

1 Identification

- **Product identifier**
- **Trade name:** **Epichlorohydrin**
- **CAS Number:**
106-89-8
- **EC number:**
203-439-8
- **Index number:**
603-026-00-6
- **Application of the substance / the mixture** Chemicals for synthesis
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Jubail Chemical Industries Company (JANA)
P.O.Box - 11919
Jubail Industrial City - 31961
Saudi Arabia
Phone + 966 13 347 8888 ext. 555 fax + 966 13 347 6705
- **Information department:** safety; e-mail: safety@nama.com.sa
- **Emergency telephone number:**
Tox Info Suisse
Freiestrasse 16 CH- Zurich
Emergency phone number (from outside Switzerland): 0041 44 251 51 51 (24h)

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H311 Toxic in contact with skin.

Acute Tox. 3 H331 Toxic if inhaled.



GHS08 Health hazard

Carc. 1B H350 May cause cancer.



GHS05 Corrosion

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



GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

- **Label elements**
- **GHS label elements**
The substance is classified and labeled according to the Globally Harmonized System (GHS).

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Trade name: Epichlorohydrin

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· **Hazard pictograms**



GHS02 GHS05 GHS06 GHS07 GHS08

· **Signal word** *Danger*

· **Hazard-determining components of labeling:**

1-chloro-2,3-epoxypropane

· **Hazard statements**

H226 Flammable liquid and vapor.

H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H350 May cause cancer.

· **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P301+P310 If swallowed: Immediately call a poison center/doctor.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Substances**

· **CAS No. Description**

106-89-8 1-chloro-2,3-epoxypropane

· **Identification number(s)**

· **EC number:** 203-439-8

· **Index number:** 603-026-00-6

4 First-aid measures

· **Description of first aid measures**

· **General information:**

Immediately remove any clothing soiled by the product.

Remove breathing apparatus only after contaminated clothing have been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· **After inhalation:**

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:** *Immediately wash with water and soap and rinse thoroughly.*

· **After eye contact:** *Rinse opened eye for several minutes under running water. Then consult a doctor.*

· **After swallowing:**

Do not induce vomiting; immediately call for medical help.

Drink copious amounts of water and provide fresh air. Immediately call a doctor.

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Trade name: Epichlorohydrin

(Contd. of page 2)

- **Information for doctor:**
- **Most important symptoms and effects both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Dilute with plenty of water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

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· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

106-89-8 1-chloro-2,3-epoxypropane

PEL Long-term value: 19 mg/m³, 5 ppm
Skin

REL See Pocket Guide App. A

TLV Long-term value: 1.9 mg/m³, 0.5 ppm
Skin

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

Filter AX

Suitable respiratory protective device recommended.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

Butyl rubber, BR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Recommended thickness of the material: ≥ 0.7 mm

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

For the mixture of chemicals mentioned below the penetration time has to be at least 480 minutes (Permeation according to EN 374 Part 3: Level 6).

· **Eye protection:**



Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Fluid

Color: Colorless

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· Odor:	Like chlorine
· pH-value:	Not determined.
· Change in condition	
Melting point/Melting range:	-57,2 °C (-71 °F)
Boiling point/Boiling range:	116 °C (240.8 °F) (DIN 51751)
· Flash point:	28 °C (82.4 °F) (DIN 51755)
· Ignition temperature:	385 °C (725 °F) (DIN 51794)
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	2,3 Vol %
Upper:	34,4 Vol %
· Vapor pressure at 20 °C (68 °F):	16 hPa (12 mm Hg)
· Density at 20 °C (68 °F):	1,18 g/cm ³ (9.8471 lbs/gal)
· Solubility in / Miscibility with Water at 20 °C (68 °F):	60 g/l
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	0,0 %
VOC content:	0.0 g/l / 0.00 lb/gl
· Other information	No further relevant information available.

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
Heat, flames and sparks.
No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** Strong oxidizing materials, strong alkalis, strong acids, amines, aluminium.
- **Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Hydrogen chloride (HCl)
Phosgene

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:**

ATE (Acute Toxicity Estimate)		
Oral	LD50	175 mg/kg (rat)
Dermal	LD50	515 mg/kg (rabbit)
Inhalative	LC50/4 h	4,114 mg/l (rat)

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US

Trade name: Epichlorohydrin

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106-89-8 1-chloro-2,3-epoxypropane

Oral	LD50	175 mg/kg (rat)
Dermal	LD50	515 mg/kg (rabbit)
Inhalative	LC50/4 h	4,114 mg/l (rat)

- **Primary irritant effect:**
- **on the skin:** Caustic effect on skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.
- **By inhalation:** Toxic if inhaled.
- **By ingestion:** Toxic if swallowed.
- **Sensitization:** Sensitization possible through skin contact.
- **Additional toxicological information:**
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

2A

· **NTP (National Toxicology Program)**

R

· **OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

106-89-8 1-chloro-2,3-epoxypropane

EC50 (48h)	23.9 mg/l (daphnia magna)
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- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Must not reach bodies of water or drainage ditch undiluted or unneutralized.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Hand over to hazardous waste disposers.

· **Uncleaned packagings:**

- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.





US

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Trade name: **Epichlorohydrin**

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14 Transport information

· UN-Number	UN2023
· DOT, ADR, IMDG, IATA	UN2023
· UN proper shipping name	Epichlorohydrin
· DOT, IATA	Epichlorohydrin
· ADR	2023 Epichlorohydrin
· IMDG	EPICHLOROXYDRIN
· Transport hazard class(es)	
· DOT	
	
· Class	6.1 Toxic substances
· Label	6.1, 3
· ADR	
	
· Class	6.1 Toxic substances
· Label	6.1+3
· IMDG	
	
· Class	6.1 Toxic substances
· Label	6.1/3
· IATA	
	
· Class	6.1 Toxic substances
· Label	6.1 (3)
· Packing group	II
· DOT, ADR, IMDG, IATA	II
· Environmental hazards:	
· Marine pollutant:	Yes (Symbol fish and tree)
· Special precautions for user	Warning: Toxic substances
· Danger code (Kemler):	63
· EMS Number:	F-E,S-D
· Stowage Category	A
· Stowage Code	SW2 Clear of living quarters.
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.

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US

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· **Transport/Additional information:**

· **ADR**

· **Excepted quantities (EQ)**

Code: E4

Maximum net quantity per inner packaging: 1 ml

Maximum net quantity per outer packaging: 500 ml

· **IMDG**

· **Limited quantities (LQ)**

100 ml

· **Excepted quantities (EQ)**

Code: E4

Maximum net quantity per inner packaging: 1 ml

Maximum net quantity per outer packaging: 500 ml

· **UN "Model Regulation":**

UN 2023 EPICHLOROXYDRIN, 6.1 (3), II

15 Regulatory information

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

· **Sara**

· **Section 355 (extremely hazardous substances):**

Substance is listed.

· **Section 313 (Specific toxic chemical listings):**

Substance is listed.

· **TSCA (Toxic Substances Control Act):**

Substance is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

Substance is listed.

· **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for males:**

Substance is listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

· **Carcinogeny categories**

· **EPA (Environmental Protection Agency)**

B2

· **TLV (Threshold Limit Value established by ACGIH)**

A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

Substance is listed.

· **GHS label elements**

The substance is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS02

GHS05

GHS06

GHS07

GHS08

· **Signal word Danger**

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Trade name: Epichlorohydrin

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· **Hazard-determining components of labeling:**

1-chloro-2,3-epoxypropane

· **Hazard statements**

H226 Flammable liquid and vapor.

H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled.

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H317 May cause an allergic skin reaction.

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· **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

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P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** product safety departement

· **Date of preparation / last revision** 02/27/2018 / 8

· **Abbreviations and acronyms:**

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organisation

ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOCV: Lenkungsabgabe auf flüchtigen organischen Verbindungen, Schweiz (Swiss Ordinance on volatile organic compounds)

VOC: Volatile Organic Compounds (USA, EU)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 3: Acute toxicity – Category 3

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Skin Sens. 1: Skin sensitisation – Category 1

Carc. 1B: Carcinogenicity – Category 1B

· *** Data compared to the previous version altered.**