



# Material Safety Data Sheet

The Dow Chemical Company

**Product Name:** Epichlorohydrin

**Issue Date:** 05/18/2009

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The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## 1. Product and Company Identification

### Product Name

Epichlorohydrin

### COMPANY IDENTIFICATION

The Dow Chemical Company  
2030 Willard H. Dow Center  
Midland, MI 48674  
USA

Customer Information Number: 800-258-2436

### EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** 989-636-4400

**Local Emergency Contact:** 989-636-4400

## 2. Hazards Identification

### Emergency Overview

**Color:** Colorless

**Physical State:** Liquid.

**Odor:** Pungent

**Hazards of product:**

Danger - Poison! Flammable liquid and vapor. May be fatal if inhaled. Causes eye irritation. Harmful if absorbed through skin. May cause allergic skin reaction. Harmful if inhaled; may cause lung injury. Harmful if swallowed. May cause skin irritation. Aspiration hazard. Can enter lungs and cause damage to body systems. Keep upwind of spill. Vapor explosion hazard. Vapors may travel a long distance; ignition and/or flash back may occur. Isolate area. Stay out of low areas. Warn public of downwind explosion hazard. Elevated temperatures can cause hazardous polymerization. Toxic fumes may be released in fire situations. Suspect cancer hazard. May cause cancer.

### OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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**Potential Health Effects**

**Eye Contact:** May cause severe eye irritation. May cause corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

**Skin Contact:** Brief contact may cause slight skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

**Skin Absorption:** Prolonged or widespread skin contact may result in absorption of harmful amounts.

**Skin Sensitization:** Has caused allergic skin reactions in humans.

**Inhalation:** Easily attainable vapor concentrations may cause unconsciousness and death. Effects may be delayed. Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Excessive exposure may cause lung injury. Signs and symptoms of excessive exposure may include: Difficulty in breathing.

**Ingestion:** Moderate toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death.

**Aspiration hazard:** Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

**Effects of Repeated Exposure:** In humans, effects have been reported on the following organs:

Kidney. Lung. In animals, effects have been reported on the following organs: Liver. Kidney.

**Cancer Information:** Has caused cancer in laboratory animals. Recent epidemiology studies have shown either no association or an equivocal relationship between human epichlorohydrin exposure and cancer or heart disease.

**Birth Defects/Developmental Effects:** Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

**Reproductive Effects:** In animal studies, has been shown to interfere with fertility in males.

**3. Composition Information**

Component	CAS #	Amount
3-Chloro-1,2-propylene oxide (epichlorohydrin)	106-89-8	99.9 %

**4. First-aid measures**

**Eye Contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

**Skin Contact:** Immediately wash skin with soap and plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Obtain medical attention without delay. Wash clothing before reuse. Destroy contaminated articles such as shoes.

**Inhalation:** Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Ingestion:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately. Seek medical attention immediately.

**Notes to Physician:** Because rapid absorption may occur through the lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Maintain adequate ventilation and oxygenation of the patient. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

**Medical Conditions Aggravated by Exposure:** Excessive exposure may aggravate preexisting lung, liver, and kidney disease.

**Emergency Personnel Protection:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection) If potential for exposure exists refer to Section 8 for specific personal protective equipment.

## 5. Fire Fighting Measures

**Extinguishing Media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. Straight or direct water streams may not be effective to extinguish fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective. Water fog, applied gently may be used as a blanket for fire extinguishment.

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water may not be effective in extinguishing fire. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment.

**Special Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

**Unusual Fire and Explosion Hazards:** Container may rupture from polymerization. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Flammable mixtures may exist within the vapor space of containers at room temperature. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Hydrogen chloride. Carbon monoxide. Carbon dioxide.

## 6. Accidental Release Measures

**Steps to be Taken if Material is Released or Spilled:** Ground and bond all containers and handling equipment. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Contained liquids should be recovered free of separate water phase, preferably by use of air-operated or other non-spark producing pump. Do not touch or walk through spilled material. Final cleanup can be similar to small spills. For smaller spills, and if the contaminated water can be properly disposed, deluge or flood the spill area with sufficient water to remove the product. Epichlorohydrin will slowly hydrolyze to less volatile and less flammable (but still toxic) compounds when dissolved in water. Use SODA ASH (Na<sub>2</sub>CO<sub>3</sub>) in conjunction with the water to react with the epichlorohydrin and convert it to glycerine. Be sure to prevent a two-phase mixture, thus avoiding potential reactivity hazards. If contaminated water can not be disposed of properly, small spills can be collected using a solid absorbent product. Contain spilled material if possible. Do NOT use absorbent materials such as: Clay. Milsorb®. DRIERITE. ABSORB-N-DRI. Cellulose. Absorb with materials such as: Polyethylene fiber products. Polypropylene fiber products. Sand. Perlite. Spills on bare ground may necessitate the removal of contaminated earth. The moisture in the soil can react with this product in a hazardous manner. Therefore, careful monitoring of removed soil and prompt disposal is advantageous. See Section 13, Disposal Considerations, for additional information.

**Personal Precautions:** For large spills, warn public of downwind explosion hazard. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Check area with combustible gas detector before reentering area.

Ground and bond all containers and handling equipment. See Section 10 for more specific information. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Keep unnecessary and unprotected personnel from entering the area. Isolate area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Refer to Section 7, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Keep personnel out of low areas.

**Environmental Precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

## 7. Handling and Storage

### Handling

**General Handling:** Keep away from heat, sparks and flame. Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Do not swallow. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. No smoking, open flames or sources of ignition in handling and storage area. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Other Precautions:** Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Never use air pressure for transferring product. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

### Storage

Minimize sources of ignition, such as static build-up, heat, spark or flame. Do not store product contaminated with water to prevent potential hazardous reaction. Keep containers tightly closed when not in use to prevent formation of carbonate salts. Keep container tightly closed. Store in the following material(s): Carbon steel. Stainless steel. Avoid contact with: Do not store in: Zinc. Bronze. Aluminum. Aluminum alloys. Copper alloys. Brass. Copper. Magnesium. Magnesium alloys. See Section 10 for more specific information. Do not store mixtures of this product and water to avoid potential for hazardous reaction. Maintain a nitrogen atmosphere. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure. Keep container tightly closed when not in use. Store away from incompatible materials. See STABILITY AND REACTIVITY section. Storage tanks should be blanketed with nitrogen and the oxygen concentration should be maintained below eight (8%) percent.

	Shelf life: Use within	Storage temperature:
<b>Metal drums.</b>		
	24 Months	< 35 °C
<b>Bulk</b>		
	12 Months	< 35 °C

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
3-Chloro-1,2-propylene oxide (epichlorohydrin)	ACGIH	TWA	0.5 ppm SKIN
	OSHA Table Z-1	PEL	19 mg/m <sup>3</sup> 5 ppm SKIN

A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.

It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

### Personal Protection

**Eye/Face Protection:** Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

**Skin Protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Chlorinated polyethylene.

Styrene/butadiene rubber. Polyvinyl alcohol ("PVA"). Ethyl vinyl alcohol laminate ("EVAL").

Examples of acceptable glove barrier materials include: Viton. Neoprene. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR").

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Respiratory Protection:** Atmospheric levels should be maintained below the exposure guideline.

When respiratory protection is required, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

**Ingestion:** Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

### Engineering Controls

**Ventilation:** Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Lethal concentrations may exist in areas with poor ventilation.

## 9. Physical and Chemical Properties

<b>Physical State</b>	Liquid.
<b>Color</b>	Colorless
<b>Odor</b>	Pungent
<b>Odor Threshold</b>	No test data available
<b>Flash Point - Closed Cup</b>	31 °C (88 °F) <i>Literature</i>
<b>Flammability (solid, gas)</b>	No
<b>Flammable Limits In Air</b>	<b>Lower:</b> 3.8 %(V) <i>Literature</i> Vapor <b>Upper:</b> 21.0 %(V) <i>Literature</i> Vapor
<b>Autoignition Temperature</b>	1 atm 416 °C (781 °F) <i>Literature</i>
<b>Vapor Pressure</b>	2.28 kPa @ 25 °C <i>Literature</i>
<b>Boiling Point (760 mmHg)</b>	116 °C (241 °F) <i>Literature</i> .
<b>Vapor Density (air = 1)</b>	3.2 @ 25 °C <i>Literature</i>
<b>Specific Gravity (H2O = 1)</b>	1.178 <i>Literature</i>
<b>Liquid Density</b>	1.2 g/cm <sup>3</sup> <i>Literature</i>
<b>Freezing Point</b>	-57 °C (-71 °F) <i>Literature</i>
<b>Melting Point</b>	Not applicable
<b>Solubility in water (by weight)</b>	6.6 % @ 25 °C <i>Literature</i>
<b>pH</b>	No test data available

<b>Molecular Weight</b>	92.53 g/mol <i>Literature</i>
<b>Decomposition Temperature</b>	No test data available
<b>Partition coefficient, n-octanol/water (log Pow)</b>	0.45 <i>Measured</i>
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Dynamic Viscosity</b>	1.086 mPa.s @ 25 °C <i>Literature</i>
<b>Kinematic Viscosity</b>	No test data available

## 10. Stability and Reactivity

### Stability/Instability

Stable under recommended storage conditions. See Storage, Section 7.

**Conditions to Avoid:** Exposure to elevated temperatures can cause product to decompose. Avoid two phase storage with water, a slow exothermic reaction may be initiated. Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition.

**Incompatible Materials:** Avoid contact with oxidizing materials such as: Sodium hypochlorite. Chlorine. Avoid contact with: Amines. Acids. Bases. Avoid contact with absorbent materials such as: Cellulose-based absorbents. Clay-based absorbents.

### Hazardous Polymerization

Can occur. Elevated temperatures can cause hazardous polymerization. Polymerization can be catalyzed by: Zinc. Aluminum. Amines. Copper. Lead. Strong acids. Strong bases.

### Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials.

## 11. Toxicological Information

### Acute Toxicity

#### Ingestion

LD50, Rat, female 175 mg/kg

LD50, Rat, male 282 mg/kg

#### Skin Absorption

LD50, Rabbit 515 mg/kg

#### Inhalation

LC50, 1 h, Vapor, Rat, female 2,165 ppm

LC50, Vapor, Rat, male 3,617 ppm

### Sensitization

#### Skin

Has caused allergic skin reactions in humans.

### Repeated Dose Toxicity

In humans, effects have been reported on the following organs: Kidney. Lung. In animals, effects have been reported on the following organs: Liver. Kidney.

### Chronic Toxicity and Carcinogenicity

Has caused cancer in laboratory animals. Recent epidemiology studies have shown either no association or an equivocal relationship between human epichlorohydrin exposure and cancer or heart disease.

### Carcinogenicity Classifications:

Component	List	Classification
3-Chloro-1,2-propylene oxide (epichlorohydrin)	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.; Group A3
	NTP	Anticipated carcinogen.
	IARC	Probable carcinogen.; 2A

**Developmental Toxicity**

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**Reproductive Toxicity**

In animal studies, has been shown to interfere with fertility in males.

**Genetic Toxicology**

Has been shown to have mutagenic activity in bacteria. Animal genetic toxicity studies were positive.

## 12. Ecological Information

**ENVIRONMENTAL FATE****Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is high (Koc between 50 and 150).

**Henry's Law Constant (H):** 3.04E-05 atm\*m3/mole

**Partition coefficient, n-octanol/water (log Pow):** 0.45 Measured

**Partition coefficient, soil organic carbon/water (Koc):** 120 Estimated.

**Persistence and Degradability**

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

**Indirect Photodegradation with OH Radicals**

Rate Constant	Atmospheric Half-life	Method
5.64E-13 cm <sup>3</sup> /s	19 d	Estimated.

**Stability in Water (1/2-life):**

8.2 d

**Biological oxygen demand (BOD):**

BOD 5	BOD 10	BOD 20	BOD 28
18.2 %	43 %	52.9 %	

**Theoretical Oxygen Demand:** 1.21 mg/mg

**ECOTOXICITY**

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

**Fish Acute & Prolonged Toxicity**

LC50, fathead minnow (*Pimephales promelas*), 96 h: 10.6 - 13.2 mg/l

**Aquatic Invertebrate Acute Toxicity**

LC50, water flea *Daphnia magna*, 48 h: 23.9 mg/l

**Aquatic Plant Toxicity**

EC50, green alga *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum*), biomass growth inhibition, 96 h: 16 - 17 mg/l

## 13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

## 14. Transport Information

### DOT Non-Bulk

Proper Shipping Name: EPICHLOROXYDRIN

Hazard Class: 6.1 (3) ID Number: UN2023 Packing Group: PG II

### DOT Bulk

Proper Shipping Name: EPICHLOROXYDRIN

Hazard Class: 6.1 (3) ID Number: UN2023 Packing Group: PG II

### IMDG

Proper Shipping Name: EPICHLOROXYDRIN

Hazard Class: 6.1 (3) ID Number: UN2023 Packing Group: PG II

EMS Number: F-E,S-D

Marine pollutant.: Yes

### ICAO/IATA

Proper Shipping Name: EPICHLOROXYDRIN

Hazard Class: 6.1 (3) ID Number: UN2023 Packing Group: PG II

Cargo Packing Instruction: 611

Passenger Packing Instruction: 609

### Additional Information

MARINE POLLUTANT

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.*

## 15. Regulatory Information

### OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	Yes
Sudden Release of Pressure Hazard	No

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

Component	CAS #	Amount
3-Chloro-1,2-propylene oxide (epichlorohydrin)	106-89-8	99.9%

### Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.



Component	CAS #	Amount
3-Chloro-1,2-propylene oxide (epichlorohydrin)	106-89-8	99.9%

**Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:**

The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
3-Chloro-1,2-propylene oxide (epichlorohydrin)	106-89-8	99.9%

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Component	CAS #	Amount
3-Chloro-1,2-propylene oxide (epichlorohydrin)	106-89-8	99.9%

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Component	CAS #	Amount
3-Chloro-1,2-propylene oxide (epichlorohydrin)	106-89-8	99.9%

**US. Toxic Substances Control Act**

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

**CEPA - Domestic Substances List (DSL)**

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

## 16. Other Information

**Hazard Rating System**

<b>NFPA</b>	<b>Health</b>	<b>Fire</b>	<b>Reactivity</b>
	3	3	2

**Recommended Uses and Restrictions**

A commodity chemical - Used in applications such as: Chemical intermediate.

**Revision**

Identification Number: 50130 / 1001 / Issue Date 05/18/2009 / Version: 4.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

*The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.*