



Safety Data Sheet

Version 7.1
Revision Date: 30/09/2019

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **Deuterated Epichlorohydrin**
Product abbreviation: D5ECH, D4ECH, D2ECH
Product use: For laboratory research purposes.
Supplier / Manufacturer: Polymer Source, Inc.
Address: 124 Avro street, Dorval (Montreal), Quebec H9P 2X8, Canada
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2. HAZARDS IDENTIFICATION

Emergency overview: Target organs: Kidney, liver, lungs.
WHMIS classification: B2. Flammable liquid.
D1A. Very toxic material causing immediate and serious toxic effects: Highly toxic by inhalation.
D1B. Toxic material causing immediate and serious toxic effects: Toxic by ingestion.
D2A. Very toxic material causing other toxic effects: Toxic by skin absorption.
D2B. Toxic material causing other toxic effects: Carcinogen.
E. Corrosive material. Respiratory sensitizer. Severe eye irritant. Corrosive to skin.
GHS classification: Flammable liquid (Category 3).
Acute toxicity, Oral (Category 3).
Acute toxicity, Inhalation (Category 3).
Acute toxicity, Dermal (Category 3).
Skin corrosion (Category 1B).
Serious eye damage (Category 1).
Respiratory sensitization (Category 1).
Carcinogenicity (Category 1B).

GHS Label elements, including precautionary statements:

Pictogram:



Signal word: Danger

Hazard statements: H226. Flammable liquid and vapour.
H301 + H311. Toxic if swallowed or in contact with skin.
H314. Causes severe skin burns and eye damage.
H331. Toxic if inhaled.
H334. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350. May cause cancer.

Precautionary statements: P201. Obtain special instructions before use.
P261. Avoid breathing dust, fume, gas, mist, vapours, spray.
P280. Wear protective gloves, protective clothing, eye protection, face protection.
P305 + P351 + P338. *If in eyes:* Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310. Immediately call a POISON CENTER or doctor / physician.

HMIS classification: Health hazard: 3
Chronic health hazard: *
Flammability: 3
Physical hazards: 0

Potential health effects: Inhalation: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous.
Skin: Toxic if absorbed through skin. Causes skin burns.
Eyes: Causes eye burns.
Ingestion: Toxic if swallowed.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Formula:	Epichlorohydrin-d ₅ :	C ₃ D ₅ OC ₂ H ₅
	Epichlorohydrin-d ₄ :	C ₃ D ₄ HOC ₂ H ₅
	Epichlorohydrin-d ₂ :	C ₃ D ₂ H ₃ OC ₂ H ₅
Synonyms:	Deuterated 2-(Chloromethyl)oxirane (d ₂₋₅); Deuterated 1-Chloro-2,3-epoxypropane (d ₂₋₅).	
Concentration:	≤ 100 %	

CAS registry number:	Epichlorohydrin-d ₅ (<i>labeled</i>):	69533-54-6
	Epichlorohydrin (<i>unlabeled</i> ; C ₃ H ₅ ClO):	106-89-8

4. FIRST AID MEASURES

General advice:	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled:	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact:	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
In case of eye contact:	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.
If swallowed:	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Conditions of flammability:	Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.
Suitable extinguishing media:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for firefighters:	Wear self contained breathing apparatus for firefighting if necessary.
Hazardous combustion products:	Hazardous decomposition products formed under fire conditions: Carbon oxides, Hydrogen chloride gas.
Explosion data:	Sensitivity to mechanical impact: no data available Sensitivity to static discharge: no data available
Further information:	Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Environmental precautions:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Methods and materials for containment and cleaning up:	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition – No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage: Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store under inert gas. Hygroscopic.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters:

<i>Components</i>	<i>Value</i>	<i>Control parameters</i>	<i>Basis</i>	<i>Remarks</i>
Epichlorohydrin-d ₅ (CAS-No.: 69533-54-6)	TWA	0.500000 ppm 1.900000 mg/m ³	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)	Substance may be readily absorbed through intact skin.
	TWA	0.100000 ppm	Canada. British Columbia OEL	IARC '2A' applies to substances deemed probably carcinogenic to humans on the basis of limited evidence of carcinogenicity in humans. Adverse reproductive effect. Contributes significantly to the overall exposure by the skin route.
	TWAEV	2.000000 ppm 7.600000 mg/m ³	Québec. Regulation Respecting Occupational Health and Safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants.	A substance which may not be recirculated in accordance with section 108. A substance to which exposure must be reduced to a minimum in accordance with section 42. Skin (percutaneous). Carcinogenic effect suspected in humans.
	TWA	0.500000 ppm	USA. ACGIH Threshold Limit Values (TLV).	

Personal protective equipment:

- Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

- Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
- Eye protection: Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
- Skin and body protection: Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
- Specific engineering controls: Use mechanical exhaust or laboratory fumehood to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Form:	Clear, liquid
	Colour:	Colourless
Safety data:	pH:	no data available
	Melting point / Freezing point:	m.p.(lit.): -57 °C (-71 °F)
	Boling point:	b.p.(lit.): 115–117 °C (239–243 °F)
	Flash point:	(lit.): 33 °C (91 °F) - closed cup
	Ignition temperature:	no data available
	Auto-ignition temperature:	no data available
	Lower explosion limit:	no data available
	Upper explosion limit:	no data available
	Vapour pressure:	no data available
	Density:	(lit.): 1.247 g/mL at 25 °C (1.247 g/cm ³ at 77 °F)
	Water solubility:	no data available
	Partition coefficient: n-octanol/water:	no data available
	Relative vapour density:	no data available
	Odour:	no data available
	Odour threshold:	no data available
	Evaporation rate:	no data available

10. STABILITY AND REACTIVITY

Chemical stability:	Stable under recommended storage conditions.
Radioactivity:	Stable isotope compound. Not radioactive.

Possibility of hazardous reactions:	Vapours may form explosive mixture with air.
Conditions to avoid:	Heat, flames and sparks.
Materials to avoid:	no data available
Hazardous decomposition products:	Hazardous decomposition products formed under fire conditions: Carbon oxides, Hydrogen chloride gas. Other decomposition products: no data available.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:	Oral LD50:	no data available
	Inhalation LC50:	no data available
	Dermal LD50:	no data available
	Other information on acute toxicity:	no data available
Skin corrosion/irritation:	no data available	
Serious eye damage/eye irritation:	no data available	
Respiratory or skin sensitization:	no data available	
Germ cell mutagenicity:	no data available	
Carcinogenicity:	Possible human carcinogen.	
	IARC: Group 2A: Probably carcinogenic to humans.	
Reproductive toxicity:	no data available	
Teratogenicity:	no data available	
Specific target organ toxicity:	Single exposure (GHS):	no data available
	Repeated exposure (GHS):	no data available
Aspiration hazard:	no data available	
Potential health effects:	Inhalation:	Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
	Ingestion:	Toxic if swallowed.
	Skin:	Toxic if absorbed through skin. Causes skin burns.
	Eyes:	Causes eye burns.
Signs and symptoms of exposure:	Avoid high concentrations of unreacted epichlorohydrin in reaction systems. Rubber or neoprene are slowly penetrated by epichlorohydrin. Direct contact of liquid epichlorohydrin may cause: tissue death, corneal opacity. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting.	
Synergistic effects:	no data available	
Additional information:	RTECS:	not available

12. ECOLOGICAL INFORMATION

Toxicity:	no data available
Persistence and degradability:	no data available
Bioaccumulative potential:	no data available
Mobility in soil:	no data available
PBT and vPvB assessment:	no data available
Other adverse effects:	no data available

13. DISPOSAL CONSIDERATIONS

Product:	Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging:	Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US):	UN number: 2023 Class: 6.1 (3) Packing group: II Proper shipping name: Epichlorohydrin Reportable Quantity (RQ): 100 lbs Marine pollutant: No Poison Inhalation Hazard: No
IMDG:	UN number: 2023 Class: 6.1 (3) Packing group: II EMS-No: F-E, S-D Proper shipping name: Epichlorohydrin Marine pollutant: Marine pollutant
IATA:	UN number: 2023 Class: 6.1 (3) Packing group: II Proper shipping name: Epichlorohydrin

15. REGULATORY INFORMATION

WHMIS classification:	B2.	Flammable liquid.
	D1A.	Very toxic material causing immediate and serious toxic effects: Highly toxic by inhalation.
	D1B.	Toxic material causing immediate and serious toxic effects: Toxic by ingestion.

- D2A. Very toxic material causing other toxic effects:
Toxic by skin absorption.
- D2B. Toxic material causing other toxic effects:
Carcinogen.
- E. Corrosive material.
Respiratory sensitizer. Severe eye irritant. Corrosive to skin.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

Date of the latest revision: 30 September 2019

Further information: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Polymer Source, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product. See www.polymersource.ca for additional terms and conditions of sale.