ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Epichlorohydrin

Revision Date:2025-03-08 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name	: Epichlorohydrin
CBnumber	: CB8381781
CAS	: 106-89-8
EINECS Number	: 203-439-8
Synonyms	: epichlorohydrin,ECH

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	: For R&D use only. Not for medicinal, household or other use.
Uses advised against	: none

Company Identification

Company	: Chemicalbook
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 400-158-6606

SECTION 2: Hazards identification

GHS Label elements, including precautionary statements

Symbol(GHS)

Signal word Danger

Precautionary statements

P405 Store locked up.

P310 Immediately call a POISON CENTER or doctor/physician.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P307+P311 IF exposed: call a POISON CENTER or doctor/physician.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continuerinsing.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P284 Wear respiratory protection.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P273 Avoid release to the environment.

P272 Contaminated work clothing should not be allowed out of the workplace.

P271 Use only outdoors or in a well-ventilated area.

P270 Do not eat, drink or smoke when using this product.

P264 Wash skin thouroughly after handling.

P264 Wash hands thoroughly after handling.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P240 Ground/bond container and receiving equipment.

P233 Keep container tightly closed.

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

P202 Do not handle until all safety precautions have been read and understood.

P201 Obtain special instructions before use.

Hazard statements

H402 Harmful to aquatic life

H372 Causes damage to organs through prolonged or repeated exposure

H370 Causes damage to organs

H361 Suspected of damaging fertility or the unborn child

H350 May cause cancer

H341 Suspected of causing genetic defects

H331 Toxic if inhaled

H330 Fatal if inhaled

H317 May cause an allergic skin reaction

H314 Causes severe skin burns and eye damage

H311 Toxic in contact with skin

H301 Toxic if swalloed

H226 Flammable liquid and vapour

Disposal

WARNING.Cancer - https://oehha.ca.gov/proposition-65/chemicals/epichlorohydrin

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SECTION 3: Composition/information on ingredients

Substance

Product name	: Epichlorohydrin
Synonyms	: epichlorohydrin,ECH
CAS	: 106-89-8
EC number	: 203-439-8
MF	: C3H5ClO
MW	: 92.52

SECTION 4: First aid measures

Description of first aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media

Small (incipient) fires must be extinguished with alcohol resistant foam, dry chemical powder or carbon dioxide. Large amounts of water are ineffective. Cool containers with large amounts of water.

Special hazards arising from the substance or mixture

Carbon oxides Hydrogen chloride gas Combustible.

Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapours possible in the event of fire.

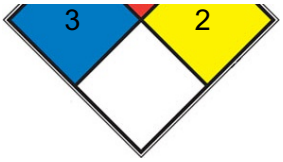
Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

NFPA 704



HEALTH	3	Short exposure could cause serious temporary or moderate residual injury (e.g. liquid hydrogen, sulfuric acid, calcium hypochlorite, hexafluorosilicic acid)
FIRE	3	Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions . Liquids having a flash point below 22.8 °C (73 °F) and having a boiling point at or above 37.8 °C (100 °F) or having a flash point between 22.8 and 37.8 °C (73 and 100 °F). (e.g. gasoline, acetone)
REACT	2	Undergoes violent chemical change at elevated temperatures and pressures, reacts violently with water, or may form explosive mixtures with water (e.g. white phosphorus, potassium, sodium)
SPEC. HAZ.		

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

Environmental precautions

Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g.

Chemizorb?). Dispose of properly. Clean up affected area.

Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Store under inert gas.

Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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SECTION 8: Exposure controls/personal protection

control parameter

Hazard composition and occupational exposure limits

Does not contain substances with occupational exposure limits.

Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact

Material: butyl-rubber

Minimum layer thickness: 0,7 mm Break through time: 480 min Material tested:Butoject? (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact Material: Viton?

Minimum layer thickness: 0,7 mm Break through time: 60 min

Material tested:Vitoject? (KCL 890 / Aldrich Z677698, Size M)

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

Recommended Filter type: Filter A-(P3)

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the

instructions of the producer.

These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

Exposure limits

TLV-TWA(skin) 8 mg/m^3 (2 ppm) (ACGIH); STEL (15 min) 19 mg/m^3 (5 ppm) (NIOSH).

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Appearance	colorless clear, liquid
Odour	stinging
Odour Threshold	No data available
pH	No data available
Melting point/freezing point	Melting point/range: -57 °C
Initial boiling point and boiling range	115 - 117 °C
Flash point	28 °C - DIN 51755 Part 1
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	Upper explosion limit: 21 %(V) Lower explosion limit: 3,8 %(V)
Vapour pressure	16,5 hPa at 20 °C 22,8 hPa at 25 °C
Vapour density	3,2 - (Air = 1.0)
Relative density	1,183 g/mL at 25 °C 1,18 at 20 °C
Water solubility	ca.65,9 g/l at 25 °C - completely soluble
Partition coefficient: n-octanol/water	log Pow: 0,45 at 25 °C - Bioaccumulation is not expected.
Autoignition temperature	385 °C at 1.013 hPa
Decomposition temperature	225 °C -
Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: ca.1,03 mPa.s at 20 °C
Explosive properties	No data available
Oxidizing properties	No data available
Henry's Law Constant	3.42(x 10^{-5} atm?m^3/mol) at 25 °C (static headspace-GC, Welke et al., 1998)

Other safety information

Surface tension 72,3 mN/m at 1,01g/l at 21,5 °C

- OECD Test Guideline 115

Relative vapor density

3,2 - (Air = 1.0)

SECTION 10: Stability and reactivity

Reactivity

Vapor/air-mixtures are explosive at intense warming.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Risk of explosion with: aluminium chloride Amines

anilines

metallic chlorides Chlorites

Tin Zinc

Exothermic reaction with: Alkali metals

Alcohols alkalines Water Zinc

Tin acids

Ethyleneimine aromatic amines Nitric acid sulfuric acid trichloroethene

Conditions to avoid

Heat, flames and sparks. Heating.

Incompatible materials

No data available

Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - female - 175 mg/kg (US-EPA)

LC50 Inhalation - Rat - female - 4 h - 2,05 mg/l Remarks: (ECHA)

LD50 Dermal - Rabbit - male and female - 515 mg/kg Remarks: (ECHA)

Skin corrosion/irritation

Skin - Rabbit Result: Corrosive (Draize Test)

(Regulation (EC) No 1272/2008, Annex VI) Skin - Rabbit

Result: Open irritation test - 24 h

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Corrosive - 24 h Remarks: (ECHA)

Causes serious eye damage.

Respiratory or skin sensitization

(OECD Test Guideline 406)

May cause sensitization by skin contact.

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471

Result: positive

Test Type: In vitro mammalian cell gene mutation test Test system: Mouse lymphoma test

Metabolic activation: without metabolic activation Method: OECD Test Guideline 476

Result: positive

Test Type: Mutagenicity (mammal cell test): chromosome aberration. Species: Mouse

Cell type: Bone marrow Application Route: Oral

Method: OECD Test Guideline 475 Result: positive

Test Type: Mutagenicity (mammal cell test): chromosome aberration. Species: Rat

Cell type: Bone marrow

Application Route: inhalation (vapor) Method: OECD Test Guideline 475

Result: Positive results were obtained in some in vivo tests.

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Toxicity

LD50 orally in rats: 0.09 g/kg (Smyth, Carpenter)

SECTION 12: Ecological information

Toxicity

Toxicity to fish

static test LC50 - Pimephales promelas (fathead minnow) - 10,6 - 13,2 mg/l - 96 h

Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates

static test EC50 - Daphnia magna (Water flea) - 24 mg/l - 48 h Remarks: (ECHA)

Toxicity to algae

static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 15 mg/l - 72 h

(OECD Test Guideline 201)

Toxicity to bacteria

static test NOEC - microorganisms - 35 mg/l - 72 h

Remarks: (ECHA)

Persistence and degradability

Biodegradability aerobic - Exposure time 14 d

Result: 92,5 % - Readily biodegradable. (OECD Test Guideline 301C)

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: 3-chloro- 1,2-propanediol

Bioaccumulative potential

No data available

Mobility in soil

No data available

Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Toxics Screening Level

The initial threshold screening level (ITSL) for epichlorohydrin is 1 µg/m3 based on an annual averaging time.

Other adverse effects

No data available

SECTION 13: Disposal considerations

Waste treatment methods

Incompatibilities

May form explosive mixture with air. Heat or strong acids; alkalies, metallic halides, or contaminants can cause explosive polymerization. Violent reaction with strong oxidizers, aliphatic amines; alkanolamines, amines (especially aniline), alkaline earths; chemically active metals; powdered metals (aluminum, zinc); alcohols, phenols, organic acids; causing fire and explosion hazard.

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Waste Disposal

Incineration, preferably after mixing with another combustible fuel. Care must be exercised to assure complete combustion to prevent the formation of phosgene. An acid scrubber is necessary to remove the halo acids produced.

SECTION 14: Transport information

UN number

ADR/RID: 2023 IMDG: 2023

UN proper shipping name

ADR/RID: EPICHLOROHYDRIN IMDG: EPICHLOROHYDRIN IATA: Epichlorohydrin

Transport hazard class(es)

ADR/RID: 6.1 (3) IMDG: 6.1 (3) IATA: 6.1 (3)

Packaging group

ADR/RID: II IMDG: II IATA: II

Environmental hazards

ADR/RID: no IMDG Marine pollutant: yes IATA: no

Special precautions for user

No data available

SECTION 15: Regulatory information

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

Regulations on the Safety Management of Hazardous Chemicals

China Catalog of Hazardous chemicals 2015:Listed. website: https://www.mem.gov.cn/

Measures for Environmental Management of New Chemical Substances

European Inventory of Existing Commercial Chemical Substances (EINECS):Listed. website: https://echa.europa.eu/

EC Inventory:Listed.

Vietnam National Chemical Inventory:Listed. website: https://chemicaldata.gov.vn/

Chinese Chemical Inventory of Existing Chemical Substances (China IECSC):Listed. website: https://www.mee.gov.cn/

Korea Existing Chemicals List (KECL):Listed. website: http://ncis.nier.go.kr

Philippines Inventory of Chemicals and Chemical Substances (PICCS):Listed. website: https://emb.gov.ph/

New Zealand Inventory of Chemicals (NZIoC):Listed. website: https://www.epa.govt.nz/

United States Toxic Substances Control Act (TSCA) Inventory:Listed. website: https://www.epa.gov/

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

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

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

【3】ECHA - European Chemicals Agency, website: https://echa.europa.eu/

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

【5】ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

【6】Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

【7】HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

【8】IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

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

【10】Sigma-Aldrich, website: https://www.sigmaaldrich.com/

Other Information

Other melting points: -25.6 °C and -57°C.Depending on the degree of exposure, periodic medical examination is suggested.The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential.Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered.The odour warning when the exposure limit value is exceeded is insufficient.Do NOT take working clothes home.