | Listed | Not Listed | Not Listed | Not Listed |

【A】 Catalog of Hazardous Chemicals(2015 Edition), Notice 5th 2015, China State Administration of Work Safety.

【B】 Catalog of Priority Hazardous Chemicals for Environment Management, Notice 33th 2014, Ministry of Environmental Protection of PRC.

【C】 List of Toxic Chemicals Restricted to be Imported/Exported in China, Notice 85th 2013, Ministry of Environmental Protection of PRC.

【D】 Catalog of Stupefacient and Psychotropic Substances(2013Edition), Notice 230th 2013, China Food and Drug Administration.

【E】Catalog of Hazardous Chemicals for Priority Management( First and Second batches ), Notice 95th, 2011, Notice 12th 2013, China State Administration of Work Safety.

【F】 List of Ozone Depletion Chemicals Controlled to be Imported/Exported in China ( First to Sixth batches ), Notice from

2000 to 2012 Ministry of Environmental Protection of PRC.

【G】 Dangerous Chemicals Directory Used to Manufacure Exploder(2011 Edition), Notice 25th Nov. 2011, Ministry of Public Security of PRC1.

【H】 Catalog of Highly Toxic Chemicals, Notice 142th 2003, China Ministry of Health.

# SECTION 16 Others

**Latest Revision Date:** 2021/11/04

## | Revision explanation

This Safety Data Sheet (SDS) was prepared according to standards of《Safety data sheet for chemical products——Content and order of sections》( GB/T 16483-2008 ) and《Guidance on the compilation of safety data sheet for chemical products》( GB/T 17519-2013 ). The result of GHS classification according to《Guidance on the Catalog of Hazardous Chemicals(2015 Edition) (trial)》and series standards of《Rules for classification and labelling of chemicals》(GB 30000.2-2013~GB 30000.29-2013).

## | Reference

【1】IPCS: The International Chemical Safety Cards (ICSC) ,website: http://www.ilo.org/dyn/icsc/showcard.home.

【2】IARC , website: http://www.iarc.fr/.

【3】OECD: The Global Portal to Information on Chemical Substances, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en.

【4】CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple.

【5】NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.

【6】EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/.

【7】U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg.

【8】Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

## | Abbreviations and acronyms

| | |
|---|---|
| **CAS** –Chemical Abstracts Service | **CMR** - Carcinogens, mutagens or substances toxic to reproduction |
| **PC-STEL**- Short term exposure limit | **PC-TWA** - Time Weighted Average |
| **DNEL** - Derived No Effect Level | **IARC** - International Agency for Research on Cancer |
| **RPE** - Respiratory Protective Equipment | **PNEC** –Predicted No Effect Concentration |
| **$LC_{50}$** - Lethal Concentration 50% | **$LD_{50}$** - Lethal Dose 50% |
| **NOEC** -No Observed Effect Concentration | **$EC_{50}$** - Effective Concentration 50% |
| **PBT** - Persistent, Bioaccumulative, Toxic | **POW** - Partition coefficient Octanol:Water |
| **BCF** - Bioconcentration factor (BCF) | **vPvB** - very Persistent, very Bioaccumulative |
| **IMDG**-International Maritime Dangerous Goods | **ICAO/IATA**-International Civil Aviation Organization/International Air Transportation Association |
| **UN**-The United Nations | **ACGIH**-American Conference of Governmental Industrial Hygienists |
| **NFPA**-National Fire Protection Association | **OECD**-Organization for Economic Co-operation and Development |

## | Disclaimer

This Safety Data Sheet (SDS) was prepared according to GB/T16483 and GB/T17519. The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However,

due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.