

EMS CATALOG NO: 13030
EMS PRODUCT: DER 332
DATE: 05/17/11

MATERIAL SAFETY DATA SHEET

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FOR PRODUCT AND SALES INFORMATION

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PRODUCT IDENTIFICATION

PRODUCT NAME: **D.E.R.^(R) 332 Epoxy Resin**

Diglycidyl Ether of Bisphenol A 100%

CAS NUMBER: 001675-54-3

HEALTH HAZARD DATA

EMERGENCY OVERVIEW

Colorless-yellow liquid to semi-solid. Epoxy odor. Can cause allergic skin reaction.

POTENTIAL HEALTH EFFECTS (See Section-Toxicological Data):

EYE: May cause slight transient (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 exposure may cause skin irritation. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

INGESTION: Single dose oral toxicity is considered to be extremely low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

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.

CANCER INFORMATION: Several studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol A (DGEbPA)-based epoxy resins. In one of these, a DGEbPA-based resin (containing high levels of several impurities, including a known animal skin carcinogen) was reported to produce a weak carcinogenic response in the skin of one of two strains of mice tested. Recent studies have suggested slight increases in two systemic tumor types following repeated application of certain DGEbPA-containing resins (or pure DGEbPA), although the response was not uniform among practically identical resins. Based on these data, and the other studies which have not shown cancer, the cause-effect relationship between DGEbPA-treatment and these tumor increases is questionable. Indeed, a recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DGEbPA is not classifiable as to its carcinogenicity.

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, has been shown not to interfere with reproduction.

FIRST AID

EYES: Flush eyes with plenty of water.

SKIN: Wash off in flowing water or shower.

INGESTION: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

INHALATION: No adverse effects anticipated by this route of exposure.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgement of the physician in response to reactions of the patient.

FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: 485°F (252°C)

METHOD USED: PMCC

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS: LFL: Not applicable

UFL: Not applicable

HAZARDOUS COMBUSTION PRODUCTS: The by-products expected in incomplete pyrolysis or combustion of epoxy resins are mainly phenolics, carbon monoxide and water. The thermal decomposition products of epoxy resins therefore should be treated as potentially hazardous substances, and appropriate precautions should be taken.

EXTINGUISHING MEDIA: Foam, CO₂, dry chemical.

OTHER FLAMMABILITY INFORMATION: None known.

FIRE FIGHTING INSTRUCTIONS: Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition is passed.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

PROTECT PEOPLE: Keep unnecessary people away; isolate hazard area and deny unnecessary entry.

PROTECT THE ENVIRONMENT: For large spills, evacuate upwind of spills and contain with dike. Keep out of sewers, storm drains, surface water and soil.

CLEANUP: Soak up in absorbent material such as sand, or poly-propylene or polyethylene fiber products and collect in suitable containers. Residual resin may be removed using steam or hot soapy water. Use of methylene chloride or other solvents in cleanup poses a distinct hazard and therefore should be avoided.

HANDLING AND STORAGE

HANDLING: Practice good caution and personal cleanliness to avoid skin and eye contact. Avoid breathing vapors of heated material.

STORAGE: Recommended pumping and storage temperature is 50°C.

EXPOSURE CONTROLS/PERSONAL PROTECTION

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 impervious to this material. Selection of specific items such as faceshield, 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.

RESPIRATORY PROTECTION: No respiratory protection should be needed.

EXPOSURE GUIDELINE(S): None established.

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Colorless to yellow liquid to semi-solid.
ODOR:	Not available.
VAPOR PRESSURE:	Not applicable.
VAPOR DENSITY:	Not applicable.
SOLUBILITY IN WATER:	None.
SPECIFIC GRAVITY:	1.16
BOILING POINT:	Not applicable.

STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable at ambient temperatures.

CONDITIONS TO AVOID: Excess heating above 60°C over long periods of time degrades the resin.

INCOMPATIBILITY WITH OTHER MATERIALS: Acids, bases, amines and oxidizing materials.

HAZARDOUS POLYMERIZATION: Will not occur by itself, but masses of more than 1 pound of product plus an aliphatic amine will cause irreversible polymerization with considerable heat buildup.

TOXICOLOGICAL INFORMATION

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 mutagenicity studies were negative. In vitro mutagenicity studies were negative in some in some cases and positive in others.

ECOLOGICAL INFORMATION

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 1767. Henry's Law Constant (H) is estimated to be 6.94E-09 atm/m³ mole. Log octanol/water partition coefficient (log Pow) is estimated using a structural fragment method to be 3.84.

DEGRADATION & TRANSFORMATION: Biodegradation under aerobic laboratory conditions is below detectable limits. Theoretical oxygen demand (ThOD) is calculated to be 2.35 p/p. The atmospheric half-life is 1.92 hr. Biodegradation reached in modified Zhan-Wellens/EMPA Test (OECD Test No. 302B) after 28 days: 12%.

ECOTOXICOLOGY: Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in most sensitive species). Acute LC50 for water flea *Daphnia Magna* is 1.3 mg/L. Acute LC50 for 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 (LC50) in OECD Activated Sludge Respiration inhibition Test (OECD Test No. 209) is >100 mg/L.

DISPOSAL CONSIDERATIONS

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.

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

TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT): For DOT regulatory information, if required, consult transportation regulations product shipping papers.

CANADIAN TDG INFORMATION: For TDG regulatory information, if required, consult transportation regulations.

REGULATORY INFORMATION

U.S. REGULATIONS:

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

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: This product has been categorized as "AN IMMEDIATE HEALTH HAZARD" due to potential for allergic skin reaction.

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory

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

CANADIAN REGULATIONS: 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.

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.

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):

DIGLYCIDYL ETHER OF BISPHENOL A
CAS # 001675-54-3
AMOUNT (%w/w) 100%