



Safety Data Sheet

Issue Date 10-Jun-2010

Revision Date: 30-Jun-2013

Version 1

1. IDENTIFICATION

Product Identifier

Product Name Epichlorohydrin

Other means of identification

SDS # NC-012

UN/ID No UN2023
Synonyms 1-chloro-2, 3-epoxypropane.

Recommended use of the chemical and restrictions on use

Recommended Use Epoxy resin raw material; water treatment chemical; flame retardant.

Details of the supplier of the safety data sheet

Supplier Address

Neuchem Inc.
2062 Union Street, Suite 300
San Francisco, CA 94123 USA
www.neuchem.com

Emergency Telephone Number

Company Phone Number Phone: 415-345-9353
Fax: 415-345-9350
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America) Account No. 100534

2. HAZARDS IDENTIFICATION

Classification

Acute toxicity - Oral	Category 3
Acute toxicity - Dermal	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1B
Flammable Liquids	Category 3

Signal Word

Danger

Hazard Statements

Toxic if swallowed
Toxic in contact with skin
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer

Flammable liquid and vapor



Appearance Clear colorless liquid

Physical State Liquid

Odor Chloroform

Precautionary Statements - Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

Precautionary Statements - Response

Immediately call a POISON CENTER or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
If skin irritation persists: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
Do not induce vomiting
IN CASE OF FIRE: Use CO₂, dry chemical, or foam for extinction

Precautionary Statements - Storage

Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other Hazards

Harmful to aquatic life with long lasting effects
Harmful to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms 1-chloro-2, 3-epoxypropane.

Chemical Name	CAS No	Weight-%
Epichlorohydrin	106-89-8	100

4. FIRST-AID MEASURES

First Aid Measures

General Advice	Provide this SDS to medical personnel for treatment. If exposed or concern: Get IMMEDIATE medical attention.
Eye Contact	Make sure to remove any contact lenses from the eyes before rinsing. Continue to rinse for at least 15 minutes and get medical attention.
Skin Contact	Remove contaminated clothing and flush with plenty of water until pain disappears. If discomfort persists, transport to hospital and bring these instructions.
Inhalation	Remove victim immediately from source of exposure. Provide rest, warmth and fresh air. If breathing stops, provide artificial respiration. Consult a physician for specific advice.
Ingestion	DO NOT INDUCE VOMITING! Rinse mouth thoroughly. Never give liquid to an unconscious person. Get Medical Attention Immediately!.

Most important symptoms and effects

Symptoms	Inhalation: coughing and sore throat Skin: irritating and may cause redness, pain and burning. Eye: profuse watering of the eyes. Irritating and may cause redness, pain and burning.
-----------------	---

Indication of any immediate medical attention and special treatment needed

Notes to Physician	NOTE: Effects may be delayed. Keep affected person under observation. Rapid absorption may occur through lung. Inducing vomiting should be made by physician.
---------------------------	---

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Small Fire	Use alcohol resistant foam; dry chemicals; carbon dioxide (CO ₂).
Large Fire	Water spray, fog or mist; extinguish with alcohol resistant foam, carbon dioxide, dry powder or water fog.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

The product is flammable, and heating may generate vapors which may form explosive vapor / air mixtures. In case of fire, toxic gases may be formed. May travel considerable distance to source of ignition and flash back. Vapors may ignite. Forms explosive mixtures with air. Vapors are heavier than air and may spread near ground to sources of ignition. Polymerizes when heated.

Sensitivity to Static Discharge Flammable mixtures of this product are readily ignited even by static discharge.

Protective equipment and precautions for firefighters

Avoid breathing fire vapors. Move container from fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Protective Equipment for firefighters: Wear full protective clothing. Use air-supplied respirator, gloves and protective goggles.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of vapors and contact with skin and eyes. Eye contact MUST be prevented by means of suitable personal protection equipment.
For Emergency Responders	Follow applicable OSHA regulations (29 CFR 1910.120).
Environmental Precautions	Do not allow ANY environmental contamination. Do not discharge into drains, water courses or onto the ground.

Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so. Absorb with sand or other inert absorbent.
Methods for Clean-Up	Use clean non-sparking tools to collect absorbed material. Sweep up absorbed material and shovel into suitable containers for disposal. Discard any product, residue, disposable container or liner in full compliance with federal, state, and local regulations. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling	Handle in accordance with good industrial hygiene and safety practice. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protection recommended in Section 8. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Use only in well-ventilated areas. Wear respiratory protection. Contaminated work clothing should not be allowed out of the workplace. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Keep container closed when not in use. Ground/bond container and receiving equipment. Use explosion proof equipment. Take precautionary measures against static discharges. Keep cool.
--------------------------------	---

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep/store in original container in a dry, cool and well-ventilated place. Keep away from food, drink, and animal feeding stuffs. Keep away from heat, sparks and open flame. Store away from incompatible materials. Store locked up. Storage Class: Flammable liquid storage.
Incompatible Materials	Strong oxidizing agents, Acids, Reducing agent, Flammable/combustible material, Strong alkalis, Alkali metals, Alkaline earth metals, Powdered metals, Other metals or alloys, Amines, Ammonia, Inorganic halides, Phenols and halogenated phenols.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH

Epichlorohydrin 106-89-8	TWA: 0.5 ppm S*	TWA: 5 ppm TWA: 19 mg/m ³ (vacated) TWA: 2 ppm (vacated) TWA: 8 mg/m ³ (vacated) S* S*	IDLH: 75 ppm
-----------------------------	--------------------	---	--------------

Other Information AVOID ALL SKIN AND RESPIRATORY CONTACT.

Appropriate engineering controls

Engineering Controls Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the SDS. Maintain eye wash fountain and quick-drench facilities in work area.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear full-face visor or shield.

Skin and Body Protection Butyl rubber gloves are recommended, but be aware that the liquid may penetrate the gloves. Frequent change is advisable. Avoid: leather; nitrile; polyethylene.

Respiratory Protection AXBEK (EN 14387) respirator cartridge.

General Hygiene Considerations Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. Promptly remove any clothing that becomes wet or contaminated.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid	Odor	Chloroform
Appearance	Clear colorless liquid	Odor Threshold	Not determined
Color	Colorless		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	Not determined	
Melting Point/Freezing Point	-48 °C / -54.4 °F	
Boiling Point/Boiling Range	117.9 °C / 244.2 °F	
Flash Point	28 °C / 82.4 °F	
Evaporation Rate	0.06	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	21% v/v	
Lower Flammability Limit	3.8% v/v	
Vapor Pressure	2280 Pa @ 25°C	
Vapor Density	3.2	(Air=1)
Specific Gravity	1.18	@ 68°F (20°C)
Water Solubility	Not determined	
Solubility in other solvents	Not determined	
Partition Coefficient	0.45	
Autoignition Temperature	385 °C / 725 °F	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	1.037 mPas @ 20°C	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Additional Information	Solubility Value (G/100G H2) @20°C = 65,900 mg/L	
Molecular Weight	92.4874	

10. STABILITY AND REACTIVITY

Reactivity

Amines; chlorine.

Chemical Stability

Stable under normal temperature conditions and recommended use.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization Hazardous polymerization may occur.**Conditions to Avoid**

Avoid shocks and physical damage, heat, sparks, flames. Incompatible Materials.

Incompatible Materials

Strong oxidizing agents, Acids, Reducing agent, Flammable/combustible material, Strong alkalis, Alkali metals, Alkaline earth metals, Powdered metals, Other metals or alloys, Amines, Ammonia, Inorganic halides, Phenols and halogenated phenols.

Hazardous Decomposition ProductsCarbon monoxide, Carbon dioxide (CO₂), Hydrogen chloride.**11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure****Product Information**

Eye Contact	Causes severe eye damage.
Skin Contact	Toxic in contact with skin. Causes severe skin burns. May cause an allergic skin reaction.
Inhalation	Fatal if inhaled.
Ingestion	Toxic if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Epichlorohydrin 106-89-8	= 90 mg/kg (Rat)	= 515 mg/kg (Rabbit)	= 500 ppm (Rat) 4 h

Information on physical, chemical and toxicological effects**Symptoms** Please see section 4 of this SDS for symptoms.**Delayed and immediate effects as well as chronic effects from short and long-term exposure****Sensitization** May cause an allergic skin reaction.**Carcinogenicity** May cause cancer; The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Epichlorohydrin 106-89-8	A3	Group 2A	Reasonably Anticipated	X

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 2A - Probably Carcinogenic to Humans

NTP (National Toxicology Program)
 Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
 OSHA (Occupational Safety and Health Administration of the US Department of Labor)
 X - Present

Target organ effects Kidneys, liver, respiratory system, lungs.

Numerical measures of toxicity

Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Epichlorohydrin 106-89-8		35: 96 h Lepomis macrochirus mg/L LC50 static 35: 96 h Lepomis macrochirus mg/L LC50 semi-static 30.5: 96 h Brachydanio rerio mg/L LC50 static 9.1 - 12.3: 96 h Pimephales promelas mg/L LC50 static	EC50 = 1160 mg/L 15 min EC50 = 2310 mg/L 5 min EC50 = 670 mg/L 30 min	24: 48 h Daphnia magna mg/L EC50

Persistence/Degradability

The substance is readily biodegradable

Phototransformation: Air. 50 Degradation (%) 292 hours

Biodegradation: Mixture of sewage, soil and natural water:

68 Degradation (%) 14 days.

84.3 Degradation (%) 14 days

Bioaccumulation

The product is not bioaccumulating

Mobility

Adsorption/Desorption Coefficient not determined. Log Kow <3.

Chemical Name	Partition Coefficient
Epichlorohydrin 106-89-8	0.3

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Epichlorohydrin 106-89-8	U041	Included in waste stream: K017		U041

Chemical Name	California Hazardous Waste Status
Epichlorohydrin 106-89-8	Toxic Ignitable

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT

UN/ID No UN2023
Proper Shipping Name Epichlorohydrin
Hazard Class 6.1
Subsidiary Hazard Class 3
Packing Group II
Reportable Quantity (RQ) 100 lbs
Marine Pollutant This product contains a chemical which is listed as a marine pollutant according to DOT.

IATA

UN/ID No UN2023
Proper Shipping Name Epichlorohydrin
Hazard Class 6.1
Subsidiary Hazard Class 3
Packing Group II

IMDG

UN/ID No UN2023
Proper Shipping Name Epichlorohydrin
Hazard Class 6.1
Subsidiary Hazard Class 3
Packing Group II
Marine Pollutant This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO

15. REGULATORY INFORMATION

International Inventories

Not determined

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Epichlorohydrin 106-89-8	100 lb	100 lb	RQ 100 lb final RQ RQ 45.4 kg final RQ

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Epichlorohydrin - 106-89-8	106-89-8	100	0.1

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Epichlorohydrin 106-89-8 (100)	100 lb			X

US State Regulations**California Proposition 65**

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Epichlorohydrin - 106-89-8	Carcinogen Male Reproductive

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Epichlorohydrin 106-89-8	X	X	X

16. OTHER INFORMATION**NFPA****Health Hazards**

Not determined

Flammability

Not determined

Instability

Not determined

Special Hazards

Not determined

HMIS**Health Hazards**

Not determined

Flammability

Not determined

Physical Hazards

Not determined

Personal Protection

Not determined

Issue Date

10-Jun-2010

Revision Date:

30-Jun-2013

Revision Note

New format

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet