

# EPICHLOROHYDRIN

## PRODUCT IDENTIFICATION

|            |                                   |
|------------|-----------------------------------|
| CAS NO.    | 106-89-8                          |
| EINECS NO. | 203-439-8                         |
| FORMULA    | C <sub>3</sub> H <sub>5</sub> ClO |
| MOL WT.    | 92.52                             |
| H.S. CODE  |                                   |
| TOXICITY   |                                   |



**SYNONYMS** 3-Chloropropyl epoxide; alpha-Epichlorohydrin; Allyl chloride oxide; 1-Chloro-2,3-epoxypropane; 1-Chloro-2,3-epoxipropano; 1-Chloro-2,3-époxypropane; 1,2-Epoxy-3-chloropropane; 2,3-Epoxypropyl chloride; 2-(Chloromethyl) oxirane; 3-Chloro-1,2-epoxypropane; 3-Chloro-1,2-propylene oxide; 3-Chloropropene-1,2-oxide; 3-Chloropropylene Oxide; (Chloromethyl) Ethylene Oxide; (Chloromethyl)oxirane; DL-alpha-epichlorohydrin; ECH; Epoxy-3-chloropropane; Epoxypropyl chloride; Glycerol Epichlorohydrin; Glycidyl chloride; (RS)-3-Chloro-1,2-epoxypropane; gamma-Chloropropylene oxide;

## DERIVATION

## CLASSIFICATION

## PHYSICAL AND CHEMICAL PROPERTIES

|                     |  |
|---------------------|--|
| PHYSICAL STATE      | Clear liquid with an irritating chloroform-like odor |
| MELTING POINT       | -48 C  |
| BOILING POINT       | 116 C  |
| SPECIFIC GRAVITY    | 1.183  |
| SOLUBILITY IN WATER | Moderate 6.59 g/100ml                                |
| pH                  |  |
| VAPOR DENSITY       | 3.3  |
| AUTOIGNITION        | 415 C  |
| NFPA RATINGS        | Health: 3; Flammability: 3; Reactivity: 2            |
| REFRACTIVE INDEX    |  |
| FLASH POINT         | 40.5 C   |
| STABILITY           | Stable under ordinary conditions.                    |

## GENERAL DESCRIPTION & APPLICATIONS

Epichlorohydrin is a clear liquid with a pungent, garlic-like odor. This substance is highly reactive and flammable compound. It will polymerize under heating or under strong acid and base conditions and when contacted with halide salts. This compound will react violently with strong oxidants, anhydrous metal halides, strong acids and bases, alcohols, phenols, amines (especially aniline) and metals such as zinc and aluminium. Fire will liberate explosive and hazard mixtures including phosgene, hydrogen chloride, and carbon monoxide. It is strongly irritant to the skin and is carcinogenic. The term of epoxide indicate three membered cyclic ether (also called oxirane or alkylene oxide) in which an oxygen atom is joined to each of two carbon atoms that are already bonded to each other. The unhindered oxygen atom carries two unshared pairs of electrons - a structure which favors the formation of coordination complexes and the solvation of cations. Because of equilateral triangle strain in this small ring, epoxides are more reactive than larger ring ethers. Epoxides undergo reactions such as C-O bond cleavage, nucleophilic addition, hydrolysis and reduction under mild conditions and more rapidly than other ethers. Epoxides are formed by some oxidation reactions of alkenes with peracids. Epichlorohydrin, called also chloropropylene oxide, is prepared from propene, which is chlorinated to allyl chloride. The allyl chloride is the feed to yield glycerol

chlorohydrins, which produce epichlorohydrin under dehydrochlorination with alkali. Epichlorohydrin is used to make numerous substances, predominantly synthetic glycerin and unmodified epoxy resins. It is used as a building block in making elastomers and other polymers, some of which are used in water supply systems. It is used in making wet strength resins and water-treatment resins. It is used to make a variety of glycidyl derivatives, surfactants, plasticizers, dyestuffs, pharmaceuticals, emulsifiers, lubricants, and adhesives. It is used as an insect fumigant. It is also used as a solvent for cellulose, resins, rosins, paints, and pesticide, and as a stabilizer in chlorine-containing substances.

#### SALES SPECIFICATION

|                  |  |
|------------------|--|
| APPEARANCE       | Clear liquid with an irritating chloroform-like odor |
| PURITY           | 99.9% min  |
| COLOR, APHA      | 15 max   |
| SPECIFIC GRAVITY | 1.18 - 1.185   |
| BOILING POINT    | 115 - 117 C  |
| VISCOSITY cps    | 1.12 at 20 C   |
| MOISTURE         | 500ppm max   |

#### TRANSPORTATION

|              |                         |
|--------------|-------------------------|
| PACKING      | 230kgs in drum          |
| HAZARD CLASS | 6.1 (Packing Group: II) |
| UN NO.       | 2023                    |

#### OTHER INFORMATION

Hazard Symbols: T, Risk Phrases: 45-10-23/24/25-34-43, Safety Phrases: 53-45