

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

PRODUCT NAME: ES-221 Black Resin

CHEMICAL NAME: Epoxy Resin Blend

MANUFACTURER: CASS POLYMERS OF MICHIGAN, INC.
815 WEST SHEPHERD STREET
CHARLOTTE MI 48813 USA

INFORMATION PHONE: (248) 588-2270

EMERGENCY PHONE: (703) 527-3887(Call Collect)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Materials Information System (United States)

Health	2
Flammability	1
Physical Hazard	0

Hazard Codes: *=Chronic Hazard 0=Minimal Hazard, 1=Slight Hazard, 2=Moderate Hazard, 3=Serious Hazard, 4=Severe Hazard

Material Composition

Component	CAS.NO	EINECS/ELINCS No.	Percent
Reaction Product of Bisphenol-A and Epichlorhydrin	25068-38-6	Polymer	25% - 30%
Neopentyl Glycol Diglycidyl Ether	17557-23-2	Unavailable	5% - 10%
Reaction Product of Epichlorhydrin, Phenol-Formaldehyde Novalac	28064-14-4	Polymer	10% - 15%
Glycidoxypropyl Trimethoxysilane	2530-83-8	219-784-2	1%
Calcium Carbonate	471-34-1	207-439-9	30% - 40%
Carbon Black	1333-86-4	215-609-9	≤1%
Siloxanes and Silicones, di-Me, reaction products with Silica	67762-90-7	Exempt	1% - 2%
Amorphous Silica	7631-86-9	231-545-4	<0.1%

Hazardous Materials are listed if present in concentrations of 1.0% or higher. Materials posing a possible Chronic Health Risk are listed at concentrations of 0.1% or higher. Materials listed in section 2 are not necessarily hazardous. See section 8-Exposure Controls/Personal Protection, and section 11-Toxicological Information for complete hazard/exposure limit information

3. HAZARDS IDENTIFICATION

****Emergency Overview****

Moderate skin irritant. Mild eye irritant. Moderate respiratory tract irritant. May cause skin sensitization.

EC Classification(s): Xi- Irritant; N- Harmful to the Environment

EC Risk Phrases: R21/22: Harmful in contact with skin and if swallowed

R36/38: Irritating to eyes and skin

R43: May cause sensitization by skin contact

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

(See Section 15-REGULATORY INFORMATION for complete text of risk phrases.)

ROUTES OF EXPOSURE

Eye Contact

Skin Contact

Ingestion

EXPOSURE STANDARDS

See section 8-Exposure Controls/Personal Protection, and section 11-Toxicological Information for complete hazard/exposure limit information

HEALTH HAZARDS

Moderate skin irritant.

Mild eye irritant.

Mild respiratory tract irritant.

May cause skin sensitization.

TARGET ORGANS

Skin

SIGNS AND SYMPTOMS OF EXPOSURE (Acute effects)

Contact with eyes may cause mild irritation and discomfort. Contact with skin causes irritation, redness and discomfort which is transient. Inhalation of mists may cause irritation in the respiratory tract. Inhalation of vapors from heated materials may cause irritation in the respiratory tract. Coughing and chest pain may result.

SIGNS AND SYMPTOMS OF EXPOSURE (Possible Longer Term Effects)

Repeated and/or prolonged exposure may cause allergic reaction/sensitization. Repeated and/or prolonged exposures may result in: adverse skin effects (such as rash, irritation or corrosion).

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

Skin disorders and Allergies

CARCINOGENS UNDER OSHA, ACGIH, NTP, IARC, OTHER

This product contains no known or suspected carcinogens in concentrations of 0.1 percent or greater.

4. FIRST AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Inhalation:

Move effected persons to fresh air; if effects occur, consult a physician.

Skin Contact:

Continued and thorough washing in flowing water for at least 15 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash clothing before reuse. Destroy contaminated leather items.

Eye Contact:

Wash immediately and continuously with flowing water for at least 15 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

Ingestion:

If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by a physician or medical personnel. Do not give anything by mouth to an unconscious person.

Note 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 PRECAUTIONS**Extinguishing Media:**

Water fog or fine spray. Carbon dioxide. Alcohol resistant foam. Dry chemical fire extinguishers.

Hazardous Combustion Products:

May generate toxic or irritating combustion products. Sudden reaction and fire may occur if product is mixed with an oxidizing agent.

Protection of Firefighters:

Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves.)

6. ACCIDENTAL RELEASE MEASURES**Personal Precautions:**

Wear adequate personal protective equipment; see Section 8-EXPOSURE CONTROLS/PERSONAL PROTECTION.

Methods of Cleaning Up:

Large spills: Contain with dike. Pump into suitable and properly labeled containers.

Small spills: Dilute with water and recover or use non-combustible absorbent material/sand and shovel into appropriate containers.

7. HANDLING AND STORAGE**STORAGE**

Keep away from: oxidizers. Keep in cool, dry, ventilated storage areas and in closed containers.

HANDLING

Avoid contact with skin or eyes. Avoid breathing of vapors. Handle in well-ventilated workspace. When handling, do not eat, drink, or smoke.

OTHER PRECAUTIONS

Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations (e.g. OSHA).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Hazardous Component Control Parameters –

Component	CAS. No.	EINECS	Percent	Exposure Limits	Source
Glycidoxypropyl Trimethoxysilane	2530-83-8	219-784-2	0.5% - 1%	5ppm TWA 10ppm STEL	Dow-Corning
Carbon Black	1333-86-4	215-609-9	≤1%	3.5 mg/m ³ ,TWA 3.5 mg/m ³ ,TLV	OSHA ACGIH

-No Further Data Available-

EYE PROTECTION

Chemical safety glasses. A full-face shield and vapor respirator is recommended for operations involving spraying or other operations placing this material under pressurized conditions.

HAND PROTECTION

Neoprene rubber gloves. Impermeable gloves. Nitrile rubber gloves. The breakthrough time of the selected glove(s) must be greater than the intended use period.

RESPIRATORY PROTECTION

Not required under normal conditions and in a well-ventilated workplace. At elevated temperatures, a cartridge mask National Institute for Occupational Safety and Health (NIOSH) approved for organic vapors may be appropriate

PROTECTIVE CLOTHING

Long sleeved clothing.

ENGINEERING CONTROLS

No specific controls needed.

WORK AND HYGIENIC PRACTICES

Provide readily accessible eye wash stations and safety showers. Wash at the end of each work shift and before eating, smoking or using the toilet.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as the instructions/specifications provided by the glove supplier.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :	Thixotropic Paste
Color:	Black
Odor:	Epoxy Odor
Specific gravity :	1.47 – 1.50
Vapor pressure:	Not Determined
Boiling point/range :	Not Determined
Freezing point/range :	Not Determined
Water solubility :	Liquid Components are Not Readily Soluble in Water
pH :	Not Determined
Flash point :	Not Determined
Auto-ignition temp. :	>300 deg.C
Flammability-LFL :	Not Determined
Flammability-UFL :	Not Determined
VOC Content:	0 g/L (0%)

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Stable

CONDITIONS TO AVOID (if unstable)

Not applicable

INCOMPATIBILITY (Materials to Avoid)

Oxidizing Agents (i.e. perchlorates, nitrates etc.). Sodium or Calcium Hypochlorite. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion.

HAZARDOUS DECOMPOSITION PRODUCTS (from burning, heating, or reaction with other materials).

Carbon Monoxide in a fire. Carbon Dioxide in a fire. Irritating and toxic fumes at elevated temperatures.

HAZARDOUS POLYMERIZATION

Will not occur

CONDITIONS TO AVOID (if polymerization may occur)

Not applicable

11. TOXICOLOGICAL INFORMATION

Acute toxicity

This finished product has not been tested to determine individual toxicological/ecological limits. Individual components of this mixture have been independently tested by the raw material manufacturers and any known results have been presented below. The results for the individual components may not be representative of the toxicity of this finished product.

Ingredient Name	CAS No.	%	Test	Result	Route	Species
Polymer of Epichlorohydrin, Phenol-Formaldehyde Novolac	28064-14-4	10% - 15%	LD50	>4000 mg/kg	Oral	Rat
Neopentyl Glycol Diglycidyl Ether	17557-23-2	5% - 10%	LD50	4500 mg/kg	Oral	Rat

-No Further Data Available-

Ingestion

This material has a low potential for toxic effects due to ingestion.

Skin Contact

Prolonged or widespread skin contact is not likely to cause toxic effects.

Irritation

Skin:

Skin contact has caused allergic skin reactions in certain sensitized individuals.

Eyes:

May cause slight temporary eye irritation with local redness. Mechanical irritation possible due to solid filler materials.

Inhalation:

May cause allergic respiratory response upon exposure to heated vapors.

Chronic Exposure

Carcinogen:

This material contains no known or suspected carcinogens in levels above 0.1%

Mutagen:

This material contains no known or suspected mutagens in levels above 0.1%

Reproductive Hazard:

This material contains no materials known or suspected to cause reproductive hazards in levels above 0.1%.

12. ECOLOGICAL INFORMATION

Persistence/Degradability:

This material contains components that show little or no evidence of biodegradability. Caution should be taken to prevent release to the environment. See Section 13 for further information.

Degradation:

Based on the stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Aquatic Toxicity:

Diglycidyl Ether of Bisphenol-A (DGEBA) resins (44% formula mass) are toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in most sensitive species). However, DGEBA is insoluble in water under most conditions.

Individual components of this mixture have been independently tested by the raw material suppliers and any known information has been presented above. The results for the individual components may not be representative of the ecological toxicity of this finished product. Caution should be taken to prevent release to the environment. See Section 13 for further information.

13. DISPOSAL CONSIDERATIONS

Disposal

Preferred method of disposal includes incineration under controlled conditions in accordance with all local and national laws and regulations. The generation of waste should be avoided or minimized wherever possible. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or watercourses. Waste must be disposed of in accordance with federal, state and local environmental control regulations. This material, when properly mixed and cured with its resin component at the proper mix ratio, may be safely landfilled.

Contaminated packaging

Empty containers can only be disposed of when the remaining product adhering to the container walls has been removed. Hazard warning labels should be removed from the container only after it has been properly emptied.

14. TRANSPORT INFORMATION**Land/Air/Sea/Rail**

Proper Shipping Name: Liquid Plastic, NOI
UN Number: Not Regulated
Hazard Class: Not Regulated
Packing Group: Not Regulated

15. REGULATORY INFORMATION**US FEDERAL REGULATIONS****TOXIC SUBSTANCES CONTROL ACT (TSCA)-**

All components are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

TOXIC SUBSTANCE CONTROL ACT (TSCA) 12(b) COMPONENT(S)

None

OSHA Hazard Communication Standard (29CFR1910.1200) hazard class(es)

Irritant. Sensitizer.

EPA SARA Title III Section 312 (40CFR370) hazard class

Immediate Health Hazard. Delayed Health Hazard.

EPA SARA Title III Section 313 (40CFR372) toxic chemicals above "de minimis" level are

NONE

STATE REGULATIONS**PROPOSITION 65 SUBSTANCES (component(s) known to the State of California to cause cancer and/or reproductive toxicity and subject to warning and discharge requirements under the "Safe Drinking Water and Toxic Enforcement Act of 1986")**

None

CANADA**DSL**

Included on Inventory.

WHMIS HAZARD CLASSIFICATION:

D2B- Skin Sensitizer

HAZARDOUS PRODUCTS ACT INFORMATION:

This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14):

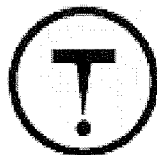
DIGLYCIDYL ETHER OF BISPHENOL-A, CAS #1675-54-3, 31% (w/w)

POLYMER OF EPICHLOROHYDRIN PHENOL-FORMALDEHYDE NOVOLAC, CAS #28064-14-4, 14% (w/w)

WHMIS TRADE SECRET REGISTRY NUMBER(S)

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

None

WHMIS SYMBOLS

EUROPEAN ECONOMIC COMMUNITY (EEC)**EINECS/ELINCS MASTER INVENTORY**

Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.

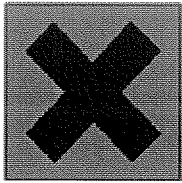
EINECS Status:

All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) in Compliance with Council Directive 67/548/EEC and its amendments. CHIP3 Regulations have been applied and meets all requirements.

Hazard symbol(s):

Xi

N



EU Labeling Classification: Xi-Irritant; N-Harmful to the Environment

Risk Phrases: R21/22: Harmful in contact with skin and if swallowed
R36/38: Irritating to eyes and skin
R43: May cause sensitization by skin contact
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Safety Phrases: S24: Avoid contact with skin.
S28: After contact with skin, wash immediately with plenty of water and soap
S37/39: Wear suitable gloves and eye/face protection.
S61: Avoid release to the environment. Refer to special instructions/Safety data sheet.

16. OTHER INFORMATION

No Other Information

To the best of our knowledge, the information contained herein is accurate. Final determination of the suitability of any material is the sole responsibility of the users. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

PRODUCT NAME: ES-221 Hardener

CHEMICAL NAME: Epoxy Hardener

MANUFACTURER: CASS POLYMERS OF MICHIGAN, INC.
815 WEST SHEPHERD STREET
CHARLOTTE MI 48813 USA

INFORMATION PHONE: (248) 588-2270

EMERGENCY PHONE: (703) 527-3887(Call Collect)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Materials Information System (United States)

Health	3
Flammability	1
Physical Hazard	0

Hazard Codes: *=Chronic Hazard 0=Minimal Hazard, 1=Slight Hazard, 2=Moderate Hazard, 3=Serious Hazard, 4=Severe Hazard

Material Composition

Component	CAS.NO	EINECS/ELINCS No.	Percent
Reaction Product of Bisphenol-A and Epichlorhydrin	25068-38-6	Polymer	18% - 20%
1,3-Benzenedimethaneamine	1477-55-0	216-032-5	23% - 25%
Diethylenetriamine	111-40-0	203-865-4	32% - 34%
4,4-isopropylidenediphenol	80-05-7	201-245-8	17% - 19%
1-Methylimidazole	616-47-7	210-484-7	4% - 6%
Trimethylhexanediamine	25620-58-0	247-134-8	2% - 4%

Hazardous Materials are required to be listed if present in concentrations of 1.0% or higher. Materials posing a possible Chronic Health Risk are required to be listed at concentrations of 0.1% or higher. Materials listed in section 2 are not necessarily hazardous. See section 8-EXPOSURE CONTROLS/PERSONAL PROTECTION, and section 11-TOXICOLOGICAL INFORMATION for complete hazard/exposure limit information.

3. HAZARDS IDENTIFICATION

****Emergency Overview****

Do not get in eyes, on skin or on clothing. Do not breathe vapors, dust or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact of large amounts of spilled material. Keep runoff out of soil and surface waterways.

EC Classification(s): C-Corrosive; N-Harmful to the Environment

Risk Phrase(s): R20/21/22: Harmful by inhalation, in contact with skin and if swallowed

R34: Causes burns

R40: Limited evidence of a carcinogenic effect

R41: Risk of serious damage to eyes

R43: May cause sensitization by skin contact

R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

(See Section 15-REGULATORY INFORMATION for complete risk phrases.)

Potential Acute Health Effects

Eyes

Very hazardous in case of eye contact (irritant, corrosive). Inflammation of the eye is characterized by redness, watering and itching. Exposure of the eyes to amine vapors may produce a temporary and reversible hazing or blurring of vision. Symptoms disappear soon after exposure is terminated.

Respiratory

Vapors produced though handling of this material in it's uncured state may cause irritation of the eyes, nose, throat or other mucous membranes. Maintain adequate local exhaust or wear adequate personal protective equipment. Processing of cured materials may produce harmful and/or irritating dusts. Use of local exhaust and or dust/vapor respirators is recommended.

Skin

Hazardous in case of skin contact (corrosive). Skin contact may produce burns.

Potential Chronic Health Effects

Respiratory

Repeated inhalation of vapors may cause lung damage. Provide appropriate ventilation to maintain exposures below occupational limits. Use of a filtering respirator rated for use with amines/ammonia is recommended where local ventilation is not adequate. See section 8-EXPOSURE CONTROLS/PERSONAL PROTECTION for exposure limits and recommended protective equipment. See section 11-TOXICOLOGICAL INFORMATION for further information.

Skin

Repeated skin contact may cause a persistent irritation or dermatitis. Repeated or prolonged exposure may aggravate existing dermatitis (skin contact). Overexposure to vapor, dust, or mist may aggravate existing respiratory conditions such as asthma, bronchitis, and inflammatory or fibrotic respiratory disease.

4. FIRST AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Inhalation

Move effected persons to fresh air; if effects occur, consult a physician.

Skin Contact

Immediate, continued and thorough washing in flowing water for at least 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash clothing before reuse. Destroy contaminated leather items.

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.

Ingestion

Do not induce vomiting. Give one glass (ca. 2.5 dL) of water or milk if available and transport to medical facility. Do not give anything by mouth to an unconscious person.

Note to Physician

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.

5. FIRE FIGHTING PRECAUTIONS

Extinguishing Media

Water fog or fine spray. Carbon dioxide. Alcohol resistant foam. Dry chemical fire extinguishers.

Hazardous Combustion Products

Combustion products may include and are not limited to: Nitrogen oxides. Carbon dioxide. Carbon monoxide.

Protection of Firefighters

Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves.)

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Wear adequate personal protective equipment, see Section 8, EXPOSURE CONTROLS/PERSONAL PROTECTION.

Methods of Cleaning Up

Large spills: Contain with dike. Pump into suitable and properly labeled containers.

Small spills: Dilute with water and recover or use non-combustible absorbent material/sand and shovel into appropriate containers.

Neutralize residues with a dilute solution of acetic acid.

7. HANDLING AND STORAGE

Handling

Keep container dry. Do not ingest. Do not breathe gas/fumes/dust/spray/dust. If ingested, seek medical advice immediately and show the container, label or this document. Avoid contact with skin and eyes.

Storage

Store under nitrogen blanket for maximum shelf life. Product should not come in contact with copper or copper-bearing alloys.

Storage Temperature and Shelf Life

Store between 10°C and 27°C for maximum shelf life.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Hazardous Component Control Parameters –

Component	CAS. No.	EINECS	Percent	Exposure Limits	Source
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-No Data Available-

Engineering Controls

Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for operations involving machining of dry or cured material.

Personal Protective Equipment

Respiratory Protection

For use of this material in its uncured state, no respiratory protection should be needed with use of adequate local exhaust, however, if handling at elevated temperatures or without sufficient ventilation, use of an approved air-purifying or supplied air respirator is recommended. Use a CE approved air-purifying respirator with cartridge/filter for Amines or Ammonia

Skin Protection

Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full body suit will depend on operation. 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 chemical resistant gloves classified under standard EN 374: Protective gloves against chemicals and microorganisms.

Examples of preferred glove barrier materials include:

-Chlorinated polyethylene.

-Polyethylene.

-Ethyl vinyl alcohol laminate ("EVAL").

Examples of acceptable glove barrier materials include:

-Butyl rubber.

-Natural rubber ("latex").

-Neoprene.

-Nitrile/butadiene rubber ("Nitrile" or "NBR").

-Polyvinyl alcohol ("PVA").

-Polyvinyl chloride ("PVC" or "vinyl").

-Viton.

When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as the instructions/specifications provided by the glove supplier.

Eye/Face Protection

Eye wash fountain should be located in immediate work area. Use chemical goggles. A full-face shield and vapor respirator is recommended for operations involving spraying or other operations placing this material under pressurized conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :	Mobile Liquid
Color:	Amber
Odor :	Amine Odor
Specific gravity :	1.0 - 1.1
Vapor pressure :	Not Determined
Boiling point/range :	Not Determined
Freezing point/range :	Not Determined
Water solubility :	Slightly Soluble in Water
pH :	Basic
Flash point :	121°C
Auto-ignition temp. :	>300 deg.C
Flammability-LFL :	Not Determined
Flammability-UFL :	Not Determined
% volatile:	<1%

10. STABILITY AND REACTIVITY

Chemical Stability

Stable under normal handling and storage conditions, see Section 7, Handling and Storage.

Materials to Avoid

Acrylates. Aldehydes. Ketones. Halogenated organic compounds. Oxidising agents. Acids. Copper and its alloys (Brass, Bronze, etc.) Mixture with these materials will result in a temperature and/or pressure increase.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

This finished product has not been tested to determine individual toxicological/ecological limits. Individual components of this mixture have been independently tested by the raw material manufacturers and any known results have been presented below. The results for the individual components may not be representative of the toxicity of this finished product.

Ingredient Name	CAS No.	%	Test	Result	Route	Species
1,3-Benzenedimethaneamine	1477-55-0	23% - 25%	LD50	2000 mg/kg	Dermal	Rabbit
			LD50	930 mg/kg	Oral	Rat
Trimethylhexanediamine	25620-58-0	2% - 4%	LD50	910 mg/kg	Oral	Rat
1-Methylimidazole	616-47-7	4% - 6%	LD50	1130 mg/kg	Oral	Rat
			LD50	>400 mg/kg	Dermal	Rabbit

-No Further Information Available-

Ingestion

Ingestion may cause gastrointestinal irritation or ulceration. Ingestion may cause burns of mouth and throat. Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

Skin Contact

Prolonged or widespread skin contact may result in absorption of harmful amounts.

Irritation

Skin

Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

Skin contact has caused allergic skin reactions in certain sensitized individuals.

Eyes

May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Inhalation

May cause allergic respiratory response. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

Chronic Exposure

Carcinogen

This product contains no materials that are reported as known or suspect carcinogens in levels above 0.1%

Mutagen

This product contains no materials that are reported as known or suspect mutagens in levels above 0.1%

Reproductive Hazard

This product contains no materials that are known or suspected of causing a reproductive hazard in levels above 0.1%.

12. ECOLOGICAL INFORMATION

Persistence/degradability:

The material contains components that show little or no evidence of biodegradability. Caution should be taken to prevent release to the environment. See Section 13 for further information.

Ecotoxicity Data:

Chemical Name	CAS No.	%	Test	Concentration	Result	Species
1,3-Benzenedimethaneamine	1477-55-0	23% - 25%	LC50	130 mg/L	LC50	Golden Orfe
			EC50 (Algae)	29.5mg/L	72 hours	Scenedesmus subspicatus
Trimethylhexanediamine	25620-58-0	2% - 4%	EC50 (Daphnia)	31.5 mg/L	24 hours	Daphnia magna
			LC50 (Fish)	172 mg/L	48 hours	Leuciscus idus
1-Methylimidazole	616-47-7	4% - 6%	LC 50	100 mg/L	96 hours	Golden Orfe

-No Further Information Available-

Individual components of this mixture have been independently tested by the raw material suppliers and any known results have been presented above. The results for the individual components may not be representative of the ecological toxicity of this finished product. This finished product has not been tested to determine individual toxicological/ecological limits. Great Caution should be taken to prevent release to the environment. See Section 13 for further information.

13. DISPOSAL CONSIDERATIONS

Disposal

Preferred method of disposal includes incineration under controlled conditions in accordance with all local and national laws and regulations. The generation of waste should be avoided or minimized wherever possible. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or watercourses. Waste must be disposed of in accordance with federal, state and local environmental control regulations. This material, when properly mixed and cured with its resin component at the proper mix ratio, may be safely landfilled.

Contaminated packaging

Empty containers can only be disposed of when the remaining product adhering to the container walls has been removed. Hazard warning labels should be removed from the container only after it has been properly emptied.

14. TRANSPORT INFORMATION

Land/Air/Sea/Rail

Proper Shipping Name: Amines, Liquid, Corrosive, NOS (Diethylenetriamine)
 UN Number: UN-2735
 Hazard Class: 8
 Packing Group: II

15. REGULATORY INFORMATION

U.S Regulations

US TSCA:

This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C. 2601 et. seq. This product contains a chemical substance that is subject to export notification under Section 12(b) of the Toxic Substances Control Act, 15 U.S.C. 2601 et. seq.

Toxic Substances Control Act (TSCA) 12(b) Components:

None Known

OSHA Hazard Communication Standard (29CFR1910.1200) hazard class(es):

Corrosive, Toxic by Skin Absorption, Dangerous for the Environment.

EPA SARA Title III section 302 (40CFR370) Hazard Class:

Immediate Health Hazard, Delayed Health Hazard

EPA SARA Title III section 313 (40 CFR 372) Toxic Chemicals above "de minimus" levels:

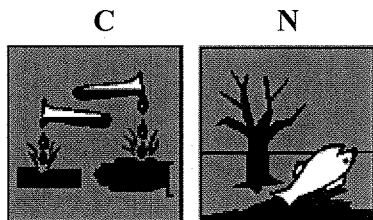
4,4-ISOPROPYLIDENEDIPHENOL (CAS# 80-05-7), 18%

U.S. State Regulations

CAIFORNIA PROP 65: This product contains the following substance known to the State of California to cause cancer:
 None Known

EEC MARKING AND LABELLING

Hazard symbol(s):



EU Labeling Classification: C-Corrosive; N-Harmful to the Environment

Risk Phrases: R20/21/22: Harmful by inhalation, in contact with skin and if swallowed
 R34: Causes burns
 R40: Limited evidence of a carcinogenic effect
 R41: Risk of serious damage to eyes
 R43: May cause sensitization by skin contact

R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

EINECS Status: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) in compliance with Council Directive 67/548/EEC and its amendments. CHIP3 Regulations have been applied and meets all requirements.

CANADIAN REGULATIONS

WHMIS Classification: D2A - respiratory tract sensitizer
D2B - skin sensitizer
E - corrosive to metal or skin

WHMIS Symbol(s):



Safety Phrases: S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection
S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

DSL: Components of this product have been reported to Environment Canada in accordance with subsection 25 of the Canadian Environmental Protection Act and are included on the Domestic Substances List.

HAZARDOUS PRODUCTS ACT INFORMATION

This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14):

DIETHYLENETRIAMINE (CAS# 111-40-0) 33%
BISPHENOL A (CAS# 80-05-7) 18%

16. OTHER INFORMATION

No Other Information

To the best of our knowledge, the information contained herein is accurate. Final determination of the suitability of any material is the sole responsibility of the users. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.
