

Material Safety Data Sheet

1. Product and Company Identification

Product Name: Raven 171 - Part A

Product Type: Epoxy Resin

Raven Lining Systems

13105 East 61st Street South, Suite A

Broken Arrow, OK 74012

www.ravenlining.com

Company Phone: (918) 615-0020

Company Toll Free: (800) 324-2810

24 hour Emergency Phone USA: (800) 424-9300 CHEMTREC

24 hour Emergency International: (703) 527-3887 CHEMTREC

2. Composition / Information on Ingredients

Component	CAS #	% by Wt.
Epoxy Resin	25068-38-6	80 - 100%
Aliphatic Epoxy Resin	68609-97-2	0 - 20%

3. Hazards Identification

Emergency Overview

Color: Clear

Physical State: Liquid, medium paint consistency

Odor: Mild

Hazards of Product:

WARNING! May cause allergic skin reaction. May cause eye irritation. May cause skin irritation.

This product is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential Health Effects: See section 11 for more information.

Likely Routes of Exposure: Eye and skin contact, inhalation, ingestion.

Eye Contact: May cause eye irritation. Corneal injury is unlikely.

Skin Contact: Prolonged contact may cause skin irritation with local redness. Repeated exposure may cause skin irritation.

Skin Absorption: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

Skin Sensitization: May cause allergic skin reaction in susceptible individuals.

Inhalation: Vapors are unlikely due to physical properties.

Ingestion: Single dose oral toxicity is low. No hazards anticipated from ingestion incidental to industrial exposure.

Medical Conditions Aggravated by Exposure: Except for skin sensitization, repeated exposures to low molecular weight epoxy resins of this type are not anticipated to cause any significant adverse effects.

4. First Aid Measures

Eye Contact: Flush with large quantities of water for at least 15 minutes. Consult a physician.

Skin Contact: Wash thoroughly with soap and flowing water.

Inhalation: Remove to fresh air if effects occur. Consult a physician.

Ingestion: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

5. Fire Fighting Measures

Flammable Properties: Product is not considered a fire hazard, but will burn if ignited.

NFPA Flammability Class: III B (Combustible liquid)

Suitable Extinguishing Media: Carbon dioxide, dry chemical, water fog or fine spray. Alcohol resistant foams are preferred, general purpose synthetic foams or protein foams may function, but will not be as effective.

Unsuitable Extinguishing Media: Do not use direct water stream, as it may spread fire.

Products of Combustion: Thermal decomposition in the presence of air may yield carbon monoxide, carbon dioxide, phenolics, acids, aldehydes, ketones and other unidentified toxic and/or irritating compounds.

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Protection of Firefighters: Wear positive pressure self-contained breathing apparatus (SCBA) and approved protective clothing (helmet, coat, trousers, boots and gloves). If contact is likely, use full chemical resistant fire fighting clothing with SCBA.

6. Accidental Release Measures

Personal Precautions: Put on appropriate personal protective equipment (see section 8).

Environmental Precautions: Prevent spilled material from contact with soil, drains and sewers.

Methods for Containment: Contain by diking with sand, earth or other suitable material.

Methods for Clean-up: Absorb spill with an inert material, place into labeled waste container for disposal.

7. Handling and Storage

Handling: Wear appropriate personal protective equipment (see section 8). Avoid contact with skin, eyes or clothing. Do not breathe vapor or mist. Do not ingest. Avoid prolonged or repeated contact with skin. May cause allergic skin reaction, persons with a history of skin sensitization should not be employed in any process in which this product is used. Wash thoroughly with soap and water after handling. Do not handle or store near flame, heat or strong oxidants. Keep away from sources of ignition and hot metal surfaces.

Storage: Store original unopened containers in a sheltered area between 60°F and 80°F (15°C and 27°C) at atmospheric pressure. Do not store in direct sunlight. Keep containers closed when not in use.

8. Exposure Controls / Personal Protection

Exposure Guidelines

Component	OSHA – PEL		ACGIH – TLV	
	TWA	STEL	TWA	STEL
Epoxy Resin	N.E.	N.E.	N.E.	N.E.
Aliphatic Epoxy Resin	N.E.	N.E.	N.E.	N.E.

Engineering Controls: General mechanical ventilation is sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

Eye/face Protection: Use chemical safety glasses, splash-proof eye goggles or goggles with full faceshield.

Skin Protection: Use nitrile or other impermeable chemical resistant gloves to prevent skin irritation. If potential for skin contact is present, wear impervious, long-sleeved, body covering clothing and rubber boots.

Respiratory Protection: Respiratory protection should not be needed. If exposure may or does exceed occupational exposure limits, respiratory irritation is experienced, or during spray application, use a properly fitted MSHA/NIOSH approved respirator fitted with organic vapor cartridges. In addition, spray application may require the use of paint pre-filters. If sanding or grinding on cured material, use above respirator fitted with HEPA filters or a dust mask.

General Hygiene Considerations: Wash thoroughly after handling and before eating, drinking or smoking.

9. Physical and Chemical Properties

Color:	Clear
Odor:	Mild
Odor Threshold:	Not determined
Physical State:	Liquid
pH:	Not determined
Melting Point:	Not determined
Boiling Point:	> 212 deg F (100 deg C)
Flash Point, Closed Cup method:	> 212 deg F (100 deg C)
Evaporation Rate:	Not determined
Flammability (solid, gas):	Not applicable to liquids
Lower Flammability Limit:	Not determined
Upper Flammability Limit:	Not determined

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Vapor Pressure:	Not determined
Vapor Density:	Not determined
Specific Gravity:	1.1 - 1.2
Solubility in Water:	Insoluble
Partition Coefficient, n-octanol/water:	Not determined
Auto-ignition Temperature:	Not determined
Decomposition Temperature:	Not determined

10. Stability and Reactivity

Chemical Stability: Stable under recommended storage conditions (see Section 7).

Conditions to Avoid: Avoid temperatures above 450 deg F (230 deg C), potential violent decomposition may occur.

Incompatible Materials: Strong acids, bases, or oxidizing agents. Avoid unintended contact with amines.

Hazardous Decomposition Products: Thermal decomposition in the presence of air may yield carbon monoxide, carbon dioxide, phenolics, acids, aldehydes and other unidentified toxic and/or irritating compounds.

Possibility of Hazardous Reactions: Will not occur by itself.

11. Toxicological Information

Acute Effects

Component	Inhalation		Oral		Skin	
	LC50	Species	LD50	Species	LD50	Species
Epoxy Resin	N.D.		>2000 mg/kg	Rat	20 g/kg	Rabbit
Aliphatic Epoxy Resin	N.E.		17.1 g/kg	Rat	>4.5 g/kg	Rabbit

Inhalation: No relevant information found.

Eye Irritation: (Rabbit) Slight irritation.

Skin Irritation/Corrosion: (Rabbit) Moderate irritation.

Sensitization, Skin: May cause allergic skin reaction in susceptible humans.

Repeated Dose Toxicity: Except for skin sensitization, repeated exposures to low molecular weight epoxy resins of this type are not anticipated to cause any significant adverse effects.

Chronic Effects

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Fertility Effects: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

12. Ecological Information

Ecotoxicity: Toxicity to aquatic species occurs at concentrations above material's water solubility.

Persistence/Degradability: 28-day biodegradation = 12%; Material is not considered readily biodegradable.

Bioaccumulation/Accumulation: Bioconcentration potential is moderate.

Mobility in Environment: Potential for mobility in soil is low.

Other Adverse Effects: No known significant effects or critical hazards.

13. Disposal Considerations

Waste Disposal Methods: Dispose of in accordance with federal, state and local regulations.

The preferred method for disposal of uncontaminated product is by incineration or other thermal destruction device using a licensed waste disposal contractor.

14. Transport Information

Regulatory Information	UN/NA number	Proper shipping name	Classes/ PG
DOT (ground)		Not regulated	
IMDG (water)		Not regulated	
IATA (air cargo)		Not regulated	

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TDG (ground) Not regulated

15. Regulatory Information

US Federal

OSHA: This MSDS has been prepared in compliance with the federal OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is considered to be a hazardous chemical under that standard. The identity of any remaining proprietary ingredient(s) may be withheld as a trade secret, pursuant to the standard. HCS Classification: Irritating material, Sensitizing material.

Resource Conservation and Recovery Act (RCRA): Not a hazardous waste under RCRA (40 CFR 261).

SARA Title III Rules:

Section 302 Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances:

<u>Component</u>	<u>CERCLA/SARA RQ</u>	<u>SARA EHS TPQ</u>
none		

Section 311/312 Hazard Classifications:

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Section 313 ingredients: To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

TSCA Section 12(b) - Export Notification: This product is not known to contain any chemicals that are subject to a Section 12(b) export notification.

Canadian WHMIS Classification: D-2B: Material causing other toxic effects (Toxic).

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

US State Regulations

The Listing requirements of the Right to Know legislation vary by state. All information for these states can be derived from the listing of components in section 2 of this MSDS.

International Regulations

<u>Country</u>	<u>Regulatory list</u>	<u>Notification status of all the components contained in this product</u>
USA	TSCA 8(b)	Listed
Canada	DSL	Listed
EU	EINECS	Listed on EINECS inventory or exempted as "no-longer polymer"
Australia	AICS	Listed
Japan	METI	Listed
South Korea	KECL	Listed
Philippines	PICCS	Listed
China	SEPA	Listed

16. Other Information

NFPA 704 Hazard Rating: Health: 2 Flammability: 1 Reactivity: 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Legend

ACGIH American Conference of Governmental Industrial Hygienists, Inc.
CAS No. Chemical Abstract Service Registry Number
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act, AKA "Superfund"
DOT Department of Transportation (USA)
HCS OSHA Hazard Communication Standard (29 CFR 1910.1200)
IARC International Agency for Research on Cancer
IATA International Air Transport Association
ICAO International Civil Aviation Organization

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IMO	International Maritime Organization
IMDG	International Maritime Dangerous Goods
MSHA	Mine Safety and Health Administration
N.A.	Not Applicable
N.D.	Not Determined
N.E.	Not Established
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration (USA)
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986 (40 CFR)
STEL	Short Term Exposure Limit (15 minute Time Weighted Average)
TDG	Canada Transport of Dangerous Goods regulations
TLV	Threshold Limit Value
TWA	Time Weighted Average
WHMIS	Canada Workplace Hazardous Materials Information System

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Material Safety Data Sheet

1. Product and Company Identification

Product Name: Raven 171 - Part B
Product Type: Epoxy Curing Agent

Raven Lining Systems
13105 East 61st Street South, Suite A
Broken Arrow, OK 74012
www.ravenlining.com

Company Phone: (918) 615-0020
Company Toll Free: (800) 324-2810
24 hour Emergency Phone USA: (800) 424-9300 CHEMTREC
24 hour Emergency International: (703) 527-3887 CHEMTREC

2. Composition / Information on Ingredients

Component	CAS #	% by Wt.
Phenalkamine Curing Agent	868765-93-9	45 - 65%
Cashew Nutshell Liquids	232265-65-5	15 - 25%
Alkylphenol	84852-15-3	5 - 15%
Polyoxyalkyleneamine	9046-10-0	5 - 15%
Benzyl Alcohol	100-51-6	1 - 5%
2,4,6-tris(Dimethylaminomethyl) Phenol	90-72-2	1 - 5%
Diisopropylbiphenyl	69009-90-1	1 - 5%
Aliphatic Amine	1477-55-0	1 - 5%

3. Hazards Identification

Emergency Overview

Color: Amber

Physical State: Liquid, medium paint consistency

Odor: Ammonia-like

Hazards of Product:

WARNING! May cause skin irritation. Severe eye irritant. May cause respiratory irritation. Harmful if swallowed.

This product is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential Health Effects: See section 11 for more information.

Likely Routes of Exposure: Eye and skin contact, inhalation, ingestion.

Eye Contact: Severe eye irritant. May cause burns. May cause blindness.

Skin Contact: Possible skin irritant. May cause injury to skin following prolonged or repeated contact (such as rash or irritation).

Skin Absorption: Product may be absorbed through the skin and cause nausea, headache, dizziness and general discomfort

Skin Sensitization: Repeated exposure may cause sensitization.

Inhalation: Harmful if inhaled. May cause irritation of nose, throat and lung. May cause central nervous system effects, such as nausea, headache, dizziness, breathing difficulties. Severe overexposure to aerosol mist may result in respiratory failure.

Ingestion: Harmful if swallowed. May cause nausea, headache, vomiting and bleeding of the gastrointestinal tract.

Medical Conditions Aggravated by Exposure: Eye disease, skin disorders and allergies, chronic respiratory disease, asthma, neurological disorders.

4. First Aid Measures

Eye Contact: Hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes. Seek medical care.

Skin Contact: Wash thoroughly with soap and flowing water. Remove contaminated clothing.

Inhalation: Move to fresh air. If breathing has stopped, give assisted respiration while seeking medical care. Supplemental oxygen may be indicated.

Ingestion: If person is conscious, administer 3-4 glasses of milk or water. Do not induce vomiting. Seek medical care.

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5. Fire Fighting Measures

Flammable Properties: Product is not considered a fire hazard, but will burn if ignited.

NFPA Flammability Class: III B (Combustible liquid)

Suitable Extinguishing Media: Alcohol resistant foam, carbon dioxide, dry chemical or water fog.

Unsuitable Extinguishing Media: Do not use direct water stream, as it may spread fire.

Products of Combustion: Thermal decomposition in the presence of air may yield carbon monoxide, carbon dioxide, ammonia, nitrogen oxides and other unidentified toxic and/or irritating compounds.

Protection of Firefighters: Wear positive pressure self-contained breathing apparatus (SCBA) and approved protective clothing (helmet, coat, trousers, boots and gloves). If contact is likely, use full chemical resistant fire fighting clothing with SCBA.

6. Accidental Release Measures

Personal Precautions: Put on appropriate personal protective equipment (see section 8).

Environmental Precautions: Prevent spilled material from contact with soil, drains and sewers.

Methods for Containment: Contain by diking with sand, earth or other suitable material.

Methods for Clean-up: Absorb spill with an inert material, place into labeled waste container for disposal.

7. Handling and Storage

Handling: Wear appropriate personal protective equipment (see section 8). Avoid contact with skin, eyes or clothing. Do not breathe vapor or mist. Do not ingest. Avoid prolonged or repeated contact with skin. May cause allergic skin reaction, persons with a history of skin sensitization should not be employed in any process in which this product is used. Wash thoroughly with soap and water after handling. Do not handle or store near flame, heat or strong oxidants. Keep away from sources of ignition and hot metal surfaces.

Storage: Store original unopened containers in a sheltered area between 60°F and 80°F (15°C and 27°C) at atmospheric pressure. Do not store in direct sunlight. Keep containers closed when not in use.

8. Exposure Controls / Personal Protection

Exposure Guidelines

Component	OSHA – PEL		ACGIH – TLV	
	TWA	STEL	TWA	STEL
Phenalkamine Curing Agent	N.E.	N.E.	N.E.	N.E.
Cashew Nutshell Liquids	N.E.	N.E.	N.E.	N.E.
Alkylphenol	N.E.	N.E.	N.E.	N.E.
Polyoxyalkyleneamine	N.E.	N.E.	N.E.	N.E.
Benzyl Alcohol	N.E.	N.E.	N.E.	N.E.
2,4,6-tris(Dimethylaminomethyl) Phenol	N.E.	N.E.	N.E.	N.E.
Diisopropylbiphenyl	N.E.	N.E.	N.E.	N.E.
Aliphatic Amine	N.E.	0.1 mg/m ³	N.E.	0.1 mg/m ³

Engineering Controls: General mechanical ventilation is sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

Eye/face Protection: Use chemical safety glasses, splash-proof eye goggles or goggles with full faceshield.

Skin Protection: Use nitrile or other impermeable chemical resistant gloves to prevent skin irritation. If potential for skin contact is present, wear impervious, long-sleeved, body covering clothing and rubber boots.

Respiratory Protection: Respiratory protection should not be needed. If exposure may or does exceed occupational exposure limits, respiratory irritation is experienced, or during spray application, use a properly fitted MSHA/NIOSH approved respirator fitted with organic vapor cartridges. In addition, spray application may require the use of paint pre-filters. If sanding or grinding on cured material, use above respirator fitted with HEPA filters or a dust mask.

General Hygiene Considerations: Wash thoroughly after handling and before eating, drinking or smoking.

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9. Physical and Chemical Properties

Color:	Amber
Odor:	Ammonia-like
Odor Threshold:	Not determined
Physical State:	Liquid
pH:	Not determined
Melting Point:	Not determined
Boiling Point:	> 212 deg F (100 deg C)
Flash Point, Closed Cup method:	> 212 deg F (100 deg C)
Evaporation Rate:	Not determined
Flammability (solid, gas):	Not applicable to liquids
Lower Flammability Limit:	Not determined
Upper Flammability Limit:	Not determined
Vapor Pressure:	Not determined
Vapor Density:	Not determined
Specific Gravity:	0.9 - 1.1
Solubility in Water:	Negligible
Partition Coefficient, n-octanol/water:	Not determined
Auto-ignition Temperature:	Not determined
Decomposition Temperature:	Not determined

10. Stability and Reactivity

Chemical Stability: Stable under recommended storage conditions (see Section 7).

Conditions to Avoid: Avoid temperatures above 450 deg F (230 deg C), potential violent decomposition may occur.

Incompatible Materials: Strong acids, bases, or oxidizing agents. Avoid unintended contact with epoxies.

Hazardous Decomposition Products: Thermal decomposition in the presence of air may yield carbon monoxide, carbon dioxide, ammonia, nitrogen oxides and other unidentified toxic and/or irritating compounds.

Possibility of Hazardous Reactions: Will not occur by itself.

11. Toxicological Information

Acute Effects

Component	Inhalation		Oral		Skin	
	LC50	Species	LD50	Species	LD50	Species
Phenalkamine Curing Agent	N.E.		N.E.		N.E.	
Cashew Nutshell Liquids	N.E.		N.E.		N.E.	
Alkylphenol	N.E.		N.E.		N.E.	
Polyoxyalkyleneamine	N.E.		2.885 g/kg	Rat	2.98 g/kg	Rabbit
Benzyl Alcohol	>4 mg/l	Rat	>1,200 mg/kg	Rat	2,000 mg/kg	Rabbit
2,4,6-tris(Dimethylamino-methyl) Phenol	N.E.		>2,000 mg/kg	Rat	>1,200 mg/kg	Rabbit
Diisopropylbiphenyl	N.E.		N.E.		N.E.	
Aliphatic Amine	N.E.		1.03 g/kg	Rat	N.E.	

Inhalation: No data available on the product.

Eye Irritation: Some components of this product have been shown to be a severe eye irritant (Rabbit).

Skin Irritation/Corrosion: This product has been evaluated per DOT criteria and is determined to be below corrosive limits. Some minor components of this product have been shown to be corrosive (Rabbit).

Sensitization, Skin: Some components of this product have been seen to be a skin sensitizer (human).

Chronic Effects

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Fertility Effects: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

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12. Ecological Information

Ecotoxicity: No data available on the product.

Toxicity to Fish – components

<u>Component</u>	<u>LC50</u>	<u>Exposure time</u>	<u>Species</u>
Polyoxyalkyleneamine	>220 mg/l	96 hours	Fish
Benzyl Alcohol	460 mg/l	96 hours	Fathead minnow
2,4,6-tris(Dimethylaminomethyl) Phenol	180-240 mg/l	96 hours	Rainbow trout

Toxicity to Daphnia – components

<u>Component</u>	<u>EC50</u>	<u>Exposure time</u>	<u>Species</u>
Benzyl Alcohol	55 mg/l	24 hours	Daphnia magna

Toxicity to Algae – components

<u>Component</u>	<u>IC50</u>	<u>Exposure time</u>	<u>Species</u>
Benzyl Alcohol	700 mg/l	72 hours	Algae

Persistence/Degradability: No data available on the product.

Bioaccumulation/Accumulation: No data available on the product.

Mobility in Environment: No data available on the product.

Other Adverse Effects: No known significant effects or critical hazards.

13. Disposal Considerations

Waste Disposal Methods: Dispose of in accordance with federal, state and local regulations.

The preferred method for disposal of uncontaminated product is by incineration or other thermal destruction device using a licensed waste disposal contractor.

14. Transport Information

<u>Regulatory Information</u>	<u>UN/NA number</u>	<u>Proper shipping name</u>	<u>Classes/ PG</u>
DOT (ground)		Not regulated	
IMDG (water)		Not regulated	
IATA (air cargo)		Not regulated	
TDG (ground)		Not regulated	

15. Regulatory Information

US Federal

OSHA: This MSDS has been prepared in compliance with the federal OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is considered to be a hazardous chemical under that standard. The identity of any remaining proprietary ingredient(s) may be withheld as a trade secret, pursuant to the standard. HCS Classification: Acute health hazard, Sensitizing material.

Resource Conservation and Recovery Act (RCRA): Not a hazardous waste under RCRA (40 CFR 261).

SARA Title III Rules:

Section 302 Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances:

<u>Component</u>	<u>CERCLA/SARA RQ</u>	<u>SARA EHS TPQ</u>
none		

Section 311/312 Hazard Classifications:

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Section 313 ingredients: To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

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TSCA Section 12(b) - Export Notification: This product is not known to contain any chemicals that are subject to a Section 12(b) export notification.

Canadian WHMIS Classification: D-2A: Very Toxic Material causing other Toxic Effects.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

US State Regulations

The Listing requirements of the Right to Know legislation vary by state. All information for these states can be derived from the listing of components in section 2 of this MSDS.

International Regulations

<u>Country</u>	<u>Regulatory list</u>	<u>Notification status of all the components contained in this product</u>
USA	TSCA 8(b)	Listed
Canada	DSL	Unknown
EU	EINECS	Unknown
Australia	AICS	Unknown
Japan	METI	Unknown
South Korea	KECL	Unknown
Philippines	PICCS	Unknown
China	SEPA	Unknown

16. Other Information

NFPA 704 Hazard Rating: Health: 2 Flammability: 2 Reactivity: 1
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard
Legend

ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
CAS No.	Chemical Abstract Service Registry Number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, AKA "Superfund"
DOT	Department of Transportation (USA)
HCS	OSHA Hazard Communication Standard (29 CFR 1910.1200)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IMDG	International Maritime Dangerous Goods
MSHA	Mine Safety and Health Administration
N.A.	Not Applicable
N.D.	Not Determined
N.E.	Not Established
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration (USA)
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986 (40 CFR)
STEL	Short Term Exposure Limit (15 minute Time Weighted Average)
TDG	Canada Transport of Dangerous Goods regulations
TLV	Threshold Limit Value
TWA	Time Weighted Average
WHMIS	Canada Workplace Hazardous Materials Information System

Disclaimer

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Material Safety Data Sheet

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