

# Material Safety Data Sheet



## 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

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24-Hour Emergency Phone Number: 989-636-4400

Product: D.E.R.\* 331 EPOXY RESIN

Product Code: 19248

Effective Date: 06/07/04      Date Printed: 06/08/04      MSD: 000227

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Reaction product of epichlorohydrin  
& bisphenol A      CAS# 025085-99-8      100%

## 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

\*\*\*\*\*  
\* Yellow liquid. Mild odor. May cause allergic skin reaction.      \*  
\*\*\*\*\*

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause slight temporary eye irritation. Corneal injury is unlikely.

SKIN: Has caused allergic skin reactions in humans. Prolonged exposure not likely to cause significant skin irritation. Repeated contact may cause skin irritation with local redness. Prolonged skin contact is unlikely to result in absorption of harmful amounts.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

INHALATION: Vapors are unlikely due to physical properties.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Except for skin sensitization, repeated exposures to low molecular weight epoxy resins of this type are not anticipated to cause any significant adverse effects.

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CANCER INFORMATION: Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol A (DGEBPA). Although some weak evidence of carcinogenicity has been reported in animals, when all of the data are considered, the weight of evidence does not show that DGEBPA is carcinogenic. Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DBEBPA is not classified as a carcinogen.

TERATOLOGY (BIRTH DEFECTS): DGEBPA did not cause birth defects or other adverse effects on the fetus when pregnant rabbits were exposed by skin contact, the most likely route of exposure, or when pregnant rats or rabbits were exposed orally.

REPRODUCTIVE EFFECTS: In animal studies, did not interfere with reproduction.

#### 4. FIRST AID

EYES: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

SKIN: Wash skin with plenty of water. Items which cannot be decontaminated, including leather articles such as shoes, belts, and watchbands should be disposed of properly.

INGESTION: No emergency medical treatment necessary.

INHALATION: Move person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: Consider additional thorough skin wash with mild non-abrasive soap and plenty of warm water for at least 15 minutes. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

#### 5. FIRE FIGHTING MEASURES

##### FLAMMABLE PROPERTIES

FLASH POINT: 485F, 252C  
METHOD USED: ASTM D93, PMCC

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AUTOIGNITION TEMPERATURE: Not applicable

FLAMMABILITY LIMITS

LFL: Not applicable

UFL: Not applicable

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: phenolics, carbon monoxide and carbon dioxide.

OTHER FLAMMABILITY INFORMATION: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is emitted when burned without sufficient oxygen.

EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide fire extinguishers, dry chemical fire extinguishers and foam. Do not use direct water stream. May spread fire. Alcohol resistant foams (ATC type) are preferred if available. 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 INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Do not use direct water stream. May spread fire. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Move container from fire area if this is possible without hazard. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. 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. Contain fire water run-off if possible. Fire water run-off, if not contained may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this MSDS.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants,

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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 SCBA. If this is not available, wear full chemical resistant clothing with SCBA and fight fire from a remote location. For protective equipment in post-fire or non-fire clean up situations, refer to the relevant sections.

#### 6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

**PROTECT PEOPLE:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls/Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.

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

**CLEANUP:** Absorb with material such as sand or polypropylene or polyethylene fiber products. Collect in suitable and properly labeled containers. Remove residual with soap and hot water. Solvents are not recommended for clean up unless the recommended exposure guidelines and safe handling practices for the specific solvent are followed. Consult appropriate solvent SDS for handling information and exposure guidelines.

#### 7. HANDLING AND STORAGE

**HANDLING:** Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Avoid use of electric band heaters. Failures of electric band heaters have been reported to cause drums of liquid epoxy resin to explode and catch fire. Application of a direct flame to a container of liquid epoxy resin can also cause explosion and/or fire. See Section 8, Exposure Controls/Personal Protection.

**STORAGE:** Recommended pumping and storage temperature is 60C. Additional storage information on this product may be obtained by calling your Dow sales or customer service contact. Ask for a product brochure.

#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: Use protective clothing chemically resistant to this material. Selection of specific items such as face-shield, gloves, boots, apron or full body suit will depend on operation. 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.

RESPIRATORY PROTECTION: No respiratory protection should be needed.

EXPOSURE GUIDELINE(S): None established.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE: Yellow liquid  
ODOR: Mild  
VAPOR PRESSURE: Not applicable  
VAPOR DENSITY: Not applicable  
BOILING POINT: Not applicable  
SOLUBILITY IN WATER: None  
SPECIFIC GRAVITY: 1.16

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under recommended storage conditions. See Storage, Section 7.

CONDITIONS TO AVOID: Potentially violent decomposition can occur above 350C (662F). Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with oxidizing materials, acids and bases. Avoid unintended contact with amines.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposition products depend

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upon temperature, air supply and the presence of other materials. Uncontrolled exothermic reaction of epoxy resins release phenolics, carbon monoxide and water.

HAZARDOUS POLYMERIZATION: Will not occur by itself. Masses of more than one pound (0.5 kg) of product plus an aliphatic amine will cause irreversible polymerization with considerable heat build up.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

SKIN: The LD50 for skin absorption in rabbits is 20,000 mg/kg.

INGESTION: The oral LD50 for rats is >5000 mg/kg.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Animal genetic toxicity studies were negative. In vitro genetic toxicity studies were negative in some cases and positive in other cases.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

#### ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Measured log octanol/water partition coefficient (log Pow) is 3.7-3.9. Potential for mobility in soil is low (Koc between 500 and 2000). Soil organic carbon/water partition coefficient (Koc) is estimated to be 1800-4400. Henry's Law Constant (H) is estimated to be <6.94E-09 atm-m<sup>3</sup>/mole. Log octanol/water partition coefficient (log Pow) is estimated, using a structural fragment method, to be 3.84.

DEGRADATION & PERSISTENCE: Theoretical oxygen demand (ThOD) is calculated to be 2.35 p/p. In the atmospheric environment, material is estimated to have a tropospheric half-life of 1.92 hr. Biodegradation reached in Modified Zahn-Wellens/EMPA Test (OECD Test No. 302B) after 28 days: 12%. The 20-Day Biochemical Oxygen Demand (BOD20) is <2.5%.

ECOTOXICOLOGY: Material is moderately toxic to aquatic organisms on an acute basis (LC50 or EC50 between 1 and 10 mg/L in the most sensitive species tested). Acute LC50 in water flea

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Daphnia magna is 1.3 mg/L. Acute LC50 in fathead minnow (Pimephales promelas) is 3.1 mg/L. Toxicity to aquatic species occurs at concentrations greater than water solubility. Maximum acceptable toxicant concentration (MATC) in water flea Daphnia magna is 0.55 mg/L. Growth inhibition threshold in bacteria is >42.6 mg C/L. Inhibitory concentration (IC50) in OECD Activated Sludge Respiration Inhibition Test (OECD Test No. 209) is >100 mg/L.

### 13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods 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.

THE DOW CHEMICAL COMPANY HAS 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 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler, reclaimer, incinerator or other thermal destruction device.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at 800-258-2436 or 989-832-1556 for further details.

### 14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION: For D.O.T. regulatory information, if required, consult transportation regulations, product shipping papers or contact your Dow representative.

CANADIAN TDG INFORMATION: For TDG regulatory information, if required, consult transportation regulations, product shipping papers or contact your Dow representative.

### 15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

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NOTICE: The information herein is presented 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 from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

U.S. REGULATIONS

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SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

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SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

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TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

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STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

Pennsylvania

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OSHA HAZARD COMMUNICATION STANDARD:

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REGULATORY INFORMATION (CONTINUED)

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

CANADIAN REGULATIONS

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WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

D2B - skin sensitizer

Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employer's workplace education program.

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CPR STATEMENT: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

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HAZARDOUS PRODUCTS ACT INFORMATION: This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14):

COMPONENTS:	CAS #	AMOUNT(%w/w)
Reaction product of epichlorohydrin & bisphenol A	025085-99-8	100%

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CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

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

16. OTHER INFORMATION

MSDS STATUS: Revised Sections 3,4,5,6,7,8,9,15.

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The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.