MATERIAL SAFETY DATA SHEET

4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

JANUARY 2011

METLAB EPOXY HARDENER

go to PAGE 2

Metlab Epoxy Resin

go to PAGE 10

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

JANUARY 2011

Product Name

D.E.H.* 24 EPOXY CURING AGENT / METLAB HARDENER

2. Hazards Identification

Emergency Overview

Color: Yellow
Physical State: Liquid
Odor: Amine.
Hazards of product:
DANGER! Causes severe eye burns. Causes severe skin burns. Causes burns of the mouth and throat. Harmful if absorbed through skin. May cause allergic skin reaction. Aspiration hazard. Can enter lungs and cause damage. Avoid all oral and dermal contact. May react with water. Evacuate area. Keep upwind of spill.

OSHA Hazard Communication Standard

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

Potential Health Effects

Eye Contact: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.
Skin Contact: Avoid all skin contact. Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage. Classified as corrosive to the skin according to DOT guidelines.
Skin Absorption: Avoid all skin contact. Prolonged or widespread skin contact may result in absorption of harmful amounts.
Skin Sensitization: Has caused allergic skin reactions in humans. Individuals having an allergic skin reaction to this product may have an allergic skin reaction to similar material(s). The similar material(s) is/are: Ethylenediamine (EDA). Diethylenetriamine. Piperazine. Aminoethylethanolamine. Has caused allergic skin reactions when tested in mice.
Inhalation: Excessive exposure may cause irritation to upper respiratory tract (nose and throat).
Ingestion: Avoid all oral contact. Swallowing may result in gastrointestinal irritation or ulceration. Swallowing may result in burns of the mouth and throat. Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.
Effects of Repeated Exposure: Avoid all oral and dermal contact. In animals, effects have been reported on the following organs: Liver.
Birth Defects/Developmental Effects: Avoid all oral and dermal contact. Laboratory animals that were fed exaggerated doses of TETA showed adverse fetal effects that were believed to be associated with an observed copper deficiency. Exposures having no effect on the mother should have no effect on the fetus.

3. COMPOSITION INFORMATION

Component CAS # Amount

Triethylenetetramine mixture 112-24-3 < 98.4 %
Aminoethylethanolamine 111-41-1 < 1.6 %
Aminoethylpiperazine 140-31-8 < 1.3 %
Tetraethylenepentamine mixture 112-57-2 < 1.1 %
Diethylenetriamine 111-40-0 <= 0.6 %

4. First-aid measures

Eye Contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

Skin Contact: Immediately wash thoroughly any size exposure with non-abrasive soap and large quantities of water for 30 minutes while removing contaminated clothing and shoes. Destroy contaminated leather items such as shoes, belts, and watchbands. First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection)
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Ingestion: Do not induce vomiting. Give one cup (8 ounces or 240 ml) of water or milk if available and transport to a medical facility. Do not give anything by mouth to an unconscious person.
Notes to Physician: Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. 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 pre-existing asthma.

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. May spread fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. 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. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. 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 should be applied in large quantities as fine spray.
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: Heat is generated when product mixes with water. 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.
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: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Milsorb®. Sand. Do NOT use absorbent materials such as: Cellulose. Sawdust. Moist organic absorbents. Peat moss. Ground corn cobs. Large spills: Dike area to contain spill. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.
Personal Precautions: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Evacuate area. Refer to Section 7, Handling, for additional precautionary measures. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations.

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

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: Do not get in eyes, on skin, on clothing. Do not swallow. Avoid prolonged or repeated contact with skin. Avoid breathing vapor. Use with adequate ventilation. Keep container closed. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed.
Other Precautions: Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Storage

Store in the following material(s): Stainless steel. Aluminum. Maintain a nitrogen atmosphere. Do not store in: Copper. Copper alloys. Brass. Bronze.

8. Exposure Controls / Personal Protection

Exposure Limits

Component List Type Value

Triethylenetetramine mixture WEEL TWA 6 mg/m3 1 ppm SKIN

Tetraethylenepentamine mixture
WEEL TWA
Aerosol.
5 mg/m3 1 ppm SKIN, D-SEN

Aminoethylethanolamine Dow IHG TWA 0.05 mg/m3 SKIN*, D-SEN

Diethylenetriamine ACGIH TWA 1 ppm SKIN
*Skin notation based upon the possibility that the vapor limit alone may not be protective for pregnant women. There is the potential for absorption of Aminoethylethanolamine from the skin at levels that may seriously affect the fetus.
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.
A D-SEN notation following the exposure guideline refers to the potential to produce dermal sensitization, as confirmed by human or animal data.

Personal Protection

Eye/Face Protection: Use chemical goggles. Eye wash fountain should be located in immediate work area.
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: Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Butyl rubber. Neoprene. Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. 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: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge.
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: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Physical State Liquid
Color Yellow
Odor Amine.
Flash Point - Closed Cup 148 °C (298 °F) *ASTM D93*
Flammable Limits In Air Lower: 1. %(V) *Literature*
Upper: 9.5 %(V) *Literature*
Autoignition Temperature 294 °C (561 °F)
Vapor Pressure < 0.01 kPa @ 20 °C *Literature*
Boiling Point (760 mmHg) 277 °C (531 °F) *Literature* Decomposes.
Vapor Density (air = 1) 5.0 @ 20 °C *Literature*
Specific Gravity (H2O = 1) 0.98 *Literature*
Freezing Point -35 °C (-31 °F) *Literature*
Melting Point *Not applicable*
Solubility in Water (by weight)
100 % @ 20 °C Visual
pH 11.5 *Literature* (1% aqueous solution)
Octanol/Water Partition Coefficient
-2.65 *Estimated*
Dynamic Viscosity 26.0 mPa.s @ 20 °C *Literature*

10. Stability and Reactivity

Stability/Instability

Thermally stable at typical use temperatures.
Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Reaction with carbon dioxide may form an amine carbamate. Smoke may be generated depending on vapor pressure of mixture. Product absorbs carbon dioxide from the air.
Incompatible Materials: Heat is generated when mixed with water. Spattering and boiling can occur. Avoid contact with oxidizing materials. Avoid contact with: Acids. Acrylates. Alcohols. Aldehydes. Halogenated hydrocarbons. Ketones. Nitrites. Avoid contact with metals such as: Brass. Bronze. Copper. Copper alloys. Avoid contact with absorbent materials such as: Ground corn cobs. Moist organic absorbents. Peat moss. Sawdust.

Hazardous Polymerization

Will not occur.

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

Thermal Decomposition
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Ammonia. Ethylenediamine. Volatile amines.

11. Toxicological Information

Acute Toxicity
Ingestion
LD50, Rat 2,500 - 4,340 mg/kg
Skin Absorption
LD50, Rabbit 550 - 805 mg/kg
Sensitization
Skin
Has caused allergic skin reactions in humans. Individuals having an allergic skin reaction to this product may have an allergic skin reaction to similar material(s). The similar material(s) is/are: Ethylenediamine (EDA). Diethylenetriamine. Piperazine. Aminoethylethanolamine. Has caused allergic skin reactions when tested in mice.
Repeated Dose Toxicity
Avoid all oral and dermal contact. In animals, effects have been reported on the following organs: Liver.
Chronic Toxicity and Carcinogenicity
Did not cause cancer in laboratory animals.
Developmental Toxicity
Avoid all oral and dermal contact. Laboratory animals that were fed exaggerated doses of TETA showed adverse fetal effects that were believed to be associated with an observed copper deficiency. Exposures having no effect on the mother should have no effect on the fetus.
Genetic Toxicology
In vitro genetic toxicity studies were positive.

12. Ecological Information

CHEMICAL FATE
Movement & Partitioning
Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50).
Henry's Law Constant (H): 5.21E-10 atm*m3/mole; 25 °C Estimated
Partition coefficient, n-octanol/water (log Pow): -2.65 Estimated
Partition coefficient, soil organic carbon/water (Koc): 4.1 - 310 Estimated
Persistence and Degradability
Material is not readily biodegradable according to OECD/EC guidelines.
Indirect Photodegradation with OH Radicals
Rate Constant Atmospheric Half-life Method
2.32E-10 cm3/s 0.55 h Estimated
OECD Biodegradation Tests:
Biodegradation Exposure Time Method
0 % 28 d OECD 302B Test
Biological oxygen demand (BOD):
BOD 5 BOD 10 BOD 20 BOD 28
5 % 2.5 - 11 %
Chemical Oxygen Demand: 1.94 mg/mg
Theoretical Oxygen Demand: 3.40 mg/mg
ECOTOXICITY
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in most sensitive species tested). May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

Fish Acute & Prolonged Toxicity
LC50, fathead minnow (Pimephales promelas): 330 - 495 mg/l
LC50, guppy (Poecilia reticulata), static renewal, 96 h: 570 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna: 12 - 40 mg/l
Aquatic Plant Toxicity
EC50, green alga Selenastrum capricornutum, biomass growth inhibition: 3.7 mg/l
Toxicity to Micro-organisms
EC50; bacteria, Growth inhibition (cell density reduction), 16 h: 680 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. DOW 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: Composition Information. 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 Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details.

14. Transport Information

DOT Non-Bulk
Proper Shipping Name: TRIETHYLENETETRAMINE
Hazard Class: 8 **ID Number:** UN2259 **Packing Group:** PG II
DOT Bulk
Proper Shipping Name: TRIETHYLENETETRAMINE
Hazard Class: 8 **ID Number:** UN2259 **Packing Group:** PG II
IMDG
Proper Shipping Name: TRIETHYLENETETRAMINE
Hazard Class: 8 **ID Number:** UN2259 **Packing Group:** PG II
EMS Number: F-A,S-B
ICAO/IATA
Proper Shipping Name: TRIETHYLENETETRAMINE
Hazard Class: 8 **ID Number:** UN2259 **Packing Group:** PG II
Cargo Packing Instruction: 812
Passenger Packing Instruction: 808
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

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

and Community Right-to-Know Act of 1986) Sections 311 and 312
Immediate (Acute) Health Hazard Yes
Delayed (Chronic) Health Hazard Yes
Fire Hazard No
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
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
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
Triethylenetetramine mixture 112-24-3 < 98.4 %
Aminoethylethanolamine 111-41-1 < 1.6 %
Aminoethylpiperazine 140-31-8 < 1.3 %
Tetraethylenepentamine mixture 112-57-2 < 1.1 %
Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.
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
NFPA Health Fire Reactivity
3 1 0
Recommended Uses and Restrictions
Used in applications such as: Polyamide resins. Curing agent. Chemical additive.
Revision
Identification Number: 2157 / 1001 / Issue Date 02/26/2008 / Version: 6.0
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

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

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,

MATERIAL SAFETY DATA SHEET

4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

JANUARY 2011

1. Product and Company Identification

D.E.R.* 324 EPOXY RESIN / METLAB RESIN

2. Hazards Identification

Emergency Overview

Color: Yellow
Physical State: Liquid
Odor: Mild
Hazards of product:
WARNING! May cause allergic skin reaction. May cause eye irritation. May cause skin irritation. Isolate area.

OSHA Hazard Communication Standard

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

Potential Health Effects

Eye Contact: May cause eye irritation. Corneal injury is unlikely.
Skin Contact: Prolonged or repeated contact may cause skin irritation.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Skin Sensitization: Has caused allergic skin reactions in humans.
Inhalation: Excessive exposure may cause irritation to upper respiratory tract (nose and throat).
Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
Cancer Information: For the major component(s): Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol A (DGEBPA). Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DGEBPA is not classified as a carcinogen. 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.

3. Composition Information

Component	CAS #	Amount
Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers	25085-99-8	83.0 %
Alkyl(C12-14) glycidyl ether	68609-97-2	17.0 %

4. First-aid measures

Eye Contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
Skin Contact: Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Ingestion: No emergency medical treatment necessary.
Notes to Physician: 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

Extinguishing Media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

extinguishers. Foam. Do not use direct water stream. May spread 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. 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. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. 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. 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 (M)SDS.
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 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.
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. Carbon dioxide.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Absorb with materials such as: Sand. Polypropylene fiber products. Polyethylene fiber products. Remove residual with soap and hot water. Collect in suitable and properly labeled containers. Residual can be removed with solvent. 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 Safety Data Sheet for handling information and exposure guidelines. See Section 13, Disposal Considerations, for additional information.
Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.
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: Avoid prolonged or repeated contact with skin. Avoid contact with eyes. Avoid contact with skin and clothing. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage
No specific requirements. Additional storage and handling information on this product may be obtained by calling your Dow sales or customer service contact. Ask for a product brochure.
Shelf life: Use within Storage temperature:
24 Months 2 - 43 °C

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

8. Exposure Controls / Personal Protection

Exposure Limits
None established

Personal Protection
Eye/Face Protection: Use safety glasses.
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. 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. Ethyl vinyl alcohol laminate ("EVAL"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). 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: For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls
Ventilation: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Physical State Liquid
Color Yellow
Odor Mild
Flash Point - Closed Cup 176.7 - 190.6 °C (350.1 - 375.1 °F) *PMCC, ASTM D93*
Flammable Limits In Air Lower: Not applicable
Upper: Not applicable
Autoignition Temperature Not determined
Vapor Pressure 0.06 mmHg @ 70 °F *Literature* (alkyl glycidyl ether)
Boiling Point (760 mmHg) >= 300 °F (>= 300 °F) *Literature* .
Vapor Density (air = 1) *Literature* Not applicable
Specific Gravity (H2O = 1) 1.11 - 1.14 *Literature*
Freezing Point Not determined
Melting Point Not applicable
Solubility in Water (by weight)
Insoluble
pH Not applicable
Dynamic Viscosity 600 - 800 cPs @ 25 °C *ASTM D445*

10. Stability and Reactivity

Stability/Instability
Stable under recommended storage conditions. See Storage, Section 7.
Conditions to Avoid: Avoid temperatures above 300°C (572°F) Potentially violent decomposition can occur above 350°C (662°F) Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid.

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

Incompatible Materials: Avoid contact with oxidizing materials. Avoid contact with: Acids. Bases. Avoid unintended contact with amines.

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.

Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition. Uncontrolled exothermic reaction of epoxy resins release phenolics, carbon monoxide, and water.

11. Toxicological Information

Acute Toxicity

Ingestion

Based on information for component(s): LD50, Rat > 5,000 mg/kg

Skin Absorption

For the major component(s): LD50, Rabbit 20,000 mg/kg

Sensitization

Skin

Has caused allergic skin reactions in humans. For the major component(s): Did not cause allergic skin reactions when tested in mice.

Repeated Dose Toxicity

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Chronic Toxicity and Carcinogenicity

For the major component(s): Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol A (DGEBPA). Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DGEBPA is not classified as a carcinogen. 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.

Developmental Toxicity

For the major component(s): Resins based on the diglycidyl ether of bisphenol A (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 Toxicity

For the major component(s): In animal studies, did not interfere with reproduction.

Genetic Toxicology

Based on information for component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

12. Ecological Information

CHEMICAL FATE

Data for Component: **Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers**

Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is low (Koc between 500 and 2000).

Henry's Law Constant (H): < 6.94E-09 atm*m3/mole; 25 °C Estimated

Partition coefficient, soil organic carbon/water (Koc): 1,800 - 4,400 Estimated

Persistence and Degradability

Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

Indirect Photodegradation with OH Radicals

Rate Constant Atmospheric Half-life Method

6.69E-11 cm3/s 1.92 h Estimated

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

OECD Biodegradation Tests:
Biodegradation Exposure Time Method
12 % 28 d OECD 302B Test
Biological oxygen demand (BOD):
BOD 5 BOD 10 BOD 20 BOD 28
< 2.5 %
Theoretical Oxygen Demand: 2.35 mg/mg
Data for Component: **Alkyl(C12-14) glycidyl ether**

Movement & Partitioning

Partition coefficient, n-octanol/water (log Pow): 3.77 Shake flask (OECD 107 Test)

Persistence and Degradability

Biodegradation under aerobic static laboratory conditions is moderate (BOD20 or BOD28/ThOD between 10 and 40%).
OECD Biodegradation Tests:
Biodegradation Exposure Time Method
34.7 % 28 d OECD 301D Test
Chemical Oxygen Demand: 2.09 mg/mg
ECOTOXICITY
Data for Component: **Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers**
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in most sensitive species tested). Toxicity to aquatic species occurs at concentrations above material's water solubility.
Fish Acute & Prolonged Toxicity
LC50, fathead minnow (Pimephales promelas), 96 h: 3.1 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, 48 h, immobilization: 1.4 - 1.7 mg/l
Toxicity to Micro-organisms
IC50; bacteria, Growth inhibition, 18 h: > 42.6 mg/l
Data for Component: **Alkyl(C12-14) glycidyl ether**
EC50 is above the water solubility.

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. DOW 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: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: 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.

14. Transport Information

DOT Non-Bulk
NOT REGULATED
DOT Bulk
NOT REGULATED
IMDG
NOT REGULATED

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

ICAO/IATA
NOT REGULATED
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 No
Fire Hazard No
Reactive Hazard No
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
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

European Inventory of Existing Commercial Chemical Substances (EINECS)
Components of this product are not listed on EINECS because they are polymers or "no-longer polymers" marketed before the enforcement of the 7th Amendment to Directive 67/548/EEC.

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.

Remarks:
Liquid Epoxy Resins (LERs) are made by reacting bisphenol A and epichlorohydrin. Dow uses both CAS No. 25085-99-8 and 25068-38-6 for its LERs. Other manufacturers use CAS No. 25068-38-6 for their LERs. Accordingly, LER manufacturers consider that derivatives of LERs may be described using either CAS number as a starting material.

MetLab Corporation
4011 Hyde Park Blvd.
P. O. Box 1075
Niagara Falls, NY 14302-1075

Telephone: (716) 282-6950
Fax: (716) 282-6971

JANUARY 2011

16. Other Information

Hazard Rating System

NFPA Health Fire Reactivity

1 1 1

Recommended Uses and Restrictions

Used in applications such as: Adhesives. Casting. Tooling. Civil engineering. Composites. Marine and protective coatings. Potting and encapsulation.