



**EMSEAL Joint Systems, Ltd.**  
 25 Bridle Lane, Westborough, MA 01581 USA  
 www.emseal.com

# Safety Data Sheet

## SecuritySeal SSW Foam

**Preparation Date** March 15, 2015    **Revision Date** May 31, 2015

### 1. Identification of the Substance / Preparation

<b>Product identifier</b>	<b>EMSHIELD SSW</b>
<b>Other identifier or names</b>	SecuritySeal SSW
<b>UN ID number</b>	None
<b>Manufacturer Address</b>	EMSEAL LLC 120 Carrier Drive Toronto, Ontario M9W 5R1 Canada
<b>Company Phone</b>	(508) 836-0280 M-F 9am - 5pm
<b>Emergency Phone</b>	CHEMTREC (800) 424-9300 (24 Hours)
<b>CHEMTREC International Phone</b>	+1 703-527-3887 (24 Hours)

### 2. Hazardous Identification

<b>Hazardous Classification</b>	This product is not classified as hazardous when used as intended.
<b>Signal Word</b>	None
<b>Pictograms</b>	None
<b>Emergency Overview:</b>	No emergency requirements.

### 3. Composition / Information on Ingredients

*SecuritySeal SSW is composed of polyurethane foam impregnated with a with a proprietary solid inorganic fire retardant bonded to a fully cured polyurethane sealant. It is classified as Non-Hazardous.*

**NOTE: Polyurethane facing is fully cured. The composition of the polyurethane in its liquid state is comprised of the following:**

<b>Chemical Name</b>	<b>CAS #</b>	<b>% by Weight</b>	<b>GHS Classification Hazard Statements</b>
Calcium Carbonate, Synthetic	471-34-1	20.0-50.0	SELF CLASSIFICATION Classification: Not Applicable
Proprietary Polyoxyalkylene Polymer		25.0-40.0	SELF CLASSIFICATION Classification: Not Applicable
Diisononyl Phthalate	68515-43-5	1.0-20.0	SELF CLASSIFICATION Classification: Not Applicable
Dialkyl Phthalate	68648-93-1	0.0-19.0	SELF CLASSIFICATION Classification: Not Applicable
Proprietary Silica		1.0-5.0	SELF CLASSIFICATION Classification: Not Applicable
Stearic Acid	57-11-4	1.0-5.0	SELF CLASSIFICATION Classification: Not Applicable
Proprietary Pigment		1.0-2.0	SELF CLASSIFICATION Classification: Not Applicable

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).

Classification: Not Applicable



## 4. First Aid Measures

---

- 4.1 EYES:** Flush with water for at least 15 minutes, and call physician if problems persist.
- 4.2 SKIN:** Product may leave a sticky residue, and mild irritation if prolonged exposure. Scrub with soapy water until adhesive is removed.
- 4.3 INGESTION:** Do not eat – call physician if ingested.

## 5. Fire-fighting Measures

---

- 5.2 FLAMMABILITY:** Slight. The material composition does not support combustion.
- 5.2 FLASH POINT:** Unknown.
- 5.3 AUTO-IGNITION TEMPERATURE:** Unknown.
- 5.4 EXTINGUISHING MEDIA:** Large volumes of water, or ABC chemical may be appropriate for initial control or small volumes of impregnated foam.
- 5.5 HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon di/mon oxides will be formed as well as other noxious and toxic fumes upon combustion – do not breath combustion products.

## 6. Accidental Release Measures

---

If material is unusable pick up pieces and dispose of in accordance with local regulations; material and all components are non-toxic and normal landfill will most often be acceptable.

## 7. Handling and Storage

---

Store in original packaging below 35°C. There are no special handling instructions.

## 8. Exposure Controls / Personal Protection

---

- 8.1 RESPIRATORY PROTECTION:** Not required
- 8.2 EYE PROTECTION:** Not required
- 8.3 SKIN PROTECTION:** Gloves of any material are suitable if desired, but not required. No other protection is required.

## 9. Physical and Chemical Properties

---

- 9.1 APPEARANCE:** Dark grey / charcoal colored foam and white or gray polyurethane face with product identifying packaging.
- 9.2 ODOR:** Slight characteristic odor.
- 9.3 PERCENT SOLIDS BY WEIGHT:** 100%
- 9.4 PHYSICAL STATE:** Solid
- 9.5 PERCENT VOLATILE:** <1% wt/wt
- 9.6 DENSITY:** 0.4g/cm<sup>3</sup>
- 9.7 DECOMPOSITION:** > 300°C
- 9.8 SOLUBILITY IN WATER:** None



## 10. Stability and Reactivity

---

Stable under normal conditions – avoid temperatures in excess of 300°C, strong acids and bases, and open flame.

## 11. Toxicological Information

---

Unknown.

## 12. Ecological Information

---

Unknown

## 13. Disposal Considerations

---

No known hazard. Dispose of in accordance with local regulations; material and all components are non-toxic and disposal in normal landfill will most often be acceptable.

## 14. Transportation Information

---

Not hazardous – safe for non-hazardous shipping.

## 15. Regulatory Information

---

Unknown.

## 16. Other Information

---

No other information provided.

**This page has been left blank.**



## Safety Data Sheet

Copyright, 2014, 3M Company.

All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that: (1) the information is copied in full with no changes unless prior written agreement is obtained from 3M, and (2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

<b>Document Group:</b>	09-5451-1	<b>Version Number:</b>	26.00
<b>Issue Date:</b>	06/20/14	<b>Supersedes Date:</b>	08/18/13

### SECTION 1: Identification

#### 1.1. Product identifier

3M Brand Fire Barrier CP-25WB+

#### Product Identification Numbers

42-0016-4710-8, 42-0016-4715-7, 42-0016-4716-5, 98-0400-5380-7, 98-0400-5381-5, 98-0400-5382-3, 98-0400-5383-1, 98-0400-5406-0, 98-0400-5456-5, 98-0400-5562-0, 98-0400-5573-7, 98-0400-5610-7, 98-0400-5629-7

#### 1.2. Recommended use and restrictions on use

##### Recommended use

Fire Protection, Used as Firestop in buildings.

#### 1.3. Supplier's details

<b>MANUFACTURER:</b>	3M
<b>DIVISION:</b>	Industrial Adhesives and Tapes Division
<b>ADDRESS:</b>	3M Center, St. Paul, MN 55144-1000, USA
<b>Telephone:</b>	1-888-3M HELPS (1-888-364-3577)

#### 1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Serious Eye Damage/Irritation: Category 2B.

#### 2.2. Label elements

##### Signal word

Warning

##### Symbols

Not applicable

##### Pictograms

Not applicable

#### Hazard Statements

Causes eye irritation.

**Precautionary Statements**

**General:**

Keep out of reach of children.

**Prevention:**

Wash thoroughly after handling.

**Response:**

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

If eye irritation persists: Get medical advice/attention.

**2.3. Hazards not otherwise classified**

None.

25% of the mixture consists of ingredients of unknown acute dermal toxicity.

**SECTION 3: Composition/information on ingredients**

Ingredient	C.A.S. No.	% by Wt
Zinc Borate 2335	138265-88-0	10 - 30 Trade Secret *
Polymer (NJTS Reg. No. 04499600-7270)	Trade Secret*	10 - 30 Trade Secret *
Water	7732-18-5	10 - 30 Trade Secret *
Sodium Silicate	1344-09-8	10 - 30 Trade Secret *
Ethylhexyldiphenyl phosphate	1241-94-7	3 - 7 Trade Secret *
Oxide glass chemicals	65997-17-3	1 - 5 Trade Secret *
Iron oxide	1309-37-1	1 - 5 Trade Secret *
Polyethylene Glycol	25322-68-3	1 - 5 Trade Secret *
Triphenyl phosphate	115-86-6	< 1.0 Trade Secret *
Di-2-ethylhexylphenyl phosphate	16368-97-1	< 1.0 Trade Secret *
Polyoxyethylene monoocetylphenyl ether	9036-19-5	< 1.0 Trade Secret *
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	55965-84-9	< 0.001 Trade Secret *

NJTS or NJTSRN: New Jersey Trade Secret Registry Number.

\*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**Inhalation:**

Remove person to fresh air. If you feel unwell, get medical attention.

**Skin Contact:**

Wash with soap and water. If signs/symptoms develop, get medical attention.

**Eye Contact:**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

**If Swallowed:**

Rinse mouth. If you feel unwell, get medical attention.

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

See Section 11.1. Information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**

Not applicable

**SECTION 5: Fire-fighting measures**

**5.1. Suitable extinguishing media**

Non-combustible. Use a fire fighting agent suitable for surrounding fire.

**5.2. Special hazards arising from the substance or mixture**

None inherent in this product.

**5.3. Special protective actions for fire-fighters**

No special protective actions for fire-fighters are anticipated.

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

Evacuate area. Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

**6.2. Environmental precautions**

Avoid release to the environment.

**6.3. Methods and material for containment and cleaning up**

Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

Avoid eye contact. Keep out of reach of children. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.

**7.2. Conditions for safe storage including any incompatibilities**

Keep cool. Store away from heat. Store away from areas where product may come into contact with food or pharmaceuticals. Store in a dry place.

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

**Occupational exposure limits**

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Triphenyl phosphate	115-86-6	ACGIH	TWA:3 mg/m3	
Triphenyl phosphate	115-86-6	OSHA	TWA:3 mg/m3	

Iron oxide	1309-37-1	ACGIH	TWA(respirable fraction):5 mg/m3	
Iron oxide	1309-37-1	OSHA	TWA(as fume):10 mg/m3	
ROUGE	1309-37-1	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Polyethylene Glycol	25322-68-3	AIHA	TWA(as particulate):10 mg/m3	
Oxide glass chemicals	65997-17-3	Manufacturer determined	TWA(as dust):10 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists  
 AIHA : American Industrial Hygiene Association  
 CMRG : Chemical Manufacturer's Recommended Guidelines  
 OSHA : United States Department of Labor - Occupational Safety and Health Administration  
 TWA: Time-Weighted-Average  
 STEL: Short Term Exposure Limit  
 CEIL: Ceiling

**8.2. Exposure controls**

**8.2.1. Engineering controls**

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

**8.2.2. Personal protective equipment (PPE)**

**Eye/face protection**

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Indirect Vented Goggles

**Skin/hand protection**

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended: Butyl Rubber

Neoprene

Nitrile Rubber

**Respiratory protection**

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:

Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

**SECTION 9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

**General Physical Form:** Solid  
**Specific Physical Form:** Paste  
**Odor, Color, Grade:** Red with negligible odor



<b>Odor threshold</b>	<i>No Data Available</i>
<b>Melting point</b>	<i>No Data Available</i>
<b>Flash Point</b>	No flash point
<b>Flammability (solid, gas)</b>	Not Classified
<b>Flammable Limits(LEL)</b>	<i>Not Applicable</i>
<b>Flammable Limits(UEL)</b>	<i>Not Applicable</i>

<b>Specific Gravity</b>	1.35 [ <i>Ref Std: WATER=1</i> ]
<b>Solubility in Water</b>	Complete
<b>Solubility- non-water</b>	<i>No Data Available</i>
<b>Autoignition temperature</b>	<i>Not Applicable</i>
<b>Decomposition temperature</b>	<i>No Data Available</i>
<b>Volatile Organic Compounds</b>	< 1 g/l
<b>VOC Less H2O &amp; Exempt Solvents</b>	< 1 g/l

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

This material is considered to be non reactive under normal use conditions.

### 10.2. Chemical stability

Stable.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

None known.

### 10.5. Incompatible materials

None known.

### 10.6. Hazardous decomposition products

<u>Substance</u>	<u>Condition</u>
Carbon monoxide	Not Specified
Carbon dioxide	Not Specified
Oxides of Phosphorus	Not Specified

## SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient

classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

### 11.1. Information on Toxicological effects

#### Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

#### Inhalation:

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

#### Skin Contact:

Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

#### Eye Contact:

Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

#### Ingestion:

May be harmful if swallowed.

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

#### Toxicological Data

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

#### Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE > 5,000 mg/kg
Overall product	Ingestion		No data available; calculated ATE 2,000 - 5,000 mg/kg
Polymer (NJTS Reg. No. 04499600-7270)	Ingestion	Rat	LD50 > 2,000 mg/kg
Zinc Borate 2335	Dermal	Rabbit	LD50 > 10,000 mg/kg
Zinc Borate 2335	Ingestion	Rat	LD50 > 10,000 mg/kg
Sodium Silicate	Dermal	Rabbit	LD50 > 4,640 mg/kg
Sodium Silicate	Ingestion	Rat	LD50 500 mg/kg
Ethylhexyldiphenyl phosphate	Dermal	Rabbit	LD50 > 7,940 mg/kg
Ethylhexyldiphenyl phosphate	Ingestion	Rat	LD50 > 24,000 mg/kg
Iron oxide	Dermal	Not available	LD50 3,100 mg/kg
Iron oxide	Ingestion	Not available	LD50 3,700 mg/kg
Polyethylene Glycol	Dermal	Rabbit	LD50 > 20,000 mg/kg
Polyethylene Glycol	Ingestion	Rat	LD50 32,770 mg/kg
Oxide glass chemicals	Dermal		LD50 estimated to be > 5,000 mg/kg
Oxide glass chemicals	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Polyoxyethylene monoocetylphenyl ether	Dermal	Rabbit	LD50 > 3,000 mg/kg
Polyoxyethylene monoocetylphenyl ether	Ingestion	Rat	LD50 > 500 mg/kg
Triphenyl phosphate	Dermal	Rabbit	LD50 > 7,900 mg/kg
Triphenyl phosphate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 50 mg/l
Triphenyl phosphate	Ingestion	Rat	LD50 > 3,000 mg/kg
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Dermal	Rabbit	LD50 87 mg/kg
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.33 mg/l

3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Rat	LD50 40 mg/kg
--	-----------	-----	---------------

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

Name	Species	Value
Polymer (NJTS Reg. No. 04499600-7270)	Rabbit	Minimal irritation
Sodium Silicate	Rabbit	Corrosive
Iron oxide	Rabbit	No significant irritation
Polyethylene Glycol	Rabbit	Minimal irritation
Oxide glass chemicals		No significant irritation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Rabbit	Corrosive

**Serious Eye Damage/Irritation**

Name	Species	Value
Polymer (NJTS Reg. No. 04499600-7270)		Mild irritant
Sodium Silicate	Rabbit	Corrosive
Iron oxide	Rabbit	No significant irritation
Polyethylene Glycol	Rabbit	Mild irritant
Oxide glass chemicals		No significant irritation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Rabbit	Corrosive

**Skin Sensitization**

Name	Species	Value
Sodium Silicate	Mouse	Not sensitizing
Iron oxide	Human	Some positive data exist, but the data are not sufficient for classification
Polyethylene Glycol	Guinea pig	Not sensitizing
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Human and animal	Sensitizing

**Photosensitization**

Name	Species	Value
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Human and animal	Not sensitizing

**Respiratory Sensitization**

Name	Species	Value

**Germ Cell Mutagenicity**

Name	Route	Value
Sodium Silicate	In Vitro	Not mutagenic
Sodium Silicate	In vivo	Not mutagenic
Iron oxide	In Vitro	Not mutagenic
Polyethylene Glycol	In Vitro	Not mutagenic
Polyethylene Glycol	In vivo	Not mutagenic
Oxide glass chemicals	In Vitro	Some positive data exist, but the data are not sufficient for classification
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	In vivo	Not mutagenic
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	In Vitro	Some positive data exist, but the data are not sufficient for classification

**Carcinogenicity**

Name	Route	Species	Value
Iron oxide	Inhalation	Human	Some positive data exist, but the data are not

			sufficient for classification
Polyethylene Glycol	Ingestion	Rat	Not carcinogenic
Oxide glass chemicals	Inhalation	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Dermal	Mouse	Not carcinogenic
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Rat	Not carcinogenic

**Reproductive Toxicity**

**Reproductive and/or Developmental Effects**

Name	Route	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 200 mg/kg/day	during gestation
Polyethylene Glycol	Ingestion	Not toxic to female reproduction	Rat	NOAEL 1,125 mg/kg/day	during gestation
Polyethylene Glycol	Ingestion	Not toxic to male reproduction	Rat	NOAEL 5699 +/- 1341 mg/kg/day	5 days
Polyethylene Glycol	Not Specified	Some positive reproductive/developmental data exist, but the data are not sufficient for classification		NOEL N/A	
Polyethylene Glycol	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 562 mg/animal/day	during gestation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to female reproduction	Rat	NOAEL 10 mg/kg/day	2 generation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to male reproduction	Rat	NOAEL 10 mg/kg/day	2 generation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to development	Rat	NOAEL 15 mg/kg/day	during organogenesis

**Target Organ(s)**

**Specific Target Organ Toxicity - single exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
Polyethylene Glycol	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.008 mg/l	2 weeks
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	

**Specific Target Organ Toxicity - repeated exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Dog	LOAEL 2,400 mg/kg/day	4 weeks
Sodium Silicate	Ingestion	endocrine system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 804 mg/kg/day	3 months
Sodium Silicate	Ingestion	blood	All data are negative	Rat	NOAEL 804	3 months

					mg/kg/day	
Sodium Silicate	Ingestion	heart   liver	All data are negative	Rat	NOAEL 1,259 mg/kg/day	8 weeks
Iron oxide	Inhalation	pulmonary fibrosis   pneumoconiosis	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Polyethylene Glycol	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.008 mg/l	2 weeks
Polyethylene Glycol	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 5,640 mg/kg/day	13 weeks
Polyethylene Glycol	Ingestion	heart   endocrine system   hematopoietic system   liver   nervous system	All data are negative	Rat	NOAEL 5,640 mg/kg/day	13 weeks
Oxide glass chemicals	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL not available	occupational exposure

**Aspiration Hazard**

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

**SECTION 12: Ecological information**

**Ecotoxicological information**

Test Organism	Test Type	Result
Water flea, Daphnia magna	48 hours Aquatic Toxicity - Acute	27 mg/l
Green algae, Pseudokirchneriella subcapitata	72 hours Aquatic Toxicity - Chronic	2.6 mg/l

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

**Chemical fate information**

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

**SECTION 13: Disposal considerations**

**13.1. Disposal methods**

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

**SECTION 14: Transport Information**

For Transport Information, please visit <http://3M.com/Transportinfo> or call 1-800-364-3577 or 651-737-6501.

## SECTION 15: Regulatory information

### 15.1. US Federal Regulations

Contact 3M for more information.

#### 311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

<u>Ingredient</u>	<u>C.A.S. No</u>	<u>% by Wt</u>
Zinc Borate 2335 (ZINC COMPOUNDS)	138265-88-0	10 - 30

### 15.2. State Regulations

### 15.3. Chemical Inventories

The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

### 15.4. International Regulations

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## SECTION 16: Other information

### NFPA Hazard Classification

Health: 1 Flammability: 1 Instability: 0 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

### HMIS Hazard Classification

**Health: 2 Flammability: 1 Physical Hazard: 0 Personal Protection: X** - See PPE section.

Hazardous Material Identification System (HMIS® III) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® III ratings are to be used with a fully implemented HMIS® III program. HMIS® is a registered mark of the American Coatings Association (ACA).

<b>Document Group:</b>	09-5451-1	<b>Version Number:</b>	26.00
<b>Issue Date:</b>	06/20/14	<b>Supersedes Date:</b>	08/18/13

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the SDS available directly from 3M

**3M USA SDSs are available at [www.3M.com](http://www.3M.com)**

# NORTHERN MANUFACTURING

120 Carrier Drive  
Toronto, ON, Canada M9W 5R1  
Tel: 416-740-2090

Issue Date  
29Jun-2015

Revision Date  
31-Jul-2015

## Safety Data Sheet

Revision Date 31-Jul-2015

Version 5

### 1. Identification of the Substance/Preparation and of the Company/Undertaking

#### Product Identifier

**Product name** EPOXY ADHESIVE PART A

#### Other Means of Identification

**Product Code** NOMAD-PARTA

**Product Technology** Epoxy A side

None

Epoxy A side. FOR INDUSTRIAL USE ONLY.

Restrictions on use: Do not use this product for any use other than intended

#### **Manufacturer Address**

Northern Manufacturing  
120 Carrier Drive  
Toronto, ON, Canada  
M9W 5R1

**Company Phone Number** 416-740-2090 (8AM - 5PM EST) (M-F)

**Emergency Telephone** Chemtrec 1-800-424-9300 (24 Hours)

**Chemtrec International Phone** +1 703 527-3887

### 2. Hazards Identification

#### Classification

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS). This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Skin sensitization	Category 1

### EMERGENCY OVERVIEW

#### **WARNING**

#### **Hazard Statements**

Causes skin irritation

Causes serious eye irritation

May cause an allergic skin reaction



**Appearance** Viscous Off white**Physical State** Paste**Odor** Mild**Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling  
 Wear protective gloves, protective clothing, eye protection, face protection  
 Avoid breathing dust, fumes, or vapors  
 Contaminated work clothing should not be allowed out of the workplace

**Precautionary Statements - Response**

Call a POISON CENTER or doctor/physician if you feel unwell  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 If eye irritation persists: Get medical advice/attention  
 IF ON SKIN: Wash with plenty of soap and water  
 Take off contaminated clothing and wash before reuse  
 If skin irritation or rash occurs: Get medical advice/attention

**Precautionary Statements - Storage**

Store in a well-ventilated place. Keep container tightly closed

**Precautionary Statements - Disposal**

Dispose of contents/container in accordance with local/regional/international regulations

**Hazards Not Otherwise Classified (HNOC)****Other Information**

Toxic to aquatic life with long lasting effects  
 61.69% of the mixture consists of ingredient(s) of unknown toxicity

### 3. Composition/Information on Ingredients

**Chemical Family** Epoxy A Side  
**Chemical nature** Epoxy resin mixture.

Chemical Name	CAS No	Weight-%	Trade secret
Bisphenol A diglycidyl ether resin	25068-38-6	20 - 40	*
Proprietary resin	Proprietary	1 - 10	*

\* The exact percentage (concentration) of composition may have been withheld as a trade secret.

### 4. First Aid Measures

**FIRST AID MEASURES**

**General Advice** Use first aid treatment according to the nature of the injury. For further assistance, contact your local Poison Control Center. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

**Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.

<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
<b>Inhalation</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
<b>Ingestion</b>	Not an expected route of exposure. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
<b>Self-Protection of the First Aider</b>	First Aider: Pay attention to self-protection. Use personal protective equipment as required.

#### **Most Important Symptoms and Effects, Both Acute and Delayed**

**Symptoms** No information available.

#### **Indication of Any Immediate Medical Attention and Special Treatment Needed**

**Note to Physicians** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **Suitable Extinguishing Media**

Use CO2, dry chemical, or foam

**Unsuitable Extinguishing Media** Caution: Use of water spray when fighting fire may be inefficient.

#### **Specific Hazards Arising From the Chemical**

Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water ways. Dike for water control.

**Hazardous Combustion Products** Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See Section 10 Hazardous Decomposition Products for additional information.

#### **Explosion Data**

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

#### **Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### **6. Accidental Release Measures**

#### **Personal Precautions, Protective Equipment and Emergency Procedures**

**Personal Precautions** Ventilate affected area. Extremely slippery when spilled.

**Other Information** Use personal protective equipment as required.

**For Emergency Responders** Use personal protective equipment as required.

#### **Environmental Precautions**

**Environmental Precautions** See Section 12 for additional Ecological Information. Do not allow into any sewer, on the ground or into any body of water.

#### **Methods and Material for Containment and Cleaning Up**

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Pick up and transfer to properly labeled containers.

## 7. Handling and Storage

### Precautions for Safe Handling

**Advice on Safe Handling** Handle in accordance with good industrial hygiene and safety practice.

### Conditions for Safe Storage, Including any Incompatibilities

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place. Store and handle away from heat, flames and oxidizing materials.

**Incompatible Materials** Strong oxidizing agents. Strong acids. Strong bases.

## 8. Exposure Controls/Personal Protection

### Control Parameters

**Exposure Guidelines** .

### Appropriate Engineering Controls

**Engineering Controls** Showers  
Eyewash stations  
Ventilation systems

### Individual Protection Measures, Such As Personal Protective Equipment

**Eye/Face Protection** Splash Goggles.

**Skin and Body Protection** Wear protective gloves and protective clothing.

**Respiratory Protection** If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and Chemical Properties

### Information on Basic Physical and Chemical Properties

<b>Physical State</b>	Paste	<b>Odor</b>	Mild
<b>Appearance</b>	Viscous	<b>Odor Threshold</b>	No information available
<b>Color</b>	Off white		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No information available	
Melting Point/Freezing Point	No information available	
Boiling Point/Boiling Range	> 250 °C	
Flash Point	> 220 °C	
Evaporation Rate	No information available	
Flammability (Solid, Gas)	No information available	
Flammability Limits in Air		
Upper Flammability Limits	No information available	
Lower Flammability Limit	No information available	
Vapor Pressure	No information available	
Vapor Density	No information available	

<b>Specific Gravity</b>	1.68
<b>Water Solubility</b>	Negligible
<b>Solubility in Other Solvents</b>	No information available
<b>Partition Coefficient</b>	No information available
<b>Autoignition Temperature</b>	No information available
<b>Decomposition Temperature</b>	No information available
<b>Kinematic Viscosity</b>	464286 cSt
<b>Dynamic Viscosity</b>	780000 cps @ 25° C
<b>Explosive Properties</b>	Not an explosive
<b>Oxidizing Properties</b>	No information available

**Other Information**

<b>Softening Point</b>	No information available
<b>Molecular Weight</b>	No information available
<b>VOC Content (%)</b>	No information available
<b>Density</b>	14.0 pounds/gallon
<b>Bulk Density</b>	No information available

## 10. Stability and Reactivity

**Reactivity**

No data available

**Chemical Stability**

Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**

Hazardous polymerization does not occur.

**hazardous polymerization**          None under normal processing.

**Conditions to Avoid**

Keep out of reach of children. Extremes of temperature and direct sunlight. Mixture with or exposure to incompatible materials.

**Incompatible Materials**

Strong oxidizing agents. Strong acids. Strong bases.

**Hazardous Decomposition Products**

Carbon monoxide. Carbon Dioxide (CO<sub>2</sub>). Aldehydes. Aromatic hydrocarbons. May emit toxic fumes under fire conditions.

## 11. Toxicological Information

**Information on Likely Routes of Exposure**

<b>Product Information</b>	The product has not been tested
<b>Inhalation</b>	Remove to fresh air.
<b>Eye Contact</b>	Vapor may cause irritation. Avoid contact with eyes. Contact with eyes may cause irritation.
<b>Skin Contact</b>	Avoid contact with skin. May cause irritation. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
<b>Ingestion</b>	Not an expected route of exposure. May be harmful if swallowed.

<b>Chemical Name</b>	<b>Oral LD50 (Rat)</b>	<b>Dermal LD50 (Rabbit)</b>	<b>Inhalation LC50</b>
Bisphenol A diglycidyl ether resin 25068-38-6	= 11400 mg/kg ( Rat )	-	-
Proprietary resin	= 4500 mg/kg ( Rat )	-	-

**Information on toxicological effects**

No information available.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Skin corrosion/irritation</b>	Irritating to skin.
<b>Serious eye damage/eye irritation</b>	Irritating to eyes.
<b>Irritation</b>	Irritating to eyes and skin.
<b>Sensitization</b>	May cause sensitization of susceptible persons.
<b>Germ Cell Mutagenicity</b>	No information available.
<b>Carcinogenicity</b>	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
<b>Reproductive Toxicity</b>	No information available.
<b>STOT - Single Exposure</b>	No information available.
<b>STOT - Repeated Exposure</b>	No information available.
<b>Chronic Toxicity</b>	Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons.
<b>Aspiration Hazard</b>	No information available.

**Numerical Measures of Toxicity - Product Information**

**Unknown Acute Toxicity** 61.69% of the mixture consists of ingredient(s) of unknown toxicity  
**The following values are calculated based on chapter 3.1 of the GHS document**  
**ATEmix (oral)** 9679 mg/kg

**12. Ecological Information**

**Ecotoxicity**

No information available  
66.27998% of the mixture consists of components(s) of unknown hazards to the aquatic environment

**Persistence and Degradability**

No information available

**Other Adverse Effects**

No information available

**13. Disposal Considerations**

**Waste Treatment Methods**

<b>Disposal of Wastes</b>	Disposal should be in accordance with applicable regional, national and local laws and regulations.
<b>Contaminated Packaging</b>	Do not reuse container.

**14. Transport Information**

**DOT** Not regulated

**ICAO (air)**

**IATA**

<b>UN/ID no</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally Hazardous substance Liquid N.O.S. (Bisphenol A epoxy resin)
<b>Hazard Class</b>	9
<b>Packing group</b>	III
<b>Special Provisions</b>	A197 - Not restricted provided that the net quantity in any receptacle does not exceed 5 Kg or 5 L and the packaging meets defined standards.

**IMDG**

<b>UN/ID no</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally Hazardous Substance Liquid N.O.S. (Bisphenol A epoxy resin)
<b>Hazard Class</b>	9
<b>Packing group</b>	III
<b>Special Provisions</b>	A197 - Not restricted provided that the net quantity in any receptacle does not exceed 5 Kg or 5 L and the packaging meets defined standards.
<b>Marine pollutant</b>	This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO

## 15. Regulatory Information

**International Inventories**

**TSCA** All components of this product are either exempt or included on the TSCA Inventory in compliance with the Toxic Substances Control Act.

**Legend:**

*TSCA - United States Toxic Substances Control Act Section 8(b) Inventory*  
*DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List*

**US Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

<b>Acute Health Hazard</b>	Yes
<b>Chronic Health Hazard</b>	Yes
<b>Fire Hazard</b>	No
<b>Sudden Release of Pressure Hazard</b>	No
<b>Reactive Hazard</b>	No

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

**US State Regulations**

The following chemicals may be contained in this product in de minimis amounts not required for listing in section 3. However, these chemicals do appear on some state Right-to-Know (RTK) and/or other hazardous substance lists. Please check your state's listings for more information.

**California Proposition 65**

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Titanium dioxide - 13463-67-7	Carcinogen
Glycidyl phenyl ether - 122-60-1	Carcinogen Male Reproductive
Epichlorohydrin - 106-89-8	Carcinogen Male Reproductive
Silicon dioxide - 14808-60-7	Carcinogen

### U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations

### U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

## 16. Other Information

**HMIS**                      **Health Hazards 2**                      **Flammability 1**                      **Physical Hazards 0**                      **Personal Protection X**

**Prepared by**                      Compliance  
**Issue Date**                      29-Jun-2015  
**Revision Date**                      31-Jul-2015

### Revision note

No information available

### Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**

# NORTHERN MANUFACTURING

120 Carrier Drive  
Toronto, ON, Canada M9W 5R1  
Tel: 416-740-2090

## Safety Data Sheet

Issue Date 29-Jun-2015

Revision Date  
31-Jul-2015

Version 3

### 1. Identification of the Substance/Preparation and of the Company/Undertaking

#### Product Identifier

**Product name** EPOXY ADHESIVE PART B

#### Other Means of Identification

**Product Code** NOMAD-PARTB

**Product Technology** Epoxy B side

None

Curing chemical. FOR INDUSTRIAL USE ONLY.

Restrictions on use: Do not use this product for any use other than intended

#### **Manufacturer Address**

Northern Manufacturing  
120 Carrier Drive  
Toronto, ON, Canada  
M9W 5R1

**Company Phone Number** 416-740-2090 (8AM - 5PM EST) (M-F)

**Emergency Telephone** Chemtrec 1-800-424-9300 (24 Hours)

**Chemtrec International Phone** +1 703 527-3887

### 2. Hazards Identification

#### Classification

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS). This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1

### EMERGENCY OVERVIEW

#### **WARNING**

#### **Hazard Statements**

Harmful if swallowed

Harmful if inhaled

Causes skin irritation

Causes serious eye irritation



May cause an allergic skin reaction



**Appearance** Viscous Black

**Physical State** Paste

**Odor** Mild amine odor

#### Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling  
 Do not eat, drink or smoke when using this product  
 Avoid breathing dust, fumes, or vapors  
 Use only outdoors or in a well-ventilated area  
 Wear protective gloves, protective clothing, eye protection, face protection  
 Contaminated work clothing should not be allowed out of the workplace

#### Precautionary Statements - Response

Call a POISON CENTER or doctor/physician if you feel unwell  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 If eye irritation persists: Get medical advice/attention  
 IF ON SKIN: Wash with plenty of soap and water  
 Take off contaminated clothing and wash before reuse  
 If skin irritation or rash occurs: Get medical advice/attention  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 Call a POISON CENTER or doctor/physician if you feel unwell  
 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
 Rinse mouth

#### Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed

#### Precautionary Statements - Disposal

Dispose of contents/container in accordance with local/regional/international regulations

#### Hazards Not Otherwise Classified (HNOC)

#### Other Information

Toxic to aquatic life with long lasting effects  
 92.194% of the mixture consists of ingredient(s) of unknown toxicity

### 3. Composition/Information on Ingredients

**Chemical Family** Epoxy B Side

Chemical Name	CAS No	Weight-%	Trade secret
m-Xylylenediamine	1477-55-0	1 - 10	*
1,4,7,10,13-Pentazatridecane	112-57-2	1 - 5	*

\* The exact percentage (concentration) of composition may have been withheld as a trade secret.

### 4. First Aid Measures

#### FIRST AID MEASURES

**General Advice** Use first aid treatment according to the nature of the injury. For further assistance, contact

	your local Poison Control Center. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician if irritation persists.
<b>Skin Contact</b>	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If symptoms persist, call a physician. Wash contaminated clothing before reuse.
<b>Inhalation</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is irregular or stopped, administer artificial respiration. Administer oxygen if breathing is difficult. If symptoms persist, call a physician.
<b>Ingestion</b>	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a physician or Poison Control Center immediately.
<b>Self-Protection of the First Aider</b>	First Aider: Pay attention to self-protection. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

#### **Most Important Symptoms and Effects, Both Acute and Delayed**

**Symptoms** May cause allergic skin reaction.

#### **Indication of Any Immediate Medical Attention and Special Treatment Needed**

**Note to Physicians** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **Suitable Extinguishing Media**

Foam, Dry Chemical, Carbon Dioxide (CO<sub>2</sub>);

**Unsuitable Extinguishing Media** Caution: Use of water spray when fighting fire may be inefficient.

#### **Specific Hazards Arising From the Chemical**

Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These may be highly dangerous if inhaled in confined spaces or at high concentration. Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water ways. Dike for water control.

**Hazardous Combustion Products** Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See Section 10 Hazardous Decomposition Products for additional information.

#### **Explosion Data**

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

#### **Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### **6. Accidental Release Measures**

#### **Personal Precautions, Protective Equipment and Emergency Procedures**

**Personal Precautions** Ensure adequate ventilation, especially in confined areas.

**Other Information** Use personal protective equipment as required.

**For Emergency Responders** Use personal protective equipment as required.

### Environmental Precautions

**Environmental Precautions** Do not allow into any sewer, on the ground or into any body of water. See Section 12 for additional Ecological Information.

### Methods and Material for Containment and Cleaning Up

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Pick up and transfer to properly labeled containers.

## 7. Handling and Storage

### Precautions for Safe Handling

**Advice on Safe Handling** Handle in accordance with good industrial hygiene and safety practice.

### Conditions for Safe Storage, Including any Incompatibilities

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place.

**Incompatible Materials** Acids; Bases; Strong oxidizing agents;

## 8. Exposure Controls/Personal Protection

### Control Parameters

#### Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
m-Xylylenediamine 1477-55-0	S* Ceiling: 0.1 mg/m <sup>3</sup>	(vacated) S* (vacated) Ceiling: 0.1 mg/m <sup>3</sup>	Ceiling: 0.1 mg/m <sup>3</sup>

#### Appropriate Engineering Controls

**Engineering Controls** Showers  
Eyewash stations  
Ventilation systems

### Individual Protection Measures, Such As Personal Protective Equipment

**Eye/Face Protection** Splash Goggles. Avoid contact with eyes.

**Skin and Body Protection** Wear protective gloves and protective clothing.

**Respiratory Protection** If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and Chemical Properties

### Information on Basic Physical and Chemical Properties

<b>Physical State</b>	Paste	<b>Odor</b>	Mild amine odor
<b>Appearance</b>	Viscous	<b>Odor Threshold</b>	No information available
<b>Color</b>	Black		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No information available	
Melting Point/Freezing Point	No information available	
Boiling Point/Boiling Range	No information available	
Flash Point	> 110 °C	
Evaporation Rate	No information available	
Flammability (Solid, Gas)	No information available	
Flammability Limits in Air		
Upper Flammability Limits	No information available	
Lower Flammability Limit	No information available	
Vapor Pressure	No information available	
Vapor Density	No information available	
Specific Gravity	1.93	
Water Solubility	Negligible	
Solubility in Other Solvents	No information available	
Partition Coefficient	No information available	
Autoignition Temperature	No information available	
Decomposition Temperature	No information available	
Kinematic Viscosity	464286 cSt	
Dynamic Viscosity	780000 cps @ 25° C	
Explosive Properties	Not an explosive	
Oxidizing Properties	No information available	

**Other Information**

Softening Point	No information available
Molecular Weight	No information available
VOC Content (%)	No information available
Density	16.08 pounds/gallon
Bulk Density	No information available

**10. Stability and Reactivity****Reactivity**

No data available

**Chemical Stability**

Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**

None under normal processing.

**Conditions to Avoid**

Keep out of reach of children. Avoid moisture. Incompatible Materials.

**Incompatible Materials**

Acids; Bases; Strong oxidizing agents;

**Hazardous Decomposition Products**

Carbon oxides; Nitrogen oxides (NO<sub>x</sub>). Thermal decomposition can lead to release of toxic/corrosive gases and vapors.

**11. Toxicological Information****Information on Likely Routes of Exposure**

<b>Product Information</b>	The product has not been tested.
<b>Inhalation</b>	Remove to fresh air.
<b>Eye Contact</b>	Avoid contact with eyes. Irritating to eyes.
<b>Skin Contact</b>	Avoid contact with skin. Repeated or prolonged skin contact may cause allergic reactions

with susceptible persons.

**Ingestion** Not an expected route of exposure. Do NOT taste or swallow. Harmful if swallowed.  
**Component Information** Caution - This preparation contains a substance not yet fully tested

Chemical Name	Oral LD50 (Rat)	Dermal LD50 (Rabbit)	Inhalation LC50
m-Xylylenediamine 1477-55-0	= 660 mg/kg ( Rat )	= 2 g/kg ( Rabbit )	= 700 ppm ( Rat ) 1 h
1,4,7,10,13-Pentaazatridecane 112-57-2	= 2100 mg/kg ( Rat )	= 660 µL/kg ( Rabbit )	-

**Information on toxicological effects**

No information available.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Skin corrosion/irritation** Irritating to skin. Repeated or prolonged contact may cause skin irritation and dermatitis.  
**Serious eye damage/eye irritation** Irritating to eyes.  
**Irritation** Irritating to eyes and skin.  
**Sensitization** May cause sensitization by skin contact.  
**Germ Cell Mutagenicity** No information available.  
**Carcinogenicity** This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.  
**Reproductive Toxicity** No information available.  
**STOT - Single Exposure** No information available.  
**STOT - Repeated Exposure** No information available.  
**Chronic Toxicity** Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons.  
**Target Organ Effects** Eyes, Skin.  
**Aspiration Hazard** No information available.

**Numerical Measures of Toxicity - Product Information**

**Unknown Acute Toxicity** 92.194% of the mixture consists of ingredient(s) of unknown toxicity  
**The following values are calculated based on chapter 3.1 of the GHS document**  
**ATEmix (oral)** 800 mg/kg  
**ATEmix (dermal)** 2372 mg/kg  
**ATEmix (inhalation-dust/mist)** 0.9 mg/l  
**ATEmix (inhalation-vapor)** 621 mg/l

**12. Ecological Information**

**Ecotoxicity**

No information available

98.8% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
1,4,7,10,13-Pentaazatridecane 112-57-2	2.1: 72 h Pseudokirchneriella subcapitata mg/L EC50	420: 96 h Poecilia reticulata mg/L LC50 static		24.1: 48 h Daphnia magna mg/L EC50

**Persistence and Degradability**

No information available

Chemical Name	Partition Coefficient
1,4,7,10,13-Pentaazatridecane 112-57-2	1

**Other Adverse Effects**

No information available

**Ozone Depletion Potential (ODP)** No information available

**13. Disposal Considerations**

**Waste Treatment Methods**

**Disposal of Wastes** Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated Packaging** Do not reuse container.

**14. Transport Information**

**DOT** Not regulated

**ICAO (air)** Not regulated

**IATA** Not regulated

**IMDG** Not regulated

**15. Regulatory Information**

**International Inventories**

**TSCA** All components of this product are either exempt or included on the TSCA Inventory in compliance with the Toxic Substances Control Act.

**Legend:**

*TSCA - United States Toxic Substances Control Act Section 8(b) Inventory*  
*DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List*

**US Federal Regulations**

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

<b>Acute Health Hazard</b>	Yes
<b>Chronic Health Hazard</b>	Yes
<b>Fire Hazard</b>	No
<b>Sudden Release of Pressure Hazard</b>	No
<b>Reactive Hazard</b>	No

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and

Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

**US State Regulations**

The following chemicals may be contained in this product in de minimis amounts not required for listing in section 3. However, these chemicals do appear on some state Right-to-Know (RTK) and/or other hazardous substance lists. Please check your state's listings for more information.

**California Proposition 65**

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Carbon Black - 1333-86-4	Carcinogen

**U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania
m-Xylylenediamine 1477-55-0	X	X	X
1,4,7,10,13-Pentaazatridecane 112-57-2	X	X	X

**U.S. EPA Label Information**

EPA Pesticide Registration Number Not applicable

**16. Other Information**

**HMIS**                      **Health Hazards 2**                      **Flammability 1**                      **Physical Hazards 0**                      **Personal Protection X**

**Prepared by**                      Compliance  
**Issue Date**                      29-Jun-2015  
**Revision Date**                      31-Jul-2015

**Revision note**

No information available

**Disclaimer**

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**

# SAFETY DATA SHEET



## DynaFlex™ SC

### 1. PRODUCT IDENTIFICATION

#### IDENTIFICATION of the SUBSTANCE or PREPARATION

<u>TRADE NAME (AS LABELED):</u>	DynaFlex™ SC
<u>PRODUCT DESCRIPTION:</u>	Silyl Terminated Polyurethane Sealant
<u>CHEMICAL NAME/CLASS:</u>	Silyl Terminated Polyurethane
<u>SYNONYMS:</u>	None
<u>RELEVANT USE:</u>	Aliphatic Urethane Sealant/Caulking Compound
<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>	July 2011
<u>REVISION DATE:</u>	April 8, 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 Z400.1-2010 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, Respiratory Sensitization Cat. 1, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Aquatic Chronic Toxicity Cat. 4

Signal Word: Warning

Hazard Statement Codes: H303, H316, H320, H317, H334, H335, H413

Precautionary Statement Codes: P261, P264, P271, P272, P273, P280, P284, P305 + P351 + P338, P337 + P313, P302 + P352, P321, P333 + P313, P362 + P364, P304 + P340, P342 + P311, P321, P403 + P233, P501

Hazard Symbols/Pictogram: GHS07



#### EMERGENCY OVERVIEW:

PHYSICAL DESCRIPTION: This product is a smooth paste with a slight odor and comes in several colors, including TruWhite and Limestone.

HEALTH HAZARDS: CAUTION! May cause eye, skin, and respiratory tract irritation, especially if exposure is prolonged. May be harmful if ingested. May cause skin and respiratory sensitization in susceptible individuals.

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 trace compound that can cause chronic aquatic toxicity.

#### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS®)

<b>Health</b>	<b>2*</b>
<b>Flammability</b>	<b>1</b>
<b>Physical Hazard</b>	<b>0</b>

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
Calcium Carbonate, Synthetic	471-34-1	20.0-50.0	SELF CLASSIFICATION Classification: Not Applicable
Proprietary Polyoxyalkylene Polymer		25.0-40.0	SELF CLASSIFICATION Classification: Not Applicable
Diisononyl Phthalate	68515-43-5	1.0-20.0	SELF CLASSIFICATION Classification: Not Applicable
Dialkyl Phthalate	68648-93-1	0.0-19.0	SELF CLASSIFICATION Classification: Not Applicable
Proprietary Silica		1.0-5.0	SELF CLASSIFICATION Classification: Not Applicable
Stearic Acid	57-11-4	1.0-5.0	SELF CLASSIFICATION Classification: Not Applicable
Proprietary White Pigment		1.0-2.0	SELF CLASSIFICATION Classification: Not Applicable
Isophorone Diisocyanate	4098-71-9	0.1-0.5	Classification: Acute Inhalation Toxicity Cat. 3, Eye Irritation Cat. 2, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Irritation Cat. 2, Respiratory Sensitization Cat. 1, Skin Sensitization Cat. 1, Aquatic Chronic Toxicity Cat. 2 Hazard Statement Codes: H331, H319, H335, H315, H334, H317, H411
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:** > 93.2°C (> 200°F)

**AUTOIGNITION:** Unknown.

**FLAMMABLE LIMITS IN AIR:** Unknown.

**EXTINGUISHING MEDIA:**

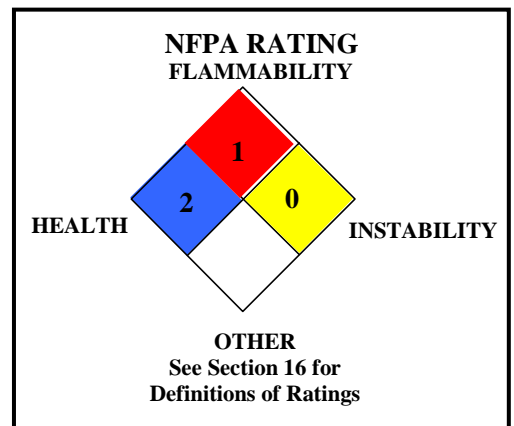
**SUITABLE EXTINGUISHING MEDIA:** Use extinguishing material suitable to the surrounding fire, including foam, halon, carbon dioxide and dry chemical.

**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 if exposed to ignition source. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. 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
Calcium Carbonate, Synthetic	471-34-1	OSHA PEL TWA NIOSH REL TWA	15 mg/m <sup>3</sup> total dust 5 mg/m <sup>3</sup> respirable fraction 10 mg/m <sup>3</sup> total dust 5 mg/m <sup>3</sup> respirable fraction
Dialkyl Phthalate	68648-93-1	NE	NE
Diisononyl Phthalate	68515-43-5	NE	NE
Isophorone Diisocyanate	4098-71-9	ACGIH TLV TWA OSHA PEL TWA OSHA PEL STEL NIOSH REL TWA NIOSH REL STEL DFG MAK TWA DFG MAK PEAK	0.005 ppm 0.005 ppm (vacated 1989 PEL) 0.02 ppm [skin] (vacated 1989 PEL) 0.005 ppm [skin] 0.02 ppm [skin] 0.005 ppm 1•MAK 15 minute average value, 1-hr interval, 4 per shift
Proprietary Polyoxyalkylene Polymer		NE	NE
Proprietary White Pigment		NE	NE
Proprietary Silica		NE	NE
Stearic Acid	57-11-4	NE	NE

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. The following NIOSH respiratory equipment guidelines for components that present an inhalation hazard are presented for additional assistance in respiratory protective equipment selection.

### ISOPHORONE DIISOCYANATE

<u>CONCENTRATION</u>	<u>RESPIRATORY PROTECTION</u>
----------------------	-------------------------------

Up to 0.05 ppm:	Any Supplied-Air Respirator (SAR).
-----------------	------------------------------------

Up to 0.125 ppm:	Any SAR operated in a continuous-flow mode.
------------------	---

Up to 0.25 ppm:	Any Self-Contained Breathing Apparatus (SCBA) with a full facepiece, or any SAR with a full facepiece.
-----------------	--

Up to 1 ppm:	Any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
--------------	---

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions:	Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, or any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive-pressure mode.
--	---

Escape:	Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister, or any appropriate escape-type, SCBA.
---------	---

---

## 9. PHYSICAL and CHEMICAL PROPERTIES

**FORM:** Smooth paste.

**MOLECULAR WEIGHT:** Mixture.

**ODOR:** Mild

**SPECIFIC GRAVITY:** 1.3-1.4

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

**SOLUBILITY IN WATER:** Insoluble.

**MELTING/FREEZING POINT:** Not available.

**VOC (less water and exempt):** <20 g/L

**FLASH POINT:** > 93.2°C (> 200°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.

**COLORS:** Tru-White and Limestone

**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:** 100-104°C (212-220°F)

**WEIGHT % VOC:** ~ 2.0%

**AUTOIGNITION TEMPERATURE:** Not established.

---

## 10. STABILITY and REACTIVITY

**CHEMICAL STABILITY:** Stable under normal circumstances of use and handling.

**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 incompatibility with aluminum, ammonium salts and mercury/hydrogen mixtures.

**HAZARDOUS DECOMPOSITION PRODUCTS:** *Combustion:* Thermal decomposition of this product can generate formaldehyde, carbon oxides, nitrogen oxides, hydrogen cyanide, isocyanates and isocyanic acid. *Hydrolysis:* Not known.

**POSSIBILITY OF HAZARDOUS REACTIONS/POLYMERIZATION:** This product is not expected to undergo hazardous polymerization, decomposition, condensation, or self-reactivity as this product contains stabilizers. Product slowly cures upon contact with moisture in air.

---

## 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.

## 11. TOXICOLOGICAL INFORMATION (Continued)

**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. Inhalation may cause respiratory sensitization and allergic reaction.

**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, respiratory system.

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

**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.

**CALCIUM CARBONATE, SYNTHETIC:**

Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Moderate  
 Standard Draize Test (Eye-Rabbit) 750 µg/24 hours: Severe  
 TDLo (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  
 LD<sub>50</sub> (Oral-Rat) 6450 mg/kg  
 TDLo (Oral-Rat) 60 gm/kg: Gastrointestinal: hypermotility, diarrhea, other changes  
 TDLo (Oral-Rat) 10 mg/kg: Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

**DIISONONYL PHTHALATE:**

TDLo (Oral Rat) 52.5 gm/kg: multi-generations: Reproductive: Paternal Effects: other effects on male; Maternal Effects: other effects

**STEARIC ACID:**

Standard Draize Test (Skin-Human) 75 mg/3 days-intermittent: Mild  
 LD<sub>50</sub> (Oral-Human) 14,286 mg/kg  
 Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Moderate  
 LD<sub>50</sub> (Oral-Rat) 4600 mg/kg  
 LD<sub>50</sub> (Skin-Rabbit) > 5 gm/kg  
 LD<sub>50</sub> (Intravenous-Rat) 21,500 µg/kg: Behavioral: convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration: other changes

**STEARIC ACID (continued):**

LD<sub>50</sub> (Intravenous-Mouse) 23 mg/kg: Behavioral: convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration: other changes  
 LDLo (Oral-Rat) 4640 mg/kg  
 TDLo (Oral-Rat) 313 gm/kg/30 weeks-continuous: Related to Chronic Data: death  
 TDLo (Oral-Rat) 8400 gm/kg/24 weeks-intermittent: Biochemical: Metabolism (Intermediary): lipids including transport  
 TDLo (Oral-Rat) 31,500 mg/kg/30 weeks-intermittent: Behavioral: food intake (animal); Related to Chronic Data: death  
 TDLo (Oral-Rat) 157.5 gm/kg/6 weeks-intermittent: Blood: change in clotting factors, changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Metabolism (Intermediary): lipids including transport  
 TDLo (Oral-Mouse) 252 gm/kg/3 weeks-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain  
 TDLo (Oral-Mouse) 1260 gm/kg/3 weeks-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death  
 TDLo (Intramuscular-Rat) 31,500 mg/kg/30 weeks-continuous: Behavioral: food intake (animal); Lungs, Thorax, or Respiration: other changes; Related to Chronic Data: death  
 TDLo (Implant-Mouse) 400 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Kidney/Ureter/Bladder: tumors  
 DNA Damage (Human Liver) 10 mg/L/20 hours

**PROPRIETARY SILICA:**

TCLo (Inhalation-Rat) 30 mg/kg/6 hours/4 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Blood: hemorrhage; Related to Chronic Data: death

**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
Calcium Carbonate (Synthetic)	No	No	No	No	No	No	No
Dialkyl Phthalate	No	No	No	No	No	No	No
Diisononyl Phthalate	No	No	No	No	No	No	No
Isophorone Diisocyanate	No	No	No	No	No	No	No
Proprietary Silica	No	No	No	No	No	No	No
Stearic Acid	No	No	No	No	No	No	No

**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 contains diisocyanate compounds, which are known human skin and respiratory sensitizers. Exposure can cause allergic reactions. Cross-sensitization between different isocyanates may occur.

**Respiratory Sensitization:** Initial symptoms of respiratory reactions may appear to be a cold or mild hay fever. However, severe asthmatic symptoms can develop and include wheezing, chest tightness, shortness of breath, difficulty breathing and/or coughing. Fever, chills, general feelings of discomfort, headache, and fatigue can also occur. Symptoms may occur immediately upon exposure (within an hour), several hours after exposure or both, and/or at night. Typically, the asthma improves with removal from exposure (e.g. weekends or vacations) and returns, in some cases, in the form of an "acute attack", on renewed exposure. Sensitized people who continue to work with diisocyanates may develop symptoms sooner after each exposure. The number and severity of symptoms may increase. Death has occurred in sensitized individuals accidentally exposed to relatively low concentrations of diisocyanates. Following removal from exposure, some sensitized workers may continue to show a slow decline in lung function and have persistent respiratory problems such as asthmatic symptoms, chronic bronchitis and hypersensitivity for months or years. Exposure to isocyanates is likely to aggravate existing respiratory disease, such as chronic bronchitis, and emphysema.

**Skin Sensitization:** Repeated skin contact with diisocyanates has caused skin sensitization in humans, although the condition is not common. Once a person is sensitized, contact with even a small amount can cause outbreaks of dermatitis with symptoms such as redness, rash, itching and swelling. This can spread from the hands or arms to the face and body. Some people who have inhaled diisocyanate developed extensive skin rashes can last weeks.

**TOXICOLOGICAL SYNERGISTIC PRODUCTS:** None known.

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

**MUTAGENICITY/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 are not available, under the Global Harmonization Standard, the Isophorone Diisocyanate 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: The following components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

<u>CHEMICAL</u>	<u>SECTION 302 EHS (TPO)</u> (40 CFR 355, Appendix A)	<u>SECTION 304 RQ</u> (40 CFR Table 302.4)	<u>SECTION 313 TRI (threshold)</u> (40 CFR 372.65)
Isophorone Diisocyanate	Yes	Yes	Yes

U.S. SARA 302 EXTREMELY HAZARDOUS THRESHOLD PLANNING QUANTITY (TPO): Isophorone Diisocyanate: 500 lb (227 kg)

U.S. SARA 304 EXTREMELY HAZARDOUS REPORTABLE QUANTITY (RQ): Isophorone Diisocyanate: 500 lb (227 kg)

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): No component of this product is found on the Proposition 65 List of chemicals known to the state to cause cancer.

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 AND RESPIRATORY SENSITIZATION AND ALLERGIC REACTION IN SUSCEPTIBLE INDIVIDUALS. CONTAINS TRACE 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.

## 16. OTHER INFORMATION (Continued)

**WARNINGS (continued):** 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 CO<sub>2</sub>. 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, Respiratory 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. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. 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. P284: Wear respiratory 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. P304 + P340: If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor. P321: Specific treatment (remove from exposure and treat symptoms).

**Storage:** P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

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

**Hazard Symbols/Pictogram:** GHS07

### 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:** August 2012: Up-date and revise entire MSDS to include current GHS requirements.

**DATE OF PRINTING**

April 8, 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.

### KEY ACRONYMS (continued):

**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.

**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 LD<sub>50</sub> Rat: > 5000 mg/kg. Dermal Toxicity LD<sub>50</sub> Rat: > 2000 mg/kg. Inhalation Toxicity 4-hrs LC<sub>50</sub> 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 LD<sub>50</sub> Rat: > 500-5000 mg/kg. Dermal Toxicity LD<sub>50</sub> Rat or Rabbit: > 1000-2000 mg/kg. Inhalation Toxicity LC<sub>50</sub> 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 LD<sub>50</sub> Rat: > 50-500 mg/kg. Dermal Toxicity LD<sub>50</sub> Rat or Rabbit: > 200-1000 mg/kg. Inhalation Toxicity LC<sub>50</sub> 4-hrs Rat: > 0.5-2 mg/L.**

## DEFINITIONS OF TERMS (Continued)

### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

**HEALTH HAZARD (continued): 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 LD<sub>50</sub> Rat:* > 1–50 mg/kg. *Dermal Toxicity LD<sub>50</sub> Rat or Rabbit:* > 20–200 mg/kg. *Inhalation Toxicity LC<sub>50</sub> 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 LD<sub>50</sub> Rat:* ≤ 1 mg/kg. *Dermal Toxicity LD<sub>50</sub> Rat or Rabbit:* ≤ 20 mg/kg. *Inhalation Toxicity LC<sub>50</sub> 4-hrs Rat:* ≤ 0.05 mg/L.

**FLAMMABILITY HAZARD: 0 Minimal Hazard:** Materials that will not burn in air when exposure 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).

**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 0 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:* Packing 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. *Reactives:* 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 ≥ 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.

### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

**PHYSICAL HAZARD (continued): 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. *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 LC<sub>50</sub> for acute inhalation toxicity greater than 10,000 ppm. Dusts and mists with an LC<sub>50</sub> for acute inhalation toxicity greater than 200 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 2000 mg/kg. Materials with an LD<sub>50</sub> 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 LC<sub>50</sub> for acute inhalation toxicity greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists with an LC<sub>50</sub> for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD<sub>50</sub> 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 LD<sub>50</sub> 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 LC<sub>50</sub> 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 LC<sub>50</sub> for acute inhalation toxicity, if its LC<sub>50</sub> 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 LC<sub>50</sub> for acute inhalation toxicity greater than 2 mg/L but less than or equal to 10 mg/L. Materials with an LD<sub>50</sub> 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 LD<sub>50</sub> 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 LC<sub>50</sub> 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 LC<sub>50</sub> for acute inhalation toxicity, if its LC<sub>50</sub> 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 LC<sub>50</sub> for acute inhalation toxicity greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials with an LD<sub>50</sub> 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 LD<sub>50</sub> 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 LC<sub>50</sub> 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 LC<sub>50</sub> for acute inhalation toxicity, if its LC<sub>50</sub> is less than or equal to 1000 ppm. Dusts and mists whose LC<sub>50</sub> for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD<sub>50</sub> for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD<sub>50</sub> 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 accordance 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 accordance 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).

## DEFINITIONS OF TERMS (Continued)

### NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

**FLAMMABILITY HAZARD (continued): 3 (continued): 3 (continued):** 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) at 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 100W/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.

### 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. **LD<sub>50</sub>:** Lethal Dose (solids & liquids) that kills 50% of the exposed animals. **LC<sub>50</sub>:** 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/m<sup>3</sup>:** 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. **TDLo:** Lowest dose to cause a symptom. **TCLo:** Lowest concentration to cause a symptom. **TD<sub>0</sub>, LDLo, and LDo, or TC, TCo, LCLo, 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. **TLM:** Median threshold limit. **log K<sub>ow</sub>** or **log K<sub>oc</sub>:** 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/NDL:** Canadian Domestic/Non-Domestic Substances List.