

MSDS

MATERIAL SAFETY DATA SHEET

MSDS# 7473-001

Date: Oct. 1, 2006

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : **ER 7473, Epoxy Resin**

CHEMICAL FAMILY : Reformed epoxy resin by bisphenol A/F

MOLECULAR FORMULA : MIXTURE

MOLECULAR WEIGHT : MIXTURE

COMPANY : **P&ID Co. Ltd.**

TIC, Ulsan College, Muger2-dong, Nam-gu, Ulsan, 680-808, KOREA

MSDS REQUEST : +82-52-223-2104

CUSTOMER SERVICE : +82-52-223-2104

EMERGENCY TELEPHONE NUMBER

DOMESTIC : +82-52-223-2102

INTERNATIONAL : +82-52-223-2108

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS. NO.	CONTENT(%)	TWA/CEILING	REFERENCE
Epoxy resin	25036-25-3	40.0 min	Not applicable	OSHA
			Not applicable	ACGIH
Xylene	1330-20-7	27.5 max	100 ppm	OSHA
			150 ppm(STEL)	ACGIH
Ethylbenzene	100-41-4	4.5 max	100 ppm	OSHA
			125 ppm(STEL)	ACGIH
Butanol	71-36-3	14.0 max	100 ppm	OSHA
			50 ppm(ceiling)	ACGIH
2-Butoxyethanol	111-76-2	14.0 max	50 ppm(skin)	OSHA
			20 ppm(TWA)	ACGIH

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

This product, as shipped, is not considered hazardous as defined by the OSHA Hazard Communication Standard(29CFR 1910.1200)

POTENTIAL HEALTH EFFECTS

Heating the resin, such as in extrusion, may release a small amount of acetaldehyde from degradation.

Burning the resin may produce carbon monoxide and oxides. Carbon monoxide can cause carbon monoxide poisoning.

CARCINOGENICITY INFORMATION

None of the components in the resin at greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen..

4. FIRST AID MEASURES

Material is not expected to be harmful by ingestion. No specific first aid measures are required.

In case of skin contact, wash affected areas of skin with soap and water.

In case of eye contact, immediately irrigate with plenty of water for 15 minutes.

If vapor or dust of this material is inhaled, remove from exposure. Administer oxygen if there is difficulty in breathing. Obtain medical attention immediately if necessary.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT : 35 °C

METHOD : Setaflash Closed Cup

FLAMMABLE LIMITS(% BY VOL)

AUTOIGNITION TEMP: >300 °C

DECOMPOSITION TEMP: Not available

EXTINGUISHING MEDIA AND FIRE FIGHTING INSTRUCTIONS

Use water spray, carbon dioxide or dry chemical to extinguish fires. Use water to keep containers cool. Wear self-contained, positive pressure breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Where exposure level is not known, wear NIOSH approved, positive pressure, self-contained respirator. Where exposure level is known, wear NIOSH approved, respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impervious boots. Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush area with water.

7. HANDLING AND STORAGE

Handling

Keep away from heat and flame. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Storage

Areas containing this material should have fire safe practices and electric equipment in accordance with applicable regulations and/or guidelines. Standards are primarily based on the material's flashpoint, but mat also take into account properties such as miscibility with water or toxicity.

Storage temperature : store at 4.4~32 °C

Reason : Integrity

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

Engineering controls are not usually necessary if good hygiene practices are followed. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. Avoid unnecessary skin contact. Impervious gloves and apron are recommended to prevent skin contact. For operations where eye or face contact can occur, wear eye protection such as chemical splash-proof goggles or face shield. Where exposures are below the Permissible Exposure Limit(PEL), no respiratory protection is required. Where exposures exceed the PEL, use respirator approved by NIOSH for the material and level of exposure.

It is recommended that a shower be taken after completion of workshift especially if significant contact has occurred. Work clothing should then be laundered prior to reuse. Street clothing should be stored separately from work clothing and protective equipment. Work clothing and shoes should not be taken home.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR : Viscous and yellow liquid, xylene odors.

BOILING POINT : Not applicable

MELTING POINT : Not applicable

VAPOR PRESSURE : Not available

SPECIFIC GRAVITY : 0.95~0.99g/cm³

VAPOR DENSITY : >1

%VOLATILE(BY WT) : ~60

pH : Not applicable

SATURATION IN AIR(%BY VOL) : Not available

EVAPORATION RATE : <1

SOLUBILITY IN WATER : Insoluble

VOLATILE ORGANIC CONTENT : Not available

10. STABILITY AND REACTIVITY

STABILITY : Stable

CONDITIONS TO AVOID : None known

POLYMERIZATION : Will Not Occur

CONDITIONS TO AVOID : None known

INCOMPATIBLE MATERIALS : No specific incompatibility

HAZARDOUS DECOMPOSITION PRODUCTS : oxides of carbon; oxides of nitrogen

11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3.HAZARDS IDENTIFICATION.

Toxicological information on the OSHA regulated components of this product is as follows:

The polyester resin is non toxic.

Xylene has an acute oral(rat) of 4.3 to 5g/kg and an acute 4-hour LC50(rat) of 19.7 to 29.1mg/L. Inhalation of vapors may be irritating to the nose and throat. Skin contact results in moderate irritation and loss of natural oils. Vapors cause eye irritation.

Ethylbenzene has acute oral(rat) and dermal(rabbit) LD50 values of 3500mg/kg and 5000mg/kg respectively. The 4-hour inhalation LC50 in rat is 4000 ppm(17.36mg/L). It is a mild eye and skin

irritant. Prolonged exposure to the vapor of ethylbenzene may cause irritation of the eyes and upper respiratory tract, motor ataxia, and hematological disorders and hepatobiliary complaints.

Butanol has acute oral(rat) and dermal(rabbit) LD50 values of 0.790g/kg and 3.4g/kg, respectively. The LC50(rat) following a 4-hour inhalation exposure is >8000 ppm(24.24mg/L). Acute overexposure to butanol vapor can cause irritation to the eyes(severe), skin(moderate), and mucous membranes, as well as, central nervous system depression. Direct contact with butanol may cause severe eye and mild to moderate skin irritation.

2-Butoxyethanol has acute oral(rat) and dermal(rabbit) LD50 values of between 470 and 3000mg/kg and 400 mg/kg, respectively. The 4-hour inhalation LC50(rat) value for 2-butoxyethanol is 450 ppm(2.17mg/L). Acute overexposure to 2-butoxyethanol vapor may cause eye and respiratory irritation. Direct contact to 2-butoxyethanol can cause moderate eye and skin irritation. Repeated overexposure to vapors may cause central nervous system effects and changes in blood parameters.

12. ECOLOGICAL INFORMATION

May cause long-term adverse effects in the aquatic environment.

Due to extreme low solubility in water, and therefore the non-availability to species, this product is regarded as not hazardous to aquatic organisms. The product is also not readily biodegradable and will remain in place until cleaned up.

13. DISPOSAL CONSIDERATIONS

The information on waste classification and disposal methodology provided below applies only to the P&ID product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. To determine Ignitability, see Section 5 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). P&ID encourages the recycle recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. P&ID has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

D.O.T. SHIPPING INFORMATION

SHIPPING NAME : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S

HAZARD CLASS/PACKING GROUP : 3 / III

UN NUMBER : UN1866

D.O.T HAZARDOUS SUBSTANCES : (PRODUCT REPORTABLE QUANTITY)

Xylene(2500 lbs.)

TRANSPORT LABEL REQUIRED : Flammable Liquid

ICAO/IATA

SHIPPING NAME : Resin solution

HAZARD CLASS : 3

SUBSIDIARY CLASS : NOT Applicable

UN/ID NUMBER : 1866

PACKING GROUP : III

TRANSPORT LABEL REQUIRED : Flammable Liquid

PACKING INSTR/ MAX NET QTY : PASSENGER Aircraft: 309; 60L

CARGO Aircraft: 310; 220L

ADDITIONAL TRANSPORT INFORMATION

COMMENTS : DOT – Not regulated if less than Reportable Quantity (RQ) per package.

15. REGULATORY INFORMATION

INVENTORY INFORMATION

USA :

All components of this product are included on the TSCA Inventory in compliance with the Toxic Substances Control Act, 15 U. S. C. 2601 et. Seq.

EU :

The following components of this product are included in the European Inventory of Existing Chemical Substances(EINECS) or are polymers of which the components of which are in EINECS, in compliance with Council Directive 67/548/EEC and its amendments.

CHINA :

All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

JAPAN :

All components of this product are included on the Japan(ENCS) inventory or are not required to be listed on the Chinese inventory.

KOREA :

All components of this product are included on the Korea(ECL) inventory or are not required to be listed on the Chinese inventory.

16. OTHER INFORMATION

NFPA Rating:

Health : 3- Materials that, under emergency conditions, can cause serious or permanent injury.

Fire : 2- Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.

Reactivity : 0- Materials that in themselves are normally stable, even under fire exposure conditions.

MSDS Version Number: 1

MSDS Effective Date : Oct. 1, 2006

Uses and Restrictions : Use only in industrial manufacturing processes.

MSDS Distribution :

The information in this document should be made available to all who may handle the product.

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