Material Safety Data Sheet

INFORMATION TELEPHONE NO. 1-800-275-6353

Reichhold, Inc.
Corporate Headquarters
P.O. Box 13582
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES
1-800-424-9300

Effective Date: 09/07/01

1. PRODUCT IDENTIFICATION

Trade Name: EPOTUF (R) 37100-00
Chemical Family: Epoxy Resin
Intended Use: Coatings, Adhesives, Plastics

NFPA Hazard Classification:
- Health Hazard: 2
- Fire Hazard: 1
- Reactivity: 1
- Special Hazard:

HMS Hazard Classification:
- Health: 2 Moderate Hazard
- Flammability: 1 Slight Hazard
- Reactivity: 1 Slight Hazard
- Personal Protection:

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Name</th>
<th>ACGIH TLV</th>
<th>OSHA</th>
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<tbody>
<tr>
<td>25085998</td>
<td>Diglycidyl Ether of Bisphenol A Homopolymer</td>
<td>NE</td>
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<td></td>
<td>Proprietary Aliphatic Polyepoxide</td>
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Refer to Section 8, Subheading "Exposure Guidelines", for additional information concerning exposure limits.

3. HAZARDS IDENTIFICATION

Emergency Overview:
- Appearance: Straw colored liquid. Aromatic odor. Contact may cause skin sensitization, an allergic reaction which becomes evident on re-exposure to this material.

Route(s) of Entry:
- Inhalation, skin and eye contact.

Acute Exposure:
- SKIN: Contact may cause skin sensitization, an allergic reaction which becomes evident on re-exposure to this material. Contact causes skin irritation. EYES: Direct contact with this material causes eye irritation.
- INHALATION: Low volatility makes vapor inhalation unlikely. Aerosol can
be irritating. INGESTION: Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likely to cause harmful effects; swallowing large amounts may be harmful. Ingestion is not an anticipated route of exposure for this material in industrial use.

Chronic Exposure:
No significant toxicological effects were observed in rats exposed by the oral route.

Carcinogenicity:
This material does not contain 0.1% or more of any chemical listed by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or regulated by the Occupational Safety and Health Administration (OSHA) as a carcinogen.

4. FIRST AID MEASURES

Eye Contact:
Immediately flush eyes with large quantities of clean water for at least 15 minutes. Get immediate medical attention.

Skin Contact:
Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists. Wash contaminated clothing before reuse. Solvents should not be used to clean hands or skin because they increase the penetration of the material into the skin. Remove and dispose of all contaminated leather goods, including shoes.

Ingestion:
Do not induce vomiting. Give the victim one or two glasses of water or milk to drink. Never give anything by mouth to an unconscious person. Seek medical advice. In general, no adverse effects are anticipated by this route of exposure incidental to proper industrial handling.

Inhalation:
Remove affected individual(s) to fresh air. Seek medical attention if breathing difficulty develops.

5. FIRE FIGHTING MEASURES

Flash Point: > 200 degrees F (> 93 degrees C)
Flash Point Method Used: SetaFlash Closed Cup
Flammable Limits in Air (Lower): Not available
Flammable Limits in Air (Upper): Not available
Autoignition: Not available VM&P Naphtha

Fire Fighting Extinguishing Media:
Use carbon dioxide, foam, dry chemical or water fog to extinguish fire.

Fire Fighting Equipment:
Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use.

Fire Fighting Instructions:
Containers of this material may build up pressure if exposed to heat.
Fire and Explosion Hazards:
This material may polymerize (react) when its container is exposed to heat
(as during a fire). This polymerization increases pressure inside a
closed container and may result in the violent rupture of the container.

Hazardous Combustion Products:
The by-products expected in incomplete pyrolysis or combustion of epoxy
resins are mainly phenolics, carbon monoxide and water.

6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures:
FOR SMALL SPILLS: Absorb spill with inert material (e.g., dry sand or
earth), then place in a chemical waste container. LARGE SPILL: Persons
not wearing protective equipment (see Section 8) should be excluded from
the area of the spill until clean-up has been completed. Prevent spilled
material from 1) contaminating soil, 2) entering sanitary sewers, storm
sewers, and drainage systems, and 3) entering bodies of water or ditches
that lead to waterways. Shut off the leak when it is safe to do so, dike
and pump the liquid into waste containers. Residual resin may be removed
using steam or hot soapy water.

7. HANDLING AND STORAGE

Signal Word:
WARNING

Handling Information:
Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after
handling and before eating or drinking. Remove and wash contaminated
clothing before reuse. Use with adequate ventilation. Empty containers
may retain product residue (liquid and/or vapor). Do not pressurize, cut,
weld, braze, solder, drill, grind, or expose these containers to heat,
flame, sparks, static electricity, or other sources of ignition as the
container may explode and may cause injury or death. Empty drums should
be completely drained and properly bunged. Empty drums should be promptly
returned to a drum reconditioner or properly disposed.

Storage Information:
Keep container closed when not in use. Warm storage (130 degrees F/54
degrees C to 150 degrees F/65.5 degrees C) is recommended. This resin may
crystallize during extended storage or when stored at low temperatures.
Resin which has crystallized can be melted by warming at 130 degrees F
- 150 degrees F until all crystals have melted. Remelting of resin has no
negative effects on performance.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION
Exposure Guidelines:
There are no Occupational Safety and Health (OSHA) Permissible Exposure Limits (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) or Short Term Exposure Limits (STEL) established for the component(s) of this product.

Engineering Controls:
Good general ventilation should be sufficient to control airborne levels of irritating vapors.

Eye Protection:
Wear 1) safety glasses with side shields and a faceshield or 2) goggles and a faceshield. Facilities storing or utilizing this material should be equipped with an eyewash station and safety shower.

Skin Protection:
Wear chemical resistant gloves such as polyvinyl alcohol. If splashing is likely, wear impervious clothing and boots to prevent repeated or prolonged skin contact. Consult your supplier of personal protective equipment for additional instructions on proper usage.

Respiratory Protection:
If material generates fumes when heated, a NIOSH/MSHA approved air-purifying respirator with organic vapor cartridge or canister may be used to minimize exposure. A respiratory protection program that meets OSHA’s 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator’s use. Protection provided by air purifying respirators is limited. Use a positive pressure air-supplied respirator if 1) there is any potential for an uncontrolled release, 2) exposure levels are not known, or 3) during other circumstances where air purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Straw colored
Odor: Aromatic
Odor Threshold: Not available
Physical State: Liquid
Solubility in Water: Insoluble at 20 degrees C (68 degrees F)
Viscosity: 4000 cps at 25 degrees C (77 degrees F)
Vapor Pressure: Not available
Specific Gravity: 1.106 - 1.146 (Water = 1) at 25 degrees C (77 degrees F)
Boiling Point: > 300 degrees F (> 149 degrees C)
Freezing Point: Not available
Evaporation Rate: Not applicable
Vapor Density: Not applicable
% Volatile: Non-volatile
VOC Content: Non-volatile
pH: Not applicable
Equivalent Weight: 217
10. STABILITY AND REACTIVITY

Stability:
Stable at normal temperatures and storage conditions. See Section 7 for additional storage information.

Incompatibility:
Avoid contact with strong oxidizing agents, mineral acids, and strong mineral and organic bases, especially primary and secondary aliphatic amines.

Hazardous Decomposition Products:
Thermal decomposition may produce various hydrocarbons and irritating, acrid vapors.

Hazardous Polymerization:
Hazardous polymerization will not occur. Reaction with some curing agents may produce considerable heat. Run-away cure reactions may char and decompose the resin system, generating unidentified fumes and vapors which may be toxic.

Conditions to Avoid:
- Contamination by those materials referred to under Incompatibility.
- Storage temperatures above 140 degrees F (60 degrees C).

11. TOXICOLOGICAL INFORMATION

Acute Eye Toxicity:
No information is available.

Acute Skin Toxicity:
Diglycidyl Ether of Bisphenol A: dermal LD50 (rabbit), 20,000 mg / kg.

Acute Inhalation Toxicity:
No information is available.

Acute Oral Toxicity:
Diglycidyl Ether of Bisphenol A: oral LD50 (rat), > 5,000 mg / kg.
Aliphatic Polyepoxide: oral LD50 (rat), 7.4 g / kg.

Chronic/Carcinogenicity:
The International Agency for Research on Cancer (IARC) has classified diglycidyl ether of bisphenol A in Group 3, the agent is not classifiable as to its carcinogenicity to humans. Many studies have been conducted to assess (DGEBA) based epoxy resins. In one of these, a DGEBA-based resin (containing high levels of several impurities, including a known animal 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 DGEBA-containing resins (or pure DGEBA), although the response was not uniform among practically identical resins. Based on the cause-effect relationship between DGEBA treatment and these tumor increases is questionable.

Teratology:
Diglycidyl ether of bisphenol A 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.

Reproduction:
In animal studies, diglycidyl ether of bisphenol A has been shown not to interfere with reproduction.

Mutagenicity:
Diglycidyl ether of bisphenol A has proved to be inactive when tested by in-vivo mutagenicity assays. It has shown activity by in-vitro microbial mutagenicity screening and has produced chromosomal aberrations in cultured rat liver cells. The significance of this information to man is unknown.

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12. ECOLOGICAL INFORMATION

Ecotoxicity:
Diglycidyl Ether of Bisphenol A: material is moderately toxic to aquatic organisms on an acute basis LC50 (Daphnia magna), 1.3 mg / L; LC50 (fathead minnow), 3.1 mg / L.

Environmental Fate:
The bioconcentration potential for diglycidyl ether of bisphenol A is moderate. Potential for mobility in soil is low. Biodegradation under aerobic laboratory conditions is below detectable limits. Theoretical oxygen demand is calculated to be 2.35 p/p.

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13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Not a RCRA hazardous waste. Disposal of this material is not regulated under RCRA. Consult federal, state and local regulations to ensure that this material and its containers, if discarded, is disposed of in compliance with all regulatory requirements. "Empty containers", as defined under 40 CFR 261.7 or other applicable state or provincial regulations or transportation regulations, are not classified as hazardous wastes.

RCRA Hazard Class:
NOT A RCRA HAZARDOUS WASTE: When discarded in its purchased form, this material would not be regulated as a RCRA Hazardous waste under 40 CFR 261.

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14. TRANSPORT INFORMATION

DOT / IATA / IMDG / TDG: Bulk and Non-Bulk
Proper Shipping Name: NOT REGULATED
Technical Shipping Name (If n.o.s.): Hazard Class:
ID Number:
Packaging Group:
Placard:
15. REGULATORY INFORMATION

Occupational Safety and Health Act (OSHA):
This material is classified as a hazardous chemical under the criteria of the US Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III: Section 304 - CERCLA:
Reportable Quantities have not been established for any of this material's components.

SARA Title III: Section 311/312 - Hazard Communication Standard (HCS):
This material is classified as an IMMEDIATE HEALTH HAZARD under the US Superfund Amendment and Reauthorization Act (Section 311/312).

SARA Title III: Section 313 Toxic Chemical List (TCL):
This product does not contain any chemicals for routine annual toxic chemical release reporting under Section 313 (40 CFR 372).

TSCA Section 8(b) - Inventory Status:
All components of this material are listed on the US Toxic Substances Control Act (TSCA) inventory.

TSCA Section 12(b) - Export Notification:
This material does not contain any components that are subject to the US Toxic Substances Control Act (TSCA) Section 12(b) Export Notification requirements.

Australian Inventory Status:
This product contains only chemicals which are currently listed on the Australian Inventory of Chemical Substances.

Canadian Inventory Status:
This material contains a component(s) that is listed on the Canadian Non-Domestic Substances List (NDSL).

Canadian WHMIS:
This material is classified by the Canadian Workplace Hazardous Material Information System as: D2B (materials causing other toxic effects, toxic material).

European Inventory Status (EINECS):
All components are either listed or are exempt from being listed, on the EINECS chemical inventory.

Korean Inventory Status:
This product contains only chemicals which are currently listed on the Korean Chemical Substances List.

California Proposition 65:
WARNING: This material contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm:
Epichlorohydrin (CAS# 106-89-8)

Additional Canadian Regulatory Information:
This product does not contain a substance present on the WHMIS Ingredient Disclosure List (IDL) which is at or above the specified concentration limit.
16. OTHER INFORMATION

MSDS No: 4987

Reason Issued: ANSI Z400 Standard Revision

Prepared By: Product Safety & Compliance Department

Supersedes Date: 11/14/94

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