

MM Expanding Impregnated Seismic Foam

Expansion Joint System

SAFETY DATA SHEET

MM Systems Corp. • 50 MM Way, Pendergrass, GA 30567 • 866.506.6929 • www.mmsystems.com

The products listed below along with their corresponding Safety Data Sheets (SDS) are contained in this document:

- Expanding Impregnated Seismic Foam
- MM High Strength Epoxy
 - Part A
 - Part B
- Pecora 301NS Traffic Grade Sealant

MM SYSTEMS EIS SERIES - EXPANDING IMPREGNATED SEISMIC FOAM

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations
Revision Date: 07/14/2015 Date of issue: 07/14/2015

Version: 1.0 SMS-0016 Rev.B

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Article

Product Name: EIS SERIES

1.2. Intended Use of the Product

Use of the substance/mixture: Sealant. For professional use only.

1.3. Name, Address, and Telephone of the Responsible Party

Company

UU o #

UU ‡ h \ " .

Pe 8° ..

T .. 800-848-1120

www. com

1.4. Emergency Telephone Number

Emergency Number : 800-848-1120

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Classification (GHS-US)

Not classified

2.2. Label Elements

GHS-US Labeling

No labeling applicable

2.3. Other Hazards

This product is exempt from OSHA hazardous communications regulations. It is defined as an "article" under 29CFR 1910.1200 (c). The data presented is intended to guide the user in the safe handling and use of the product. Within the meaning of the OSHA Hazard Communication Standard [29 CFR 1910.1200]: this product is considered a manufactured article and is not considered a hazard when used in a manner which is consistent with the labeled directions.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Name	Product Identifier	%	Classification (GHS-US)
-@o	(CAS No) N/A Article	100	Not classified

3.2. Mixture

Not applicable

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

First-aid Measures After Inhalation: When symptoms occur: go into open air and ventilate suspected area. If you feel unwell, seek medical advice.

First-aid Measures After Skin Contact: Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Obtain medical attention if irritation develops or persists.

First-aid Measures After Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

First-aid Measures After Ingestion: Rinse mouth. Do NOT induce vomiting. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/Injuries: None expected under normal conditions of use.

Symptoms/Injuries After Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use.

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Symptoms/Injuries After Skin Contact: None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/Injuries After Eye Contact: For particulates and dust: May cause slight irritation.

Symptoms/Injuries After Ingestion: Not expected to be a primary route of exposure. Ingestion may cause adverse effects.

Chronic Symptoms: None known.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product SDS at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire. Carbon dioxide, dry chemical, foam, water spray, fog.

Unsuitable Extinguishing Media: Do not use water jet. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not considered flammable but may burn at high temperatures.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers. Do not breathe fumes from fires or vapors from decomposition.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

6.1.1. For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area. Evacuate unnecessary personnel.

6.2. Environmental Precautions

None known.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Contain and collect as any solid.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see item 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Precautions for Safe Handling: Do not handle until all safety precautions have been read and understood.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Products: Strong acids. Strong bases. Strong oxidizers.

7.3. Specific End Use(s)

Sealant. For professional use only.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

EIS SERIES

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8.2. Exposure Controls

- Appropriate Engineering Controls** : Ensure all national/local regulations are observed. Avoid dust production. Provide adequate ventilation.
- Personal Protective Equipment** : Not generally required. The use of personal protective equipment may be necessary as conditions warrant.
- Hand Protection** : Chemically resistant gloves are recommended, but not required.
- Eye Protection** : In case of dust production: protective goggles.
- Skin and Body Protection** : Wear appropriate personal protective equipment.
- Respiratory Protection** : The following applies to the product if it is cut, sanded or altered in such a way that excessive and/or significant particulates and/or dusts may be generated: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.
- Consumer Exposure Controls** : Do not eat, drink or smoke during use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

- Physical State** : Solid
- Appearance** : Black/Dark Gray Open Cell Foam
- Odor** : Characteristic Odor
- Odor Threshold** : No data available
- pH** : No data available
- Evaporation Rate** : No data available
- Melting Point** : 300 °F (148.89 °C)
- Freezing Point** : No data available
- Boiling Point** : No data available
- Flash Point** : No data available
- Auto-ignition Temperature** : No data available
- Decomposition Temperature** : No data available
- Flammability (solid, gas)** : No data available
- Vapor Pressure** : No data available
- Relative Vapor Density at 20 °C** : No data available
- Relative Density** : No data available
- Specific Gravity** : 0.91
- Solubility** : Water: Not soluble
- Partition Coefficient: N-Octanol/Water** : No data available
- Viscosity** : No data available

9.2. Other Information No additional information available

SECTION 10: STABILITY AND REACTIVITY

- 10.1. Reactivity:** Hazardous reactions will not occur under normal conditions.
- 10.2. Chemical Stability:** Stable at standard temperature and pressure.
- 10.3. Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4. Conditions to Avoid:** Sparks, heat, open flame and other sources of ignition. Incompatible materials.
- 10.5. Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers.
- 10.6. Hazardous Decomposition Products:** Under fire conditions this material may produce hazardous carbon dioxide (CO₂), carbon monoxide (CO), hydrocarbons, and smoke.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information On Toxicological Effects

- Acute Toxicity:** Not classified
- Skin Corrosion/Irritation:** Not classified
- Serious Eye Damage/Irritation:** Not classified
- Respiratory or Skin Sensitization:** Not classified
- Germ Cell Mutagenicity:** Not classified
- Carcinogenicity:** Not classified

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Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use.

Symptoms/Injuries After Skin Contact: None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/Injuries After Eye Contact: For particulates and dust: May cause slight irritation.

Symptoms/Injuries After Ingestion: Not expected to be a primary route of exposure. Ingestion may cause adverse effects.

Chronic Symptoms: None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity No additional information available

12.2. Persistence and Degradability

EIS SERIES	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

EIS SERIES	
Bioaccumulative Potential	Not established.

12.4. Mobility in Soil No additional information available

12.5. Other Adverse Effects

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, and international regulations.

SECTION 14: TRANSPORT INFORMATION

14.1. In Accordance with DOT Not regulated for transport

14.2. In Accordance with IMDG Not regulated for transport

14.3. In Accordance with IATA Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations Neither this product nor its chemical components appear on any US federal lists.

15.2 US State Regulations Neither this product nor its chemical components appear on any US state lists.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 07/14/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SDS US (GHS HazCom)

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

SECTION 1: Identification of the substance/mixture and of the supplier

Product name: MM High Strength Epoxy Part A

Manufacture/Supplier Trade Name:

Manufacture/Supplier Article Number:

Recommended uses of the product and restrictions on use: Concrete patching/bonding

Manufacturer Details:

MM Systems Corporation

50 MM Way

Pendergrass, GA 30567

(706)824-7500

Emergency telephone number:

Infotrac 800-535-5053

SECTION 2: Hazards Identification

Classification of the substance or mixture:



Irritant

Skin irritation, category 2

Eye irritation, category 2A

Skin sensitization, category 1



Environmentally Damaged

Chronic hazards to the aquatic environment, category 2

Signal word: Warning

Hazard statement:

Harmful if swallowed

Causes skin irritation

Causes serious eye irritation

Toxic to aquatic life with long lasting effects

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

Precautionary statements:

Keep container tightly closed

If medical advice is needed, have product container or label at hand

Keep out reach of children

Read label before use

Avoid breathing dust/gas/mist/vapors/spray

Wash skin thoroughly after handling

Contaminated work clothing should not be allowed out of the workplace

Avoid release to the environment

Wear protective gloves/protective clothing/eye protective/face protection

IF ON SKIN: Wash with soap and water

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do.

Continue rinsing

If skin irritation or a rash occurs. Get medical advice/attention

Take off contaminated clothing and wash before reuse

Collect spillage

Store locked up

Dispose of contents and container as instructed in Section 13

Other Non-GHS Classification: none

SECTION 3: Composition/information on ingredients

Ingredients

CAS 25068-38-6	BISPHENOL-a-(EPICHLORHYDRIN) AND EPOXY RESIN	20-30%
CAS 2461-15-6	[[[2-ETHYLHEXYL]OXY]METHYL]OXIRANE	3-6%
CAS 13463-67-7	Titanium dioxide	2-3%
CAS 14808-60-7	Silicon dioxide	50-70%
CAS 12174-11-7	Attapulgite clay	6-8%

Percentages are by weight

SECTION 4: First aid measures

Description of first aid measures

After inhalation:

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Loosen clothing and place exposed in a comfortable position.

After skin contact:

Wash hands and exposed skin with soap and plenty of water.

After eye contact:

Seek medical attention. Protect unexposed eye. Flush exposed eye gently using water for 15-20 minutes

Remove contact lenses while rinsing

After swallowing:

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention

Most important symptoms and effects, both acute and delayed:

Shortness of breath, Headache, Nausea, Dizziness, Irritation-all routes of exposure. Acute pneumoconiosis or silicosis from overwhelming exposure to crystalline silica dust has occurred. Lungs may be affected by repeated or prolonged exposure to fibers, resulting in fibrosis. This substance is possible carcinogenic to humans. Persons with impaired respiratory function may be more susceptible to the effects of this substance. Smoking can increase the risk of lung injury.

Indication of an 7y immediate medical attention and special treatment needed

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing agents:

Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam

Unsuitable extinguishing agents: None

Advice for firefighter:

Protective equipment: Wear protective eyewear, gloves, and clothing. Refer to section

Additional information (precautions)

Avoid inhaling gases, fumes, dust, mist, and aerosols. Avoid contact with skin, eyes and clothing

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:
Ensure adequate ventilation. Ensure that air-handling systems are operational

Environmental precautions:
Should not be released into environment. Prevent from reaching drains, sewer, or waterway

Methods and material for containment and cleaning up:
Soak up with inert absorbent material and dispose of as hazardous waste. Wear protective eyewear, gloves, and clothing. Refer to section 8. Always obey local regulations. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Containerize for disposal. Refer to section 13. Keep in suitable closed containers for disposal.
Reference to other sections: none

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling;
Avoid contact with skin, eyes, and clothing. Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substance.

Conditions for safe storage, including any incompatibilities:
Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage. Provide ventilation for containers. Keep container tightly sealed, Store away from incompatible materials

SECTION 8: Exposure controls/personal protection

Control Parameters: 13463-67-7, Titanium dioxide, ACGIH TLV: 10, OSHA PEL: 10

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls To keep the airborne concentrations of vapor and mist below the applicable workplace exposure limits indicated above. (Occupational Exposure-OELS)

Respiratory protection: Not required under normal conditions of use. Where risk Assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

Protection of skin:	(US) or type P3 (EN143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment. Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer service. Avoid skin contact with used gloves. Wear protective clothing.
Eye protection:	Faceshield (8-inch minimum) with tightly fitting safety goggles are appropriate eyewear. Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU)
General hygienic measures:	Perform routine housekeeping. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing. Before rewearing wash contaminated clothing.

SECTION 9: Physical and chemical properties

Appearance (physical State, color)	white, gritty paste	Explosion limit lower	Not determined
Odor:	Slight sweet odor	Explosion limit upper	Not determined
Odor threshold:	Not Determined	Vapor pressure at 20⁰	Not determined
PH-value:	Not Determined	Vapor density	Not determined
Melting/Freezing Point:	Not Determined	Relative density	1.85
Boiling point/Range:	Not Determined	Solubilities	Insoluble in water
		Partition coefficient (n-octanol/water)	Not determined
Flash point(closed cup):	Not Determined	Auto/self-ignition Temperature	Not determined
Evaporation rate:	Not Determined	Decomposition Temp	Not determined
Flammability (solid Gaseous)	Not Determined	Viscosity	a. Kinematic Not determined b. Dynamic: Not determined
Density at 20⁰	Not Determined		

SECTION 10: Stability and reactivity

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

Reactivity:

Nonreactive under normal conditions

Chemical stability:

Stable under normal conditions

Possible hazardous reactions:

None under normal conditions

Conditions to avoid:

Incompatible materials

Incompatible materials:

Acids, Bases, Oxidizing agents, Hydrogen fluoride, Acetylene and ammonia

Hazardous decomposition products:

25068-38-6: Strong oxidizing, acids, amines, and bases

SECTION 11: Toxicological information
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Acute Toxicity:

Oral:

25068-38-6 LD50 Oral-rat-13,600 mg/kg

2461-15-6 LD50 Oral-rat-7,800 mg/kg

Inhalation:

N/A

Chronic Toxicity:

Inhalation:

May cause respiratory irritation

Skin corrosion/irritation:

1408-60-7

Serious eye damage/irritation:

14808-60-7

Respiratory or skin sensitization:

May cause skin sensitization in some individuals

Carcinogenicity:

N/A

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

Reproductive Toxicity: No additional information

STOT-single and repeated exposure:

2461-15-6: Inhalation-May cause respiratory irritation

Additional toxicological information: No additional information

SECTION 12: Ecological information

Ecotoxicity:

2461-15-6: LC50-Carassius(goldfish)-14mg/l-24 h

13463-67-7: LC50-Other fish->1,000 mg/l-96 h

13463-67-7: EC50-Daphnia magna(Water flea)->1,000 mg/l-48 h

Persistence and degradability:

25068-38-6: Result: According to the results of test of biodegradability this product is not readily biodegradable. 1217-11-7: long term degradation products may arise.

Bioaccumulative potential: No additional information

Mobility in soil: no additional information

Other adverse effects: no additional information

SECTION 13: Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as usual product. Product or containers must not be disposed together with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION 14: Transport information

US DOT

Not-Regulated

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

UN Number: 3082
ADR,AND,DOT,IMDG,IATA

Limited Quantity : NONE

Bulk: Non Bulk

RQ (if applicable): none
Proper shipping name: Environmentally
Hazardous substance, liquid, n.o.s.
Hazardous substance, liquid, n.o.s.
(reaction product: bisphenol-A-
(epichlorhydrin) and epoxy resin(number
Average molecular weight <=700)

RQ (if applicable): none
Proper shipping name: Environmentally
Hazardous substance, liquid, n.o.s.
Hazardous substance, liquid, n.o.s.
(reaction product: bisphenol-A-
(epichlorhydrin) and epoxy resin(number
Average molecular weight <=700)

Hazard Class: 9

Hazard class: 9

Packing Group: III

Packing Group: III

Marine Pollutant(if applicable): no

Marine Pollutant (if applicable): no

SECTION 15: regulatory information

United States (USA)

SARA SECTION 311/312 (Specific toxic chemical listings):
Acute

SARA SECTION 311/312 (Specific toxic chemical listings):
None of the ingredients are listed.

RCRA (hazardous waste code):
None of the ingredients are listed.

TSCA (Toxic substance control act)
All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)
None of the ingredients are listed.

Proposition 65 (California):

Chemicals known to cause cancer:
None of the ingredients are listed.

Chemicals known to cause reproduction toxicity for females:
None of the ingredients are listed.

Chemicals known to cause reproduction toxicity for males:
None of the ingredients are listed.

Chemicals known to cause developmental toxicity:
None of the ingredients are listed.

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part A

Canada

Canadian Domestic Substance list (DSL)

None of the ingredients are listed.

SECTION 16: Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take these precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of the material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

NFPA: 2-10

HMIS: 3-1-0

GHS Full Text Phrases: None

Abbreviations and Acronyms: None

Effective date: 09.15.2015

Last updated: 09.15.2015

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part B

SECTION 1: Identification of the substance/mixture and of the supplier

Product name: MM High Strength Epoxy Part B

Manufacture/Supplier Trade Name:

Manufacture/Supplier Article Number:

Recommended uses of the product and restrictions on use: High Strength Epoxy

Manufacturer Details:

MM Systems Corporation

50 MM Way

Pendergrass, GA 30567

706-824-7500

Emergency telephone number:

Infotrac 800-535-5053

SECTION 2: Hazards Identification

Classification of the substance or mixture:



Irritant

Skin irritation, category 2

Eye irritation, category 2A

Skin sensitization, category 1

Specific target organ toxicity following single exposure, category 1

Acute toxicity(oral,dermal,inhalation), category 1



Health hazard:

Reproductive toxicity, category 2



Skin Corrosion/irritation-Skin irritation 2

Skin sensitizer 1

Eye irritation 2

STOT single exposure 3

Acute toxicity-Oral-Acute tox. 4

Reproductive toxicity-repr. 2

Signal word: Danger

Hazard statement:

Harmful if swallowed

Causes skin irritation

Causes serious eye irritation

Harmful if swallowed

Page 1 of 10

May cause an allergic skin irritation

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part B

Precautionary statements:

Keep container tightly closed

If medical advice is needed, have product container or label at hand

Keep out reach of children

Read label before use

Avoid breathing dust/gas/mist/vapors/spray

Wash skin thoroughly after handling

Contaminated work clothing should not be allowed out of the workplace

Avoid release to the environment

Wear protective gloves/protective clothing/eye protective/face protection

IF ON SKIN: Wash with soap and water

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do.

Continue rinsing

IF INHALED: Remove victim to fresh air and keep at rest in a comfortable for breathing

If skin irritation or a rash occurs. Get medical advice/attention

Take off contaminated clothing and wash before reuse

Collect spillage

Store locked up

Store in a well ventilated place. Keep container tightly closed

Dispose of contents and container as instructed in Section 13

Other Non-GHS Classification: Health-3,Flammability-1,Physical-0,Personal Protection X

SECTION 3: Composition/information on ingredients

Ingredients

CAS 1408-60-7	Silicon dioxide	60-70%
CAS 68953-36-6	Polyamido Amine	25-30%
CAS 12174-11-7	Attapulgitte clay	5-7+%

Percentages are by weight

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part B

SECTION 4: First aid measures

Description of first aid measures

Page 2 of 10

After inhalation:

Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Loosen clothing and place exposed in a comfortable position.

After skin contact:

Wash hands and exposed skin with soap and plenty of water. Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists. Wash away any material which may have contacted the body with copious amounts of water or soap.

After eye contact:

Seek medical attention. Protect unexposed eye. Flush exposed eye gently using water for 15-20 minutes

Remove contact lenses while rinsing

After swallowing:

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention

Most important symptoms and effects, both acute and delayed:

Shortness of breath, Headache, Nausea, Dizziness, Irritation-all routes of exposure. Acute pneumoconiosis or silicosis from overwhelming exposure to crystalline silica dust has occurred. Lungs may be affected by repeated or prolonged exposure to fibers, resulting in fibrosis. This substance is possible carcinogenic to humans. Persons with impaired respiratory function may be more susceptible to the effects of this substance. Smoking can increase the risk of lung injury.

Indication of any immediate medical attention and special treatment needed

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

Safety Data Sheet

According to 29CFR1910/1200 and GHS Rev.3

Effective date: 09.15.2015

MM High Strength Epoxy Part B

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing agents:

Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam. Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition. If large quantities of combustibles are involved, use water in flooding quantities as spray and fog. Use water spray to Knock-down vapors. Page 3 of 10

Unsuitable extinguishing agents: None

Advice for firefighter:

Protective equipment: Wear protective eyewear, gloves, and clothing. Refer to section Additional information (precautions)

Avoid inhaling gases, fumes, dust, mist, and aerosols. Avoid contact with skin, eyes and clothing. Additional information (precautions)

If material not on fire and not involved in fire: keep sparks, flames, and other sources of ignition away. Keep material out of water sources and sewers. Build dikes to contain flow as necessary. Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes and clothing. Move product containers away from fire or keep cool with water spray as a protective measure, where feasible. Avoid generating dust, fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Water⁴ spill: Neutralize with agricultural lime (CaO), crushed limestone (CaCO₃) or sodium bicarbonate (NaHCO₃). If dissolved, in region of 10 ppm or greater concentration, apply activated carbon at ten times the spilled amount. Land spill: Dig a pit, pond, lagoon, holding area (should be sealed with an impermeable flexible membrane liner) to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash or cement powder. Neutralize as noted for water spill. Ensure adequate ventilation. Ensure that air-handling systems are operational

Environmental precautions:

Should not be released into environment. Prevent from reaching drains, sewer, or waterway. Collect contaminated soil for characterization per section 13.

Methods and material for containment and cleaning up:

Sweep up and shovel. Soak up with inert absorbent material and dispose of as hazardous waste. Wear protective eyewear, gloves, and clothing. Personal protection: P2 filter respirator for harmful particles. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e. clearing dust surface with compressed air). Collect solids in powder form using vacuum with (HEPA filter) Do not handle broken

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packages unless wearing appropriate chemical protective equipment. Wash away any material which may have contacted the body with copious amounts of water and soap. Refer to section 8. Always obey local regulations. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Containerize for disposal. Refer to section 13. Keep in suitable closed containers for disposal. Page 4 of 10

Sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Reference to other sections: none

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling;

Avoid contact with skin, eyes, and clothing. Follow good hygiene procedures when handling chemical materials. Do Not take working clothes home. Refer to Section 8. Follow proper disposal methods. Combustible dusts formation is a risk. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substance.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage. Provide ventilation for containers. Keep container tightly sealed, Store away from incompatible materials. Avoid storage near extreme heat, ignition sources or open flame.

SECTION 8: Exposure controls/personal protection

Control Parameters:

68953-36-6 AIHA WEEL (2004-01.01) TWA 5 mg/m³

Appropriate Engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls To keep the airborne concentrations of vapor and mist below the applicable workplace exposure limits indicated above. (Occupational Exposure-OELS). It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosive relief vents or an explosive suppression system or an oxygen deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e. there is no leakage from the equipment) Use under a fume hood.

Respiratory protection:

Where risk Assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.

Protection of skin:

Select glove material impermeable and resistant to the

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substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer service. Avoid skin contact with used gloves. Wear protective clothing.

Eye protection:

Faceshield (8-inch minimum) with tightly fitting safety goggles are appropriate eyewear. Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU)

General hygienic measures:

Perform routine housekeeping. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing. Before rewearing wash contaminated clothing.

SECTION 9: Physical and chemical properties

Appearance (physical State, color)	black, gritty paste	Explosion limit lower	N/A
		Explosion limit upper	N/A
Odor:	Slight ammonia	Vapor pressure at 20°	Not determined
Odor threshold:	Not Determined	Vapor density	Not determined
PH-value:	Not Determined	Relative density	1.77
Melting/Freezing Point:	Not Determined	Solubilities	N/A
Boiling point/Range:	Not Determined	Partition coefficient (n-octanol/water)	Not determined
Flash point(closed cup):	Not Determined	Auto/self-ignition Temperature	Not determined
Evaporation rate:	Not Determined	Decomposition Temp	Not determined
Flammability (solid Gaseous)	Not Determined	Viscosity	a. Kinematic Paste b. Dynamic: Paste
Density at 20°	Not Determined		1.77

SECTION 10: Stability and reactivity

Reactivity:

Nonreactive under normal conditions

Chemical stability:

Stable under normal conditions. Chemically inert, properties are inert; affected by change in PH

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Possible hazardous reactions:

None under normal conditions

Conditions to avoid:

Incompatible materials

Incompatible materials:

Strong Acids, Strong Bases, Oxidizing agents, Hydrogen fluoride.

Hazardous decomposition products:

Carbon oxides, Nitrogen oxides, Ammonia. When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute Toxicity:

Oral:

Inhalation:

The substance can be absorbed into the body by inhalation.

Chronic Toxicity:

Inhalation:

May cause respiratory irritation

Corrosion irritation

Dermal: Section 2, Classified as skin irritant

Ocular: Section 2, Classified as eye irritant

Sensitization: Classified as a skin sensitizer

Single Target organ (STOT): Classified as respiratory irritant

Numerical measure: No Additional information

Mutagenicity: No additional information

Reproductive Toxicity: Classified as possible causing reproductive harm to fertility or unborn child

SECTION 12: Ecological information

Ecotoxicity:

Fish (acute 84852-15-3): 96 hr LC50 Pimephales promelas: 0.135 MG/L {flow-through}; 96 hr LC50 lepomis macrochirus: 0.1351 mg/l {flow-through}

Crustacea (acute 84852-15-3): 48 hr EC50 Daphnia magna: 0.14 mg/l

Algae (acute 84852-15-3): 96 hr EC50 Pseudokirchneriella subcapitata: 0.36-0.48 mg/l {static}; 72 hr EC50 Pseudokirchneriella subcapitata: 0.16-0.72 mg/l {static}; 72 hr EC50 Desmodesmus subspicatus: 1.3 mg/l

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SECTION 15: regulatory information

United States (USA)

SARA SECTION 311/312 (Specific toxic chemical listings):

None of the ingredients is listed

SARA SECTION 313 (Specific toxic chemical listings):

84852-15-3.1.0% de minimis concentration (listed under Chemical Category Nonylphenol)

RCRA (hazardous waste code):

None of the ingredients are listed.

TSCA (Toxic substance control act)

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)

None of the ingredients are listed.

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproduction toxicity for females:

None of the ingredients are listed.

Chemicals known to cause reproduction toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

Canada

Canadian Domestic Substance list (DSL)

None of the ingredients are listed.

Canadian NPRI ingredient disclosure list (limit 0.1%)

None of the ingredients is listed

Canadian NPRI ingredient disclosure list (limit 1%)

148-8-60-7 Quartz

SECTION 16: Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take these precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information handling and use are beyond our control, we make no guarantee of results, and assume no liability for

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damages incurred by the use of the material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material. The information contained herein is, to the best of our knowledge and belief, accurate.

GHS Full Text Phrases: None

Abbreviations and Acronyms:

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonized System of classification and labelling of chemicals

ACGIH; American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification Systems (USA)

ACGIH: American Conference of Governmental Industrial Hygienists

WHMIS: Workplace Hazardous Materials Information System (CANADA)

DNEL: Derived No-Effect level (Reach)

PNEC: Predicted No-Effect Concentration (Reach)

CFR: Code of Federal Regulations (USA)

SARA: Superfund Amendments and Reauthorization Act (USA)

RCRA: Resource Conservation and Recovery Act (USA)

TSCA: Toxic Substance Control Act (USA)

NPRI: National Pollutant Release Inventory (CANADA)

DOT: US Department of Transportation

CAS: Chemical Abstracts Service (Division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (CANADA)

DNEL: Derived No-Effect Level (Reach)

SAFETY DATA SHEET



Pecora 301 NS

1. PRODUCT IDENTIFICATION

IDENTIFICATION of the SUBSTANCE or PREPARATION

<u>TRADE NAME (AS LABELED):</u>	Pecora 301NS
<u>PRODUCT DESCRIPTION:</u>	Non-Sag Silicone Highway & Pavement Joint Sealant
<u>CHEMICAL NAME/CLASS:</u>	Polydimethylsiloxane Silicone
<u>SYNONYMS:</u>	Silicon Sealant SL
<u>RELEVANT USE:</u>	Non-Sag Silicone Sealant
<u>USES ADVISED AGAINST:</u>	Other Than Relevant Use

COMPANY/UNDERTAKING IDENTIFICATION:

<u>SUPPLIER/MANUFACTURER'S NAME:</u>	Pecora Corporation
<u>ADDRESS:</u>	165 Wambold Road, Harleysville, PA 19438
<u>EMERGENCY PHONE:</u>	800-424-9300 (CHEMTREC, 24-hours)
<u>BUSINESS PHONE:</u>	215-723-6051 (Mon–Fri, 8 AM–5 PM ET)

<u>PREPARATION DATE:</u>	March 11, 2010
<u>REVISION DATE:</u>	May 13, 2014

This product is sold for commercial use. This MSDS has been developed to address safety concerns of those individuals working with bulk quantities of this material, as well as those of potential users of this product in industrial/occupational settings. ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, and Canadian WHMIS [Controlled Products Regulations] and the Global Harmonization Standard required information is included in appropriate sections based on the U.S. ANSI Z400.1-2008 format. This product has been classified in accordance with the hazard criteria of the countries listed above.

2. HAZARD IDENTIFICATION

GLOBAL HARMONIZATION LABELING AND CLASSIFICATION: This product has been classified per GHS Standards.

Classification: Acute Oral Toxicity Cat. 5, Eye Irritation Cat. 2B, Skin Irritation Cat. 3, Skin Sensitization Cat. 1, Aquatic Chronic Toxicity Cat. 4,

Signal Word: Warning

Hazard Statement Codes: H303, H316, H320, H317, H413

Precautionary Statement Codes: P261, P264, P272, P273, P280, P305 + P351 + P338, P337 + P313, P302 + P352, P321, P333 + P313, P362 + P364, P501

Hazard Symbols/Pictogram: GHS07



EMERGENCY OVERVIEW:

PHYSICAL DESCRIPTION: This product is a smooth paste with a slightly solvent odor and comes in several colors (black, charcoal grey and pavement grey).

HEALTH HAZARDS: CAUTION! May cause eye, skin, and respiratory tract irritation, especially if exposure is prolonged. May be harmful if ingested. May cause skin sensitization in susceptible individuals. Contains trace amounts of crystalline silica, a known human carcinogen by inhalation.

FLAMMABILITY HAZARD: This product is combustible and can ignite if exposed to high temperature or direct flame.

REACTIVITY HAZARD: This product is not reactive.

ENVIRONMENTAL HAZARD: This product has not been tested for environmental impact. This product contains a compound that can cause chronic aquatic toxicity.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS®)

Health	1*
Flammability	1
Physical Hazard	0

See Section 16 for definitions of ratings

0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate * = Chronic

HMIS® is a registered trademark of the National Paint and Coatings Association.

CANADIAN WHMIS CLASSIFICATION: Class D2B. See Section 15 (Regulatory Information) for all classification details.

U.S. OSHA REGULATORY STATUS: This material has a classification under the Global Harmonization Standard, as applied under OSHA regulations, as given earlier in this Section.

3. MATERIAL IDENTIFICATION

Chemical Name	CAS #	W/W%	GHS Classification Hazard Statements
Proprietary Silicone Polymer		30.0-60.0	SELF CLASSIFICATION Classification: Not Applicable
Calcium Carbonate (Limestone), Synthetic Calcium Carbonate	1317-65-3 471-34-1	10.0-40.0	SELF CLASSIFICATION Classification: Not Applicable
Proprietary Crosslinker		1.0-5.0	Classification: STOT RE Cat. 2, Skin Sensitization Cat. 1, Aquatic Chronic Toxicity Cat. 3 Hazard Statement Codes: H373, H317, H412
Silicon Dioxide, Fumed	112945-52-5	1.0-5.0	SELF CLASSIFICATION Classification: Not Applicable
Mineral Spirits	8052-41-3	0.0-1.0	Classification: Carcinogenic Cat. 1B, Mutagenic Cat. 1B, Aspiration Hazard Cat. 1 Hazard Statement Codes: H350, H340, H304
Quartz	14808-60-7 14464-46-1	Trace	SELF CLASSIFICATION Classification: Carcinogenic Cat. 1B Hazard Statement Codes: H350
Water and other components. Each of the other components is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).		Balance	Classification: Not Applicable

See Section 16 for full text of classification

4. FIRST-AID MEASURES

PROTECTION OF FIRST AID RESPONDERS: Rescuers should not attempt to retrieve victims of exposure to this material without adequate personal protective equipment. Rescuers should be taken for medical attention, if necessary.

DESCRIPTION OF FIRST AID MEASURES: Remove victim(s) to fresh air, as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Remove and isolate contaminated clothing and shoes. Seek immediate medical attention. Take copy of label and MSDS to physician or other health professional with victim(s).

INHALATION: If dusts of this material are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

SKIN EXPOSURE: If the material contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 20 minutes. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

EYE EXPOSURE: If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 20 minutes. Do not interrupt flushing.

INGESTION: If this material is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directly by medical personnel. Have victim rinse mouth with water or give several cupfuls of water, if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Dermatitis or other pre-existing skin disorders may be aggravated by overexposures to this product.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT IF NEEDED: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: > 104°C (> 220°F) **AUTOIGNITION:** Unknown.

FLAMMABLE LIMITS IN AIR: Unknown.

EXTINGUISHING MEDIA:

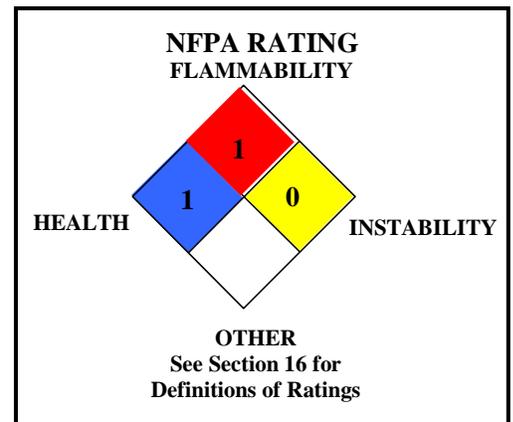
SUITABLE EXTINGUISHING MEDIA: Use extinguishing material suitable to the surrounding fire, including foam, halon, carbon dioxide and dry chemical.

UNSUITABLE EXTINGUISHING MEDIA: None known.

PROTECTION OF FIREFIGHTERS:

SPECIAL HAZARDS ARISING FROM THE SUBSTANCE: This product is combustible and can be ignited when exposed to its flashpoint. Not sensitive to mechanical impact under normal conditions. Not sensitive to static discharge under normal conditions. Closed containers may develop pressure and rupture in event of fire.

SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.



6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS AND EMERGENCY PROCEDURES: An accidental release can result in a fire. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Eliminate any possible sources of ignition, and provide maximum explosion-proof ventilation.

6. ACCIDENTAL RELEASE MEASURES (Continued)

PERSONAL PRECAUTIONS AND EMERGENCY PROCEDURES (continued): Use only non-sparking tools and equipment during the response. The atmosphere must at least 19.5 percent Oxygen before non-emergency personnel can be allowed in the area without Self-Contained Breathing Apparatus and fire protection.

PERSONAL PROTECTIVE EQUIPMENT: Responders should wear the level of protection appropriate to the type of chemical released, the amount of the material spilled, and the location where the incident has occurred.

Small Spills: For releases of 1 drum or less, Level D Protective Equipment (gloves, chemical resistant apron, boots, and eye protection) should be worn.

Large Spills: Minimum Personal Protective Equipment should be rubber gloves, rubber boots, face shield, and Tyvek suit. Minimum level of personal protective equipment for releases in which the level of oxygen is less than 19.5% or is unknown must be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit, fire-retardant clothing and boots, hard hat, and Self-Contained Breathing Apparatus.**

METHODS FOR CLEAN-UP AND CONTAINMENT:

All Spills: Access to the spill area should be restricted. Spread should be limited by gently covering the spill with polypads. Scrape up or pick-up spilled material, placing in suitable containers. Absorb any residual on appropriate material, such as sand. All contaminated absorbents and other materials should be placed in an appropriate container and seal. Do not mix with wastes from other materials. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations). Dispose of recovered material and report spill per regulatory requirements. Remove all residue before decontamination of spill area. Clean spill area with soap and copious amounts of water.

ENVIRONMENTAL PRECAUTIONS: Minimize use of water to prevent environmental contamination. Prevent spill or rinsate from contaminating storm drains, sewers, soil or groundwater. Place all spill residues in a suitable container and seal. Do not discharge effluent containing this product into streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

OTHER INFORMATION: U.S. regulations may require reporting of spills of this material that reach surface waters if a sheen is formed. If necessary, the toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802.

REFERENCE TO OTHER SECTIONS: See information in Section 8 (Exposure Controls – Personal Protection) and Section 13 (Disposal Considerations) for additional information.

7. HANDLING and STORAGE

PRECAUTIONS FOR SAFE HANDLING: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this material. Avoid contact with eyes, skin, and clothing. Avoid breathing fumes, dusts, vapors or mist. Do not taste or swallow. Use only with adequate ventilation. Keep away from heat and flame. In the event of a spill, follow practices indicated in Section 6: ACCIDENTAL RELEASE MEASURES.

CONDITIONS FOR SAFE STORAGE: This product is stable under ordinary conditions of handling, use and storage. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10: STABILITY AND REACTIVITY). Keep container tightly closed when not in use. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. To prolong shelf life, store at temperatures below 26°C (80°F).

PRODUCT END USE: This product is used as a sealant. Follow all industry standards for use of this product.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below.

OCCUPATIONAL/WORKPLACE EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS #	Guideline	Value
Proprietary Crosslinker Exposure limits given are for decomposition product methylethyl ketoxime		AIHA WEEL TWA DFG MAK TWA	10 ppm (Dermal Sensitizer) Skin, Danger of Sensitization of the skin.
Calcium Carbonate, Natural & Synthetic	1317-65-3	OSHA PEL TWA NIOSH REL TWA	15 mg/m ³ total dust 5 mg/m ³ respirable fraction 10 mg/m ³ total dust 5 mg/m ³ respirable fraction
Carbon Black	1333-86-4	ACGIH TLV TWA OSHA PEL TWA NIOSH REL TWA DFG MAK TWA	3.5 mg/m ³ (inhalable fraction) 3.5 mg/m ³ 3.5 mg/m ³ (0.1 in the presence of PAHs, as PAHs: 10-hr TWA) As inhalable dust
Proprietary Silicone Polymer		NE	NE
Mineral Spirits	8052-41-3	ACGIH TLV TWA OSHA PEL TWA NIOSH REL TWA NIOSH REL STEL	525 mg/m ³ 2900 mg/m ³ 350 mg/m ³ 1800 mg/m ³ (15 min.)
Quartz	14808-60-7 14464-46-1	ACGIH TLV TWA OSHA PEL TWA NIOSH REL TWA	0.025 mg/m ³ Respirable Fraction 30 mg/m ³ / % SiO ₂ + 2 Total Dust; 10 mg/m ³ / % SiO ₂ + 2 Respirable Fraction 0.05 mg/m ³ (Respirable Dust)

NE = Not Established. See Section 16 for Definitions of Terms Used.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

PERSONAL PROTECTIVE EQUIPMENT (PPE): The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132, including the Respiratory Protection Standard (29 CFR 1910.134), Eye Protection Standard 29 CFR 1910.13, the Hand Protection Standard 29 CFR 1910.138, and the Foot Protection Standard 29 CFR 1910.136), equivalent standards of Canada (including the Canadian CSA Respiratory Standard Z94.4-93-02, the CSA Eye Protection Standard Z94.3-M1982, Industrial Eye and Face Protectors and the Canadian CSA Foot Protection Standard Z195-M1984, Protective Footwear). Please reference applicable regulations and standards for relevant details.

EYE/FACE PROTECTION: Use approved safety goggles or safety glasses. If necessary, refer to appropriate regulations and standards.

SKIN PROTECTION: Wear chemical impervious gloves (e.g., Nitrile or Neoprene). Use triple gloves for spill response. If necessary, refer to appropriate regulations and standards.

BODY PROTECTION: Use body protection appropriate for task (e.g., lab coat, coveralls, Tyvek suit). If necessary, refer to the OSHA Technical Manual (Section VII: Personal Protective Equipment) or appropriate Standards of Canada. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in appropriate regulations and standards.

RESPIRATORY PROTECTION: If mists or sprays from this product are created during use, use appropriate respiratory protection. If necessary, use only respiratory protection authorized in appropriate regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under appropriate regulations and standards.

9. PHYSICAL and CHEMICAL PROPERTIES

FORM: Smooth paste.

MOLECULAR WEIGHT: Mixture.

ODOR: Mildly solvent-like.

SPECIFIC GRAVITY: 1.1-1.4

RELATIVE VAPOR DENSITY (air = 1): Heavier than air.

SOLUBILITY IN WATER: Soluble.

MELTING/FREEZING POINT: Not available.

VOC (less water and exempt): 50 g/L

FLASH POINT: > 104°C (> 220°F)

pH: Not available.

FLAMMABLE LIMITS (in air by volume, %): Lower: Not established; Upper: Not established.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not established.

HOW TO DETECT THIS SUBSTANCE (IDENTIFYING PROPERTIES): The appearance of this product may act as an identifying property in the event of an accidental release.

COLOR: Black, and greys.

MOLECULAR FORMULA: Mixture.

ODOR THRESHOLD: Not available.

VAPOR PRESSURE, mm Hg @ 20°C: Not established.

EVAPORATION RATE (BuAc = 1): < 1

OTHER SOLUBILITIES: Not available.

BOILING POINT: Not established.

WEIGHT % VOC: < 4%

AUTOIGNITION TEMPERATURE: Not established.

10. STABILITY and REACTIVITY

CHEMICAL STABILITY: Stable under normal circumstances of use and handling. Methylene Ketoxime is generated during curing.

CONDITIONS TO AVOID: Avoid contact with incompatible chemicals and exposure to extreme temperatures.

INCOMPATIBLE MATERIALS: This product is not compatible with strong acids and oxidizers and may have some compatibility with aluminum, ammonium salts and mercury/hydrogen mixtures.

HAZARDOUS DECOMPOSITION PRODUCTS: *Combustion:* Thermal decomposition of this product can generate dusts, irritating fumes, and toxic gases (e.g., carbon, nitrogen and silicone oxides, formaldehyde, various hydrocarbons). *Hydrolysis:* Methylene ketoxime.

POSSIBILITY OF HAZARDOUS REACTIONS/POLYMERIZATION: This product is not expected to undergo hazardous polymerization, decomposition, condensation, or self-reactivity.

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS: The most significant routes of occupational overexposure are inhalation and contact with skin and eyes. The symptoms of overexposure to this product are as follows:

CONTACT WITH SKIN or EYES: Contact may mildly irritate the skin and cause redness and discomfort. Prolonged or repeated skin contact may cause dermatitis (dry, red skin). Eye contact may cause redness, pain, and tearing.

SKIN ABSORPTION: The components of this product are not known to be absorbed through intact skin. Skin contact may cause sensitization and allergic reaction in susceptible individuals. Symptoms may include redness, itching and rash.

INGESTION: If the product is swallowed, it may mildly irritate the mouth, throat, and other tissues of the gastro-intestinal system and may cause nausea, vomiting, and diarrhea.

INHALATION: Overexposure to vapors of this product generated during curing, or dusts of this product generated during use after curing may mildly irritate the respiratory tract and cause coughing and sneezing. Vapors or fumes when used in an enclosed space, if heated or during curing may cause irritation of the respiratory system. Symptoms include nose irritation, dry or sore or burning throat, runny nose, shortness of breath, dizziness, incoordination.

INJECTION: Accidental injection of this product (e.g. puncture with a contaminated object) may cause burning, redness, and swelling in addition to the wound.

TARGET ORGANS: *Acute:* Skin, eyes, central nervous system. *Chronic:* Skin.

CHRONIC EFFECTS: Prolonged or repeated skin contact may cause dermatitis (dry, red skin), sensitization to the skin or adverse liver or kidney effects.

11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA: There are currently no toxicity data available for this product; the following toxicology information is available for components greater than 1% in concentration. Due to the large amount of data for the Carbon Black component, only LD50 Oral-Rat and LD50 Skin-Rabbit data are presented in this SDS. Contact Pecora for additional information.

PROPRIETARY CROSSLINKER:

LD₅₀ (Oral-Rat) > 8000 mg/kg
 LD₅₀ (Dermal-Rat) > 4000 mg/kg
 LC₅₀ (Inhalation-Rat) > 8000 mg/m³, 4 hours

CARBON BLACK:

LD₅₀ (Oral-Rat) > 15 400 mg/kg: Behavioral: somnolence (general depressed activity)
 LD₅₀ (Skin-Rabbit) > 3 gm/kg

CALCIUM CARBONATE, NATURAL:

TDL_o (Intravenous-Rat) 30 mg/kg: Vascular: BP lowering not characterized in autonomic section; Lungs, Thorax, or Respiration: changes in lung weight; Blood: other changes

TCL_o (Inhalation-Rat) 84 mg/m³/4 hours/40 weeks-intermittent: Lungs, Thorax, or Respiration: fibrosis (interstitial); Liver: other changes; Kidney/Ureter/Bladder: other changes

TCL_o (Inhalation-Rat) 250 mg/m³/2 hours/24 weeks-intermittent: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis)

CALCIUM CARBONATE, SYNTHETIC:

Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Moderate

Standard Draize Test (Eye-Rabbit) 750 µg/24 hours: Severe

TDL_o (Oral-Human) 4.08 gm/kg/30 days-intermittent: Vascular: BP elevation not characterized in autonomic section; Gastrointestinal: changes in structure or function of endocrine pancreas; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

LD₅₀ (Oral-Rat) 6450 mg/kg

TDL_o (Oral-Rat) 60 gm/kg: Gastrointestinal: hypermotility, diarrhea, other changes

MINERAL SPIRITS:

TDL_o (Oral-Rat) 10 mg/kg: Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

Standard Draize Test (Eye-Human) 100 ppm: Mild

Standard Draize Test (Eye-Rabbit) 500 mg/24 hours: Moderate

LC₅₀ (Inhalation-Rat) > 1400 ppm/8 hours

LD (Oral-Rat) > 5 gm/kg: Behavioral: somnolence (general depressed activity)

LD (Skin-Rabbit) > 3 gm/kg

LC (Inhalation-Rat) > 5500 mg/m³/4 hours: Behavioral: somnolence (general depressed activity)

LC (Inhalation-Dog) > 8 mg/m³/8 hours-continuous: Behavioral: tremor, convulsions or effect on seizure threshold

8200 mg/m³/8 hours: Behavioral: tremor

LCL_o (Inhalation-Cat) 1700 ppm/7 hours: Behavioral: tremor, convulsions or effect on seizure threshold

LCL_o (Inhalation-Dog) 8000 mg/m³/3 hours.....Behavioral: alteration of classical conditioning

TCL_o (Inhalation-Rat) 330 ppm/65 days-intermittent: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Blood: other changes

TCL_o (Inhalation-Rat) 480 mg/m³/65 days-intermittent: Blood: normocytic anemia

TCL_o (Inhalation-Rat) 1100 mg/m³/65 days-intermittent: Kidney/Ureter/Bladder: renal function tests depressed; Blood: normocytic anemia

TDL_o (Skin-Rabbit) 2 gm/kg/4 weeks-intermittent: Skin and Appendages: dermatitis, other (after systemic exposure)

CARCINOGENIC POTENTIAL: The following table summarizes the carcinogenicity listing for the components of this product. "NO" indicates that the substance is not considered to be or suspected to be a carcinogen by the listed agency, see section 16 for definitions of other ratings.

CHEMICAL	EPA	IARC	NTP	NIOSH	ACGIH	OSHA	PROP 65
Proprietary Crosslinker	No	No	No	No	No	No	No
Calcium Carbonate (Natural & Synthetic)	No	No	No	No	No	No	No
Carbon Black	No	2B	No	Ca	A3	No	Yes (airborne, unbound particles of respirable size)
Mineral Spirits	No	No	No	No	No	No	No
Quartz	No	1	K	Ca	A2	No	Yes (airborne, unbound particles of respirable size)
Silicon Dioxide, Fumed	No	No	No	No	No	No	No

IARC 1: Carcinogenic to Humans. IARC Group 2B: Possibly carcinogenic to humans. NTP-K: Known to Be a Human Carcinogen. NIOSH-Ca: Potential Occupational Carcinogen, with No Further Categorization. ACGIH TLV-A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans. ACGIH TLV-A2: Suspected Human Carcinogen.

IRRITANCY OF PRODUCT: This product may mildly irritate contaminated tissue, especially if contact is prolonged. Eye irritation may be more pronounced.

SENSITIZATION TO THE PRODUCT: This product may cause skin sensitization and allergic reaction in susceptible individuals due to the Proprietary Crosslinker component.

TOXICOLOGICAL SYNERGISTIC PRODUCTS: None known.

REPRODUCTIVE TOXICITY INFORMATION: This product has not been tested for reproductive toxicity.

MUTAGENICITY: Positive results for Carbon Black have been obtained in somatic cells following live animal inhalation exposures. Propylene glycol (32 mg/mL) caused chromosome damage in a mammalian cell line.

EMBRYOTOXICITY/ TERATOGENICITY/REPRODUCTIVE TOXICITY: No information available..

BIOLOGICAL EXPOSURES INDICES (BEIs): There are no BEI's established for any component of this product at this time.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: This product has not been tested for mobility in soil.

PERSISTENCE AND BIODEGRADABILITY: This product has not been tested for persistence or biodegradability.

BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential.

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. Although no data is available, under the Global Harmonization Standard, the Proprietary Crosslinker component is classified as having chronic aquatic toxicity.

OTHER ADVERSE EFFECTS: This material is not expected to have any ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: As supplied, this product would not be a hazardous waste as defined by U.S. federal regulation (40 CFR 261) if discarded or disposed. State and local regulations may differ from federal regulations. The generator of the waste is responsible for proper waste determination and management.

U.S. EPA WASTE NUMBER: Not applicable.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: This product is NOT classified as Dangerous Goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is NOT classified as Dangerous Goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): This product is NOT classified as dangerous goods, per the International Air Transport Association.

INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): This product is not classified as dangerous goods, per the International Maritime Organization.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: No component of this product is subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21): ACUTE: Yes; CHRONIC: Yes; FIRE: No; REACTIVE: No; SUDDEN RELEASE: No

U.S. TSCA INVENTORY STATUS: All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. CLEAN AIR ACT (CA 112r) THRESHOLD QUANTITY (TQ): Not applicable.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The Carbon Black and trace Quartz component (airborne, unbound particles of respirable size) are found on the Proposition 65 List of chemicals known to the state to cause cancer. Due to the form of the product, the Proposition 65 warning is not applicable to these compounds in this product.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: The components of this product are listed on the DSL Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA Priorities Substances Lists.

CANADIAN WHMIS REGULATIONS: This product is classified as a Controlled Product, Hazard Class D2B (Immediate Acute Toxicity/Irritation & Sensitization) as per the Controlled Product Regulations.



ADDITIONAL MEXICAN REGULATIONS:

MEXICAN WORKPLACE REGULATIONS (NOM-018-STPS-2000): This product is not classified as hazardous.

16. OTHER INFORMATION

WARNINGS (per ANSI Z129.1): CAUTION! MAY CAUSE EYE, SKIN, AND RESPIRATORY TRACT IRRITATION, ESPECIALLY IF EXPOSURE IS PROLONGED. MAY CAUSE SKIN SENSITIZATION AND ALLERGIC REACTION IN SUSCEPTIBLE INDIVIDUALS. CONTAINS COMPOUND THAT MAY CAUSE CHRONIC AQUATIC ADVERSE EFFECTS. COMBUSTIBLE – CAN IGNITE IF EXPOSED TO DIRECT FLAME. Avoid contact with eyes, skin, and clothing. Avoid breathing fumes, dusts, vapors or mist. Do not taste or swallow. Wash thoroughly after handling. Keep container tightly closed. Use only with adequate ventilation. Keep away from heat and flame. Wear gloves, eye protection, respiratory protection, and appropriate body protection. FIRST-AID: In case of contact, immediately flush skin and eyes with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation develops or persists. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention. IN CASE OF FIRE: Use water fog, foam, dry chemical, or CO₂. IN CASE OF SPILL: Absorb spilled product with polypads or other suitable absorbing material. Place all spill residue in an appropriate container and seal. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations and those of Canada.

GLOBAL HARMONIZATION LABELING AND CLASSIFICATION: Classified in accordance with the Global Harmonization Standard.

Classification: Acute Oral Toxicity Category 5, Eye Irritation Category 2B, Skin Irritation Category 3, Skin Sensitization Category 1, Aquatic Chronic Toxicity Category 4

Signal Word: Warning

Hazard Statements: H303: May be harmful if ingested. H316: Causes mild skin irritation. H320: Causes eye irritation. H317: May cause an allergic skin reaction. H413: May be harmful to aquatic life with long-lasting effects.

Precautionary Statements:

Prevention: P261: Avoid breathing fume. P264: Wash thoroughly after handling. P272: Contaminated work clothing should not be allowed out of the workplace. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P332 + P313: If skin irritation occurs, get medical attention. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. P337 + P313: If eye irritation persists: Get medical advice/attention. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P333 + P313: If skin irritation or rash occurs: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P321: Specific treatment (remove from exposure and treat symptoms).

Storage: None.

Disposal: P501: Dispose of contents/containers in accordance with all local, regional, national and international regulations.

Hazard Symbols/Pictogram: GHS07

16. OTHER INFORMATION (Continued)

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information presented in this Material Safety Data Sheet is presented in good faith based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. In no case shall the descriptions, information, data or designs provided be considered a part of our terms and conditions of sale.

All materials may present hazards and should be used with caution. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices or applicable federal, state, or local laws or regulations. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

REFERENCES AND DATA SOURCES: Contact the supplier for information.

METHODS OF EVALUATING INFORMATION FOR THE PURPOSE OF CLASSIFICATION: Bridging principles were used to classify this product.

REVISION DETAILS: May 2012: Up-date and revise entire MSDS to include current GHS requirements.

DATE OF PRINTING

May 13, 2014

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

KEY ACRONYMS:

CHEMTREC: Chemical Transportation Emergency Center, a 24-hour emergency information and/or emergency assistance to emergency responders.

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

DFG MAKs: Federal Republic of Germany Maximum Concentration Values in the workplace. Exposure limits are given as TWA (Time-Weighted Average) or PEAK (short-term exposure) values.

DFG MAK Germ Cell Mutagen Categories: **1:** Germ cell mutagens that have been shown to increase the mutant frequency in the progeny of exposed humans. **2:** Germ cell mutagens that have been shown to increase the mutant frequency in the progeny of exposed mammals. **3A:** Substances that have been shown to induce genetic damage in germ cells of human of animals, or which produce mutagenic effects in somatic cells of mammals *in vivo* and have been shown to reach the germ cells in an active form. **3B:** Substances that are suspected of being germ cell mutagens because of their genotoxic effects in mammalian somatic cell *in vivo*; in exceptional cases, substances for which there are no *in vivo* data, but that are clearly mutagenic *in vitro* and structurally related to known *in vivo* mutagens. **4:** Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances] if research results make this seem sensible.) **5:** Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

DFG MAK Pregnancy Risk Group Classification: **Group A:** A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed. **Group B:** Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. **Group C:** There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. **Group D:** Classification in one of the groups A–C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

IDLH: Immediately Dangerous to Life and Health. This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

LOQ: Limit of Quantitation.

NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

NIOSH RELs: NIOSH's Recommended Exposure Limits.

PEL: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL" is placed next to the PEL that was vacated by Court Order.

SKIN: Used when there is a danger of cutaneous absorption.

STEL: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

TLV: Threshold Limit Value. An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

TWA: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

WEEL: Workplace Environmental Exposure Limits from the AIHA.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS:

This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD: 0 Minimal Hazard: No significant health risk, irritation of skin or eyes not anticipated. **Skin Irritation:** Essentially non-irritating. Mechanical irritation may occur. **PII or Draize = 0. Eye Irritation:** Essentially non-irritating, minimal effects clearing in < 24 hours. Mechanical irritation may occur. **Draize = 0. Oral Toxicity LD₅₀ Rat: > 5000 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: > 2000 mg/kg. Inhalation Toxicity 4-hrs LC₅₀ Rat: > 20 mg/L. 1 Slight Hazard:** Minor reversible injury may occur; may irritate the stomach if swallowed; may defat the skin and exacerbate existing dermatitis. **Skin Irritation:** Slightly or mildly irritating. **PII or Draize > 0 < 5. Eye Irritation:** Slightly to mildly irritating, but reversible within 7 days. **Draize > 0 ≤ 25. Oral Toxicity LD₅₀ Rat: > 500–5000 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: > 1000–2000 mg/kg. Inhalation Toxicity LC₅₀ 4-hrs Rat: > 2–20 mg/L. 2 Moderate Hazard:** Temporary or transitory injury may occur; prolonged exposure may affect the CNS. **Skin Irritation:** Moderately irritating; primary irritant; sensitizer. **PII or Draize ≥ 5, with no destruction of dermal tissue. Eye Irritation:** Moderately to severely irritating; reversible corneal opacity; corneal involvement or irritation clearing in 8–21 days. **Draize = 26–100, with reversible effects. Oral Toxicity LD₅₀ Rat: > 50–500 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: > 200–1000 mg/kg. Inhalation Toxicity LC₅₀ 4-hrs Rat: > 0.5–2 mg/L. 3 Serious Hazard:** Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. **Skin Irritation:** Severely irritating and/or corrosive; may cause destruction of dermal tissue, skin burns, and dermal necrosis. **PII or Draize > 5–8, with destruction of tissue. Eye Irritation:** Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. **Draize > 80 with effects irreversible in 21 days. Oral Toxicity LD₅₀ Rat: > 1–50 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: > 20–200 mg/kg. Inhalation Toxicity LC₅₀ 4-hrs Rat: > 0.05–0.5 mg/L. 4 Severe Hazard:** Life-threatening; major or permanent damage may result from single or repeated exposures; extremely toxic; irreversible injury may result from brief contact. **Skin Irritation:** Not appropriate. Do not rate as a 4, based on skin irritation alone. **Eye Irritation:** Not appropriate. Do not rate as a 4, based on eye irritation alone. **Oral Toxicity LD₅₀ Rat: ≤ 1 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: ≤ 20 mg/kg. Inhalation Toxicity LC₅₀ 4-hrs Rat: ≤ 0.05 mg/L.**

FLAMMABILITY HAZARD: 0 Minimal Hazard: Materials that will not burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes. **1 Slight Hazard:** Materials that must be pre-heated before ignition can occur. Material requires considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur. This usually includes the following: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C (200°F) (i.e. OSHA Class IIIB); and Most ordinary combustible materials (e.g. wood, paper, etc.). **2 Moderate Hazard:** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres with air. This usually includes the following: Liquids having a flash-point at or above 37.8°C (100°F); Solid materials in the form of course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp); and Solids and semisolids (e.g. viscous and slow flowing as asphalt) that readily give off flammable vapors. **3 Serious Hazard:** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions. This usually includes the following: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 38°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (100°F) (i.e. OSHA Class IB and IC); Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air (e.g., dusts of combustible solids, mists or droplets of flammable liquids); and Materials that burn extremely rapidly, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). **4 Severe Hazard:** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. OSHA Class IA); and Materials that ignite spontaneously when exposed to air at a temperature of 54.4°C (130°F) or below (pyrophoric).

DEFINITIONS OF TERMS (Continued)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

PHYSICAL HAZARD: 0 Water Reactivity: Materials that do not react with water. **Organic Peroxides:** Materials that are normally stable, even under fire conditions and will not react with water. **Explosives:** Substances that are Non-Explosive. **Compressed Gases:** No Rating. **Pyrophorics:** No Rating. **Oxidizers:** No Rating. **Unstable Reactives:** Substances that will not polymerize, decompose, condense, or self-react. **1 Water Reactivity:** Materials that change or decompose upon exposure to moisture. **Organic Peroxides:** Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy violently. **Explosives:** Division 1.5 & 1.6 explosives. Substances that are very insensitive explosives or that do not have a mass explosion hazard. **Compressed Gases:** Pressure below OSHA definition. **Pyrophorics:** No Rating. **Oxidizers:** Packaging Group III oxidizers; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. **Unstable Reactives:** Substances that may decompose, condense, or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosion hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors. **2 Water Reactivity:** Materials that may react violently with water. **Organic Peroxides:** Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. **Explosives:** Division 1.4 explosives. Explosive substances where the explosive effects are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. **Compressed Gases:** Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. **Pyrophorics:** No Rating. **Oxidizers:** Packaging Group II oxidizers. Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. **Reactive:** Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential (or low risk) for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature. **3 Water Reactivity:** Materials that may form explosive reactions with water. **Organic Peroxides:** Materials that are capable of detonation or explosive reaction, but require a strong initiating source or must be heated under confinement before initiation; or materials that react explosively with water. **Explosives:** Division 1.3 explosives. Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. **Compressed Gases:** Pressure \geq 514.7 psi absolute at 21.1°C (70°F) [500 psig]. **Pyrophorics:** No Rating. **Oxidizers:** Packaging Group I oxidizers. Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture. Liquids: any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. **Unstable Reactives:** Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a moderate potential (or moderate risk) to cause significant heat generation or explosion. **4 Water Reactivity:** Materials that react explosively with water without requiring heat or confinement. **Organic Peroxides:** Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. **Explosives:** Division 1.1 & 1.2 explosives. Explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. **Compressed Gases:** No Rating. **Pyrophorics:** Add to the definition of Flammability 4. **Oxidizers:** No 4 rating. **Unstable Reactives:** Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS

HEALTH HAZARD: 0 Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials. Gases and vapors with an LC₅₀ for acute inhalation toxicity greater than 10,000 ppm. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 200 mg/L. Materials with an LD₅₀ for acute dermal toxicity greater than 2000 mg/kg. Materials with an LD₅₀ for acute oral toxicity greater than 2000 mg/kg. Materials essentially non-irritating to the respiratory tract, eyes, and skin. **1** Materials that, under emergency conditions, can cause significant irritation. Gases and vapors with an LC₅₀ for acute inhalation toxicity greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD₅₀ for acute dermal toxicity greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials that slightly to moderately irritate the respiratory tract, eyes and skin. Materials with an LD₅₀ for acute oral toxicity greater than 500 mg/kg but less than or equal to 2000 mg/kg. **2** Materials that, under emergency conditions, can cause temporary incapacitation or residual injury. Gases with an LC₅₀ for acute inhalation toxicity greater than 3,000 ppm but less than or equal to 5,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 2 mg/L but less than or equal to 10 mg/L. Materials with an LD₅₀ for acute dermal toxicity greater than 200 mg/kg but less than or equal to 1000 mg/kg. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. Materials whose LD₅₀ for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. **3** Materials that, under emergency conditions, can cause serious or permanent injury. Gases with an LC₅₀ for acute inhalation toxicity greater than 1,000 ppm but less than or equal to 3,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 0.5 mg/L but less than or equal to 2 mg/L.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): 3 (continued): Materials with an LD₅₀ for acute dermal toxicity greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials corrosive to the skin. Cryogenic gases that cause frostbite and irreversible tissue damage. Compressed liquefied gases with boiling points below -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials with an LD₅₀ for acute oral toxicity greater than 5 mg/kg but less than or equal to 50 mg/kg. **4** Materials that, under emergency conditions, can be lethal. Gases with an LC₅₀ for acute inhalation toxicity less than or equal to 1,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than ten times its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 1000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD₅₀ for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD₅₀ for acute oral toxicity is less than or equal to 5 mg/kg.

FLAMMABILITY HAZARD: 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D of NFPA 704. **1** Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur: Materials that will burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D of NFPA 704. Liquids, solids, and semisolids having a flash point at or above 93.4°C (200°F) (i.e. Class IIIB liquids). Liquids with a flash point greater than 35°C (95°F) that do not sustain combustion when tested using the *Method of Testing for Sustained Combustibility*, per 49 CFR 173, Appendix H or the UN *Recommendations on the Transport of Dangerous Goods, Model Regulations* (current edition) and the related *Manual of Tests and Criteria* (current edition). Liquids with a flash point greater than 35°C (95°F) in a water-miscible solution or dispersion with a water non-combustible liquid/solid content of more than 85% by weight. Liquids that have no fire point when tested by ASTM D 92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup*, up to the boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change. Combustible pellets with a representative diameter of greater than 2 mm (10 mesh). Most ordinary combustible materials. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **2** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air. Liquids having a flash point at or above 37.8°C (100°F) and below 93.4°C (200°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures with air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal, and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **3** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions. Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **4** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily. Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air, Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

INSTABILITY HAZARD: 0 Materials that in themselves are normally stable, even under fire conditions. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100 W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater.

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). **Flash Point:** Minimum temperature at which a liquid gives off sufficient vapor to form an ignitable mixture with air near the surface of the liquid or within the test vessel used. **Autoignition Temperature:** Minimum temperature of a solid, liquid, or gas required to initiate or cause self-sustained combustion in air with no other source of ignition. **LEL:** Lowest concentration of a flammable vapor or gas/air mixture that will ignite and burn with a flame. **UEL:** Highest concentration of a flammable vapor or gas/air mixture that will ignite and burn with a flame.

DEFINITIONS OF TERMS (Continued)

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. **LD₅₀:** Lethal Dose (solids & liquids) that kills 50% of the exposed animals. **LC₅₀:** Lethal Concentration (gases) that kills 50% of the exposed animals. **ppm:** Concentration expressed in parts of material per million parts of air or water. **mg/m³:** Concentration expressed in weight of substance per volume of air. **mg/kg:** Quantity of material, by weight, administered to a test subject, based on their body weight in kg. **TDL₀:** Lowest dose to cause a symptom. **TCL₀:** Lowest concentration to cause a symptom. **TDo, LDLo, and LDo, or TC, TC₀, LCL₀, and LCo:** Lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** **IARC:** International Agency for Research on Cancer. **NTP:** National Toxicology Program. **RTECS:** Registry of Toxic Effects of Chemical Substances. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information:** **BEI:** ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REPRODUCTIVE INFORMATION: A **mutagen** is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An **embryotoxin** is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A **teratogen** is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A **reproductive toxin** is any substance that interferes in any way with the reproductive process.

ECOLOGICAL INFORMATION:

EC: Effect concentration in water. **BCF:** Bioconcentration Factor, which is used to determine if a substance will concentrate in life forms that consume contaminated plant or animal matter. **TL_m:** Median threshold limit. **log K_{ow}** or **log K_{oc}:** Coefficient of Oil/Water Distribution is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION: This section explains the impact of various laws and regulations on the material.

U.S.:

EPA: U.S. Environmental Protection Agency. **ACGIH:** American Conference of Governmental Industrial Hygienists, a professional association that establishes exposure limits. **OSHA:** U.S. Occupational Safety and Health Administration. **NIOSH:** National Institute of Occupational Safety and Health, which is the research arm of OSHA. **DOT:** U.S. Department of Transportation. **TC:** Transport Canada. **SARA:** Superfund Amendments and Reauthorization Act. **TSCA:** U.S. Toxic Substance Control Act. **CERCLA:** Comprehensive Environmental Response, Compensation, and Liability Act. Marine Pollutant status according to the DOT; CERCLA or Superfund; and various state regulations. This section also includes information on the precautionary warnings that appear on the material's package label.

CANADA:

WHMIS: Canadian Workplace Hazardous Materials Information System. **TC:** Transport Canada. **DSL/NDSL:** Canadian Domestic/Non-Domestic Substances List.