IMPAX 2001 HARDENER

This product appears in the following stock number(s):
2760H 2760H-5 2760U 2761U 2762U 2763U 2764U

Last revised: 10/02/03
Printed: 2/24/2004

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Tradename: IMPAX 2001 HARDENER

General use: The following information pertains to the hardener component of a two-component system. Once properly cured, this product is not hazardous.

Chemical family: Epoxy curing agent

MANUFACTURER

ITW Philadelphia Resins
130 Commerce Dr.
Montgomeryville, PA 18936

EMERGENCY INFORMATION

Emergency telephone number
(CHEMTREC): (800) 424-9300
Other Calls: (215) 855-8450

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS CONSTITUENTS **Exposure limits**

Constituent	Abbr.	CAS No.	Weight percent	ACGIH TLV	OSHA PEL	Other Limits
Ethyl benzene		100414	< 5	100 ppm	100 ppm	100 ppm (Canada)
Benzyl alcohol	BZOH	100516	< 15	n/e	n/e	10 ppm (AIHA)
Triethylenetetramine	TETA	112243	< 5	n/e	n/e	1 ppm (skin) (AIHA-WEEL)
Xylene		1330207	10-20	100 ppm	100 ppm	100 ppm (Canada)
Dipropylene glycol monomethyl ether		34590948	20-40	100ppm	100ppm	100 ppm (Canada)
Dimer/TOFA, reaction products with TETA		68082291	15-30	n/e	n/e	n/e
Butyl alcohol		71363	1-10	n/e	50 ppm	n/e
Cycloaliphatic amine		*	< 10	n/e	n/e	n/e
Polyethylene polyamine adduct		*	10-20	n/e	n/e	n/e

"TLV" means the Threshold Limit Value exposure (eight-hour, time-weighted average, unless otherwise noted) established by the American Conference of Governmental Industrial Hygienists. "STEL" indicates a short-term exposure limit. "PEL" indicates the OSHA Permissible Exposure Limit."n/e" indicates that no exposure limit has been established. An asterisk (*) indicates a substance whose identity is a trade secret of our supplier and unknown to us.

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance, form, odor: liquid with solvent odor.

WARNING! Flammable. Eye, skin and respiratory irritant. Potential skin sensitizer. May cause central nervous system effects.

Potential health effects

Primary routes of exposure: ☒ Skin contact ☒ Skin absorption ☒ Eye contact ☒ Inhalation ☒ Ingestion

Symptoms of acute overexposure:

Skin: Can cause irritation. May be absorbed through the skin and may cause nausea, headache, and general discomfort. May cause skin sensitization. May cause dryness, defatting, itching, rash, or cracking.

Eyes: Irritant, may cause burning sensation, tearing, redness, swelling. Can cause conjunctivitis and corneal edema when absorbed into the tissue.

Inhalation:

May cause irritation of throat, nose and respiratory tract, (headaches, dizziness, nausea). May cause Central Nervous System depression (giddiness, dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness; death may occur). Other symptoms include behavioral changes, slowing of breathing rate, respiratory failure.

Ingestion:

Gastrointestinal disturbance and effects similar to those of inhalation; liquid drawn into lungs during vomiting can cause severe damage.

Effects of chronic overexposure:

Repeated and/or prolonged exposure may cause allergic reaction / sensitization. Skin contact may cause dermatitis. Chronic exposure to solvents above their TLV's may cause liver/kidney disorders. May cause nasal irritation, affect mucous tissue/ membrane dysfunction. Repeated and/or prolonged exposure may cause adverse respiratory effects (dryness of nasal passages, sore throat, cough, tightness of chest, shortness of breath, loss of consciousness, death), adverse eye effects (irritation, conjunctivitis, corneal damage), adverse skin effects (defatting, rash, irritation, corrosion). Effects from inhalation of vapors may be delayed.

Carcinogenicity -- OSHA regulated: No **ACGIH: No** **National Toxicology Program: No**

International Agency for Research on Cancer: Yes

Cancer-suspect constituent(s) : Ethyl benzene

Medical conditions which may be aggravated by exposure:

Asthma. Skin disorders and allergies. Eye diseases. Chronic respiratory disorders (e.g. Bronchitis, Emphysema).

Other effects:

See Section 11. Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain, Central Nervous System damage, and liver abnormalities. Corneal edema may give rise to a perception of "blue haze" or "fog" around lights which is transient and has no known residual effect.

4. FIRST AID MEASURES

First aid for eyes:

Flush eye with clean water for at least 20 minutes while gently holding eyelids open, lifting upper and lower lids. Get immediate medical attention.

First aid for skin:

Immediately remove contaminated clothing and excess contaminant. Flush skin with water for at least 15 minutes. Wash thoroughly with soap and warm water. Consult a physician if irritation develops.

First aid for inhalation:
Remove patient to fresh air. Administer oxygen if breathing is difficult. Get medical attention if symptoms persist.

First aid for ingestion:
Do NOT induce vomiting. Administer 3-4 glasses of milk or water. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head below hips (if sitting) or to the side (if lying down) to prevent aspiration. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

General fire and explosion characteristics:
Vapor forms explosive mixture with air.

Extinguishing media:
☐ Water ☒ Carbon dioxide ☒ Dry chemical ☒ Foam ☐ Alcohol foam

Flash Point (°F): 75 **Method:** estimate

Explosive limits in air (percent) -- **Lower:** n/d **Upper:** n/d

Special firefighting procedures:
Firefighters should wear chemical resistant protective clothing and a self-contained breathing apparatus to avoid inhalation of smoke or vapors. Water may be used to cool exposed containers.

Unusual fire and explosion hazards:
Contains solvents. Do not use in area where sparks or open flames are present. Vapors may travel along floor to an ignition source and flash back. Sudden reaction and fire may result if mixed with an oxidizing agent. Personnel in vicinity and downwind should be evacuated.

Hazardous products of combustion:
Carbon monoxide and carbon dioxide. Nitrogen oxides. Ammonia gasses. Other unknown toxic smoke and vapors may form.

6. ACCIDENTAL RELEASE MEASURES

Spill control:
Avoid personal contact. Evacuate area. Eliminate ignition sources. Ventilate area.

Containment:
Dike, contain and absorb with clay, sand or other suitable non-combustible material.

Cleanup:
For large spills, pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand, or other suitable material and dispose of properly (RCRA hazardous waste).

Special procedures:
Prevent spill from entering drainage/sewer systems, waterways, and surface waters. Collect run-off water and transfer to drums or tanks for later disposal. Notify local health authorities and other appropriate agencies if such contamination occurs. Use bonding/ grounding lines and non-sparking tools. Use non-sparking blowers and ventilation to remove potential explosive or toxic accumulations.

7. HANDLING AND STORAGE

Handling precautions:

Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after using and particularly before eating, drinking, smoking, applying cosmetics, or using toilet facilities.
Launder contaminated clothing and protective gear before reuse. Discard contaminated leather articles. Do not breathe vapor or mist. Close container after each use. Ground container when pouring. Keep away from heat, flame or sparks. Use non-sparking tools. Do NOT mix with sodium nitrite or other nitrosating agents as cancer-causing nitrosamines could be formed.

Storage:

Keep away from acids, alkalis, and oxidizers. Keep in a cool place, without direct exposure to sunlight. Keep container tightly closed and otherwise in accordance with NFPA regulations. Maintain air space in storage containers. Do not store in reactive metal containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

Ventilation :

Use ventilation that is adequate to keep employee exposure to airborne concentrations below exposure limits (or to the lowest feasible levels when limits have not been established). Although good general mechanical ventilation is usually adequate for most industrial applications, local exhaust ventilation is preferred (see ACGIH - Industrial Ventilation). Local exhaust may be required for confined areas (see OSHA 1910.146).

Other engineering controls :

Have emergency shower and eye wash available.

Personal protective equipment

Eye and face protection:

Chemical splash goggles if liquid contact is likely, or safety glasses with side shields.

Skin protection:

Chemical-resistant rubber gloves and other protective gear as needed to prevent skin contact. The breakthrough time of the selected glove(s) must be greater than the intended use period.

Respiratory protection:

None needed in normal use with proper ventilation. In poorly ventilated areas use NIOSH approved organic vapor cartidge respirator for uncured resin, dust/particle respirator during grinding/sanding operations for cured resin; or fresh airline respirator as exposure levels dictate (see OSHA 1910.134).

9. PHYSICAL AND CHEMICAL PROPERTIES

Specific gravity:	n/d	**Boiling point (°F):**	> 200
Melting point (°F):	n/d	**Vapor density (air = 1):**	>1
Vapor pressure (mmHg):	< 11 mmHg at 70 °F	**Evaporation rate (butyl acetate = 1):**	< 1
VOC (grams/liter):	n/d	**Solubility in water:**	< 40%
Percent volatile by volume:	n/d	**pH (5% solution or slurry in water):**	n/d
Percent solids by weight:	n/d		

10. STABILITY AND REACTIVITY

This material is chemically stable. Hazardous polymerization will not occur.

Conditions to avoid :

Extreme heat, sparks and open flames. Moisture. Air or oxygen. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces.

Incompatible materials:

Oxidizers, reducers, acids, bases, reactive metals. Sodium or calcium hypochlorite. Nitrous acid, nitrites, nitrous oxide atm. Peroxides. Mat'ls reactive with hydroxyl compounds.

Hazardous products of decomposition:

Acrid and toxic fumes including organic amines, ammonia, oxides of nitrogen and carbon, nitric acid. Aldehydes. Acids.

Conditions under which hazardous polymerization may occur:

Heat is generated when this hardener reacts with acids and epoxy resins. Mix only as instructed.

11. TOXICOLOGICAL INFORMATION

Acute oral effects: LD50 (rat): > 1000 mg/kg (estimate)

Acute dermal effects: LD50 (rabbit): Not available.

Acute inhalation effects: LC50 (rat): Not available. Exposure: 4 hours.

Eye irritation:

Not available.

Subchronic effects:

Mixed polycycloaliphatic amines was tested in rats for systemic effects in a subchronic (28 day) oral study at doses ranging from 15-300 mg/kg/day. Effects seen at 300 mg/kg/day included decreased survival, decreased body weight gain, increased liver, kidney and adrenal weights and histological changes in the liver, kidney, adrenals and spleen.

Carcinogenicity, teratogenicity, and mutagenicity:

Xylene: Developmental toxicity studies showed embryolethal/toxic and teratogenic effects with maternal toxicity.

Other chronic effects:

N-Butyl alcohol: Laboratory animals have shown some evidence of effects on kidney, liver and blood. Xylene: Laboratory animals exposed to prolonged and repeated high doses of xylene by various routes have shown hearing loss and effects in liver, kidneys, lungs, spleen, heart, blood and adrenals. The effects of hearing loss on human hearing is uncertain.

Toxicological information on hazardous chemical constituents of this product:

Constituent	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 4hr, (rat)
Ethyl benzene	3500 mg/kg	17800 ppm	>4000 ppm
Benzyl alcohol	1230 mg/kg	2000 mg/kg	> 2000 ppm

Constituent	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 4hr, (rat)
Triethylenetetramine	2500 mg/kg	805 mg/kg	n/d
Xylene	4300 mg/kg	>1700 mg/kg	5000 ppm
Dipropylene glycol monomethyl ether	5135 mg/kg	9500 mg/kg	n/d
Dimer/TOFA, reaction products with TETA	n/d	n/d	n/d
Butyl alcohol	790 mg/kg	3400 mg/kg	8000 ppm
Cycloaliphatic amine	n/d	n/d	n/d
Polyethylene polyamine adduct	n/d	n/d	n/d

'n/d' = 'not determined'

12 ECOLOGICAL INFORMATION

Ecotoxicity:
Not available.

Mobility and persistence:
Not available.

Environmental fate:
Not available.

13. DISPOSAL CONSIDERATIONS

Please see also Section 15, Regulatory Information.

Waste management recommendations:
If this hardener becomes a waste, it would be a hazardous waste by RCRA criteria (40CFR 261). Dispose of according to applicable federal, state, and local regulations. Incineration is the preferred method of disposal. Empty containers retain product residue (liquid and / or explosive vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.

14. TRANSPORT INFORMATION

Proper shipping name: Paint related material
Technical name : N/A
Hazard class : 3
UN number: 1263
Packing group: III
Emergency Response Guide no.: 127
IMDG page number: N/A
Other:

15. REGULATORY INFORMATION

U.S. Federal Regulations

TSCA
All ingredients of this product are listed, or are exempt from listing, on the TSCA inventory.

The following RCRA code(s) applies to this material if it becomes waste:
D001

Regulatory status of hazardous chemical constituents of this product:

Constituent	Extremely Hazardous*	Toxic Chemical**	CERCLA RQ (lbs)	TSCA 12B Export Notification
Ethyl benzene	No	Yes	1000.0	Required
Benzyl alcohol	No	No	0.0	Not required
Triethylenetetramine	No	No	0.0	Not required
Xylene	No	Yes	100.0	Not required
Dipropylene glycol monomethyl ether	No	No	0.0	Required
Dimer/TOFA, reaction products with TETA	No	No	0.0	Not required
Butyl alcohol	No	Yes	5000.0	Required
Cycloaliphatic amine	No	No	0.0	Not required
Polyethylene polyamine adduct	No	No	0.0	Not required

*Consult the appropriate regulations for emergency planning and release reporting requirements for substances on the SARA Section 301 Extremely Hazardous Substance list.

**Substances for which the "Toxic Chemical" column is marked "Yes" are on the SARA Section 313 list of

Toxic Chemicals, for which release reporting may be required. For specific requirements, consult the appropriate regulations.

For purposes of SARA Section 312 hazardous materials inventory reporting, the following hazard classes apply to this material: - Immediate health hazard -- Delayed health hazard -- Fire hazard -

Canadian regulations

WHMIS hazard class(es) : B2; D2B; D2A

16. OTHER INFORMATION

Hazardous Materials Identification System (HMIS) ratings:	Health	Flammability	Reactivity
	2*	3	0

Revisions for this issue:

MSDS section	Revisions
3	Ethyl benzene updated to IARC 2B

The information and recommendations in this document are based on the best information available to us at the time of preparation, but we make no other warranty, express or implied, as to its correctness or completeness, or as to the results of reliance on this document.

IMPAX 2001 SAFETY YELLOW RESIN

This product appears in the following stock number(s):
2764R 2764R-5 2764U

Last revised: 10/02/03
Printed: 2/24/2004

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Tradename: IMPAX 2001 SAFETY YELLOW RESIN

General use: The following information pertains to the resin component of a two-component system. Once properly cured, this product is not hazardous.

Chemical family: Epoxy resin solution

MANUFACTURER

ITW Philadelphia Resins
130 Commerce Dr.
Montgomeryville, PA 18936

EMERGENCY INFORMATION

Emergency telephone number
(CHEMTREC): (800) 424-9300
Other Calls: (215) 855-8450

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS CONSTITUENTS **Exposure limits**

Constituent	Abbr.	CAS No.	Weight percent	ACGIH TLV	OSHA PEL	Other Limits
Ethyl benzene		100414	< 5	100 ppm	100 ppm	100 ppm (Canada)
Xylene		1330207	1-10	100 ppm	100 ppm	100 ppm (Canada)
Crystalline silica		14808607	< 1	0.05 mg/m3	10/(%Q+2) mg	0.10 mg/m^3 (Canada)
Polymers of epoxy resin and bisphenol A		25036253	10-20	n/e	n/e	n/e
Bisphenol A diglycidyl ether resin	DGEBPA	25068386	15-30	n/e	n/e	n/e
Phenol, polymer with formaldehyde, glycidyl ether		28064144	1-10	n/e	n/e	n/e
Blocked polyisocyanate		*	1-5	n/e	n/e	n/e

"TLV" means the Threshold Limit Value exposure (eight-hour, time-weighted average, unless otherwise noted) established by the American Conference of Governmental Industrial Hygienists. "STEL" indicates a short-term exposure limit. "PEL" indicates the OSHA Permissible Exposure Limit."n/e" indicates that no exposure limit has been established. An asterisk (*) indicates a substance whose identity is a trade secret of our supplier and unknown to us.

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance, form, odor: liquid with solvent odor.

WARNING! Flammable. Eye, skin and respiratory irritant. Potential skin sensitizer. May cause central nervous system effects.

Potential health effects

Primary routes of exposure: ☒ Skin contact ☒ Skin absorption ☒ Eye contact ☒ Inhalation ☐ Ingestion

Symptoms of acute overexposure:

Skin: Moderate irritant (redness, itching, burning, dryness, cracking). Contact at elevated temperatures can cause thermal burns. May cause skin sensitization (rashes, hives). Products may be absorbed through skin and causing health hazard.

Eyes: Moderate irritant (stinging, burning sensation, tearing, redness, swelling). Contact at elevated temperatures can cause thermal burns which may result in permanent damage or blindness.

Inhalation:

If the product is poorly ventilated, strongly heated or atomized, the vapor or mist can cause irritation of the respiratory tract (soreness of mouth/ throat, coughing and chest pain may result). May cause central nervous system depression (headaches, dizziness, nausea, drowsiness, weakness, fatigue, unconsciousness).

Ingestion:

May cause gastric distress (irritation of mouth/ throat, nausea, vomiting, diarrhea). May cause central nervous system depression and /or difficulty breathing. Liquid drawn into lungs during vomiting can cause severe damage.

Effects of chronic overexposure:

Skin contact may cause dermatitis. Chronic exposure to solvents above their TLV's may cause liver/kidney disorders. May cause nasal irritation, affect mucous tissue/ membrane dysfunction. The epoxy resins are potential skin sensitizers. See Section 11.

Carcinogenicity -- OSHA regulated: No **ACGIH: No** **National Toxicology Program: Yes**

International Agency for Research on Cancer: Yes

Cancer-suspect constituent(s) : Silica; Ethyl benzene

Medical conditions which may be aggravated by exposure:

Preexisting eye and skin disorders (e.g. eczema). Development of preexisting skin or lung allergy symptoms may increase.

Other effects:

Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain and Central Nervous System damage. See Section 11.

4. FIRST AID MEASURES

First aid for eyes:

Flush eye with clean water for at least 20 minutes while gently holding eyelids open, lifting upper and lower lids. Get immediate medical attention.

First aid for skin:

Immediately remove contaminated clothing and excess contaminant. Flush skin with water for at least 15 minutes. Wash thoroughly with soap and warm water. Consult a physician if irritation develops.

First aid for inhalation:

Remove patient to fresh air. Administer oxygen if breathing is difficult. Get medical attention if symptoms persist.

First aid for ingestion:

Do NOT induce vomiting. Rinse mouth out with water, then sip water to remove taste from mouth. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head below hips (if sitting) or to the side (if lying down) to prevent aspiration. Get medical attention.

Note to physician :

Eyes: stain for evidence of corneal injury.

5. FIRE FIGHTING MEASURES

General fire and explosion characteristics:

Vapor forms explosive mixture with air.

Extinguishing media:

☐ Water ☒ Carbon dioxide ☒ Dry chemical ☒ Foam ☐ Alcohol foam

Flash Point (°F): 80 **Method:** PMCC

Explosive limits in air (percent) -- **Lower:** n/d **Upper:** n/d

Special firefighting procedures:

Firefighters should wear self-contained breathing apparatus to avoid inhalation of smoke or vapors. Water may be used to cool exposed containers.

Unusual fire and explosion hazards:

Containers exposed to intense heat from fires could rupture from vapor pressure buildup or from polymerization. Vapors are heavier than air and may travel to an ignition source and flash back. Burning liquid may float on water. Personnel in vicinity and downwind should be evacuated.

Hazardous products of combustion:

Fumes of Cl- , carbon monoxide, other products varying in composition and toxicity. If heated >248 F, TDI and carbodiimides may be generated.

6. ACCIDENTAL RELEASE MEASURES

Spill control:

Avoid personal contact. Evacuate area. Eliminate ignition sources. Ventilate area.

Containment:

Dike, contain and absorb with clay, sand or other suitable material.

Cleanup:

Wear appropriate respirator and protective clothing. For large spills, pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand, or other suitable material and dispose of properly. Flush area with water to remove trace residue. Small spills- take up with an absorbent material and place in appropriate containers for disposal.

Special procedures:

Prevent spill from entering drainage/sewer systems, waterways, and surface waters. Collect run-off water and transfer to drums or tanks for later disposal. Notify local health authorities and other appropriate agencies if such contamination occurs. Use bonding/ grounding lines and non-sparking tools. Use non-sparking blowers and ventilation to remove potential explosive or toxic accumulations.

7. HANDLING AND STORAGE

Handling precautions:

Do not breathe vapor or mist. Do not get in eyes, on skin or clothing. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after using and particularly before eating, drinking, smoking, applying cosmetics, or using toilet facilities.
Air dry and then launder contaminated clothing and protective gear before reuse. Close container after each use. Ground/bond container when pouring. Keep away from heat, flame or sparks. Use non-sparking tools.

Storage:

Keep in a cool place, without direct exposure to sunlight. Keep container tightly closed and otherwise in accordance with NFPA and NEC codes. Maintain air space in storage containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

Ventilation :

Use ventilation that is adequate to keep employee exposure to airborne concentrations below exposure limits (or to the lowest feasible levels when limits have not been established). Although good general mechanical ventilation is usually adequate for most industrial applications, local exhaust ventilation is preferred (see ACGIH - Industrial Ventilation). Local exhaust may be required for confined areas (see OSHA 1910.146).

Other engineering controls :

Have emergency shower and eye wash available.

Personal protective equipment

Eye and face protection:

Chemical goggles and full face shield.

Skin protection:

Chemical-resistant gloves and other gear as required to prevent skin contact.

Respiratory protection:

None needed in normal use with proper ventilation. In poorly ventilated areas use NIOSH approved organic vapor cartidge respirator for uncured resin, dust/particle respirator during grinding/sanding operations for cured resin; or fresh airline respirator as exposure levels dictate (see OSHA 1910.134).

9. PHYSICAL AND CHEMICAL PROPERTIES

Specific gravity:	1.37	**Boiling point (°F):**	n/d
Melting point (°F):	n/d	**Vapor density (air = 1):**	>1
Vapor pressure (mmHg):	n/d at 68 °F	**Evaporation rate (butyl acetate = 1):**	n/d
VOC (grams/liter):	n/d	**Solubility in water:**	slight
Percent volatile by volume:	n/d	**pH (5% solution or slurry in water):**	n/d
Percent solids by weight:	n/d		

10. STABILITY AND REACTIVITY

This material is chemically stable. Hazardous polymerization will not occur.

Conditions to avoid :

Avoid heat (esp. localized heat sources-i.e. drum heaters), open flames and ignition sources. Sunlight or ultrviolet radiation. Inert gas blanketing. Oxidizing conditions.

Incompatible materials:

Strong Lewis or mineral acids, strong oxidizers, strong mineral & organic bases (esp. primary & secondary aliphatic amines). Strong reducers. Free radical initiators.

Hazardous products of decomposition:

Oxides of carbon; aldehydes, acids, Toluenediisocyane (TDI), phenol derivatives and other organic substances may be formed during combustion or elevated temperature degradation.

Conditions under which hazardous polymerization may occur:

Heat is generated when resin is mixed with curing agents; Run-a-way cure reactions may char and decompose the resin, generating unidentified fumes and vapors which may be toxic.

11. TOXICOLOGICAL INFORMATION

Acute oral effects: LD50 (rat): Not available.

Acute dermal effects: LD50 (rabbit): Not available.

Acute inhalation effects: LC50 (rat): Not available. Exposure: 4 hours.

Eye irritation:

Not available.

Subchronic effects:

Not available.

Carcinogenicity, teratogenicity, and mutagenicity:

1) MUTAGENICITY: Liquid resins based on diglycidyl ether of Bisphenol A (DGEBPA), have proved to be inactive when tested by in vivo mutagenicity assays. These resins have shown activity in in vitro microbial mutagenicity screening and have produced chromosomal aberrations in cultured rat liver cells. The significance of these tests to man is unknown. 2) CARCINOGENICITY: Recent 2-year bioassays in rats and mice exposed by the dermal route to DGEBPA yielded no evidence of carcinogenicy to the skin or any other organs. This study clarifies prior equivocal results from a 2-year mouse skin painting study, which were suggestive, but not conclusive, for weak carcinogenic activity. 3) The International Agency for Research on Cancer (IARC) concluded that DGEBPA is not classifiable as a carcinogen (IARC group 3), that is human and animal evidence of carcinogenicy is inadequate. Xylene: Developmental toxicity studies showed embryolethal/toxic and teratogenic effects with maternal toxicity. DBGDA: In a study, pregnant mice given 60 and 80 mg/kg/day by gavage had an increased incidence of malformed fetuses compared to the control groups.

Other chronic effects:

Prolonged or repeated skin contact may cause sensitization, with itching, swelling, or rashes on later exposure. Studies have shown bisphenol A diglycidyl ether resin to cause allergic contact dermititis. Component(s) of this material have been shown to effect immune system cells, liver, kidney, blood, cardiac sensitization, cataracts, hearing,

and central nervous system in laboratory animal studies. Xylene: Laboratory animals exposed to prolonged and repeated high doses of xylene by various routes have shown hearing loss and effects in liver, kidneys, lungs, spleen, heart, blood and adrenals. The effects of hearing loss on human hearing is uncertain.

Toxicological information on hazardous chemical constituents of this product:

Constituent	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 4hr, (rat)
Ethyl benzene	3500 mg/kg	17800 ppm	>4000 ppm
Xylene	4300 mg/kg	>1700 mg/kg	5000 ppm
Crystalline silica	n/d	n/d	n/d
Polymers of epoxy resin and bisphenol A	11.4 g/kg	n/d	> 11,000 ppm
Bisphenol A diglycidyl ether resin	11.4 g/kg	>20 ml/kg	no deaths
Phenol, polymer with formaldehyde, glycidyl ether	> 5000 mg/kg	> 6000 mg/kg	> 1.7 mg/L
Blocked polyisocyanate	n/d	n/d	n/d

'n/d' = 'not determined'

12 ECOLOGICAL INFORMATION

Ecotoxicity:
Not available.

Mobility and persistence:
Not available.

Environmental fate:
Not available.

13. DISPOSAL CONSIDERATIONS

Please see also Section 15, Regulatory Information.

Waste management recommendations:
If this resin becomes a waste, it would be a hazardous waste by RCRA criteria (40CFR 261). Dispose of according to applicable federal, state, and local regulations. Do not dispose of in a landfill. Incineration is the preferred method of disposal. Empty containers still contain hazardous product residue (vapors and/or liquid). Follow all MSDS and label warnings even after container is emptied. Residual vapors in empty containers may explode on ignition - DO NOT cut, drill, grind, or weld on or near container.

14. TRANSPORT INFORMATION

Proper shipping name: Paint related material *
Technical name : N/A
Hazard class : 3
UN number: 1263
Packing group: III
Emergency Response Guide no.: 127
IMDG page number: N/A
Other:

*Depending upon the size and type of container, this material may be reclassified as "Consumer Commodity, ORM-D" for shipments within the United States, or "Limited Quantity" elsewhere. Refer to the appropriate regulation.

15. REGULATORY INFORMATION

U.S. Federal Regulations

TSCA
All ingredients of this product are listed, or are exempt from listing, on the TSCA inventory.

The following RCRA code(s) applies to this material if it becomes waste:
D001

Regulatory status of hazardous chemical constituents of this product:

Constituent	Extremely Hazardous*	Toxic Chemical**	CERCLA RQ (lbs)	TSCA 12B Export Notification
Ethyl benzene	No	Yes	1000.0	Required
Xylene	No	Yes	100.0	Not required
Crystalline silica	No	No	0.0	Not required
Polymers of epoxy resin and bisphenol A	No	No	0.0	Not required
Bisphenol A diglycidyl ether resin	No	No	0.0	Not required
Phenol, polymer with formaldehyde, glycidyl ether	No	No	0.0	Not required
Blocked polyisocyanate	No	No	0.0	Not required

*Consult the appropriate regulations for emergency planning and release reporting requirements for substances on the SARA Section 301 Extremely Hazardous Substance list.

**Substances for which the "Toxic Chemical" column is marked "Yes" are on the SARA Section 313 list of Toxic Chemicals, for which release reporting may be required. For specific requirements, consult the appropriate regulations.

For purposes of SARA Section 312 hazardous materials inventory reporting, the following hazard classes apply to this material: - Immediate health hazard -- Delayed health hazard -- Fire hazard -

Canadian regulations

WHMIS hazard class(es) : B2; D2B; D2A

16. OTHER INFORMATION

Hazardous Materials Identification System (HMIS) ratings:	Health	Flammability	Reactivity
	2*	3	1

Revisions for this issue:

MSDS section	Revisions
3	Ethyl benzene updated to IARC 2B

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