**JB&FT Construction Ltd.**

## Material Application

Spectrum 1 – will be used on exterior of building in accordance to Section 079200 – 3.4.2 Submit colour samples for Architect's approval.

Tremflex 834 – will be used on interior of building in accordance to Section 079200 – 3.4.4

EXP to review Hilti CFS-WB Joint Spray – will be used on demising walls in accordance to Section 078500 – 3.2.2.6 upon approval from EXP. This material and system pass the fire-rated systems and tests as required as per specifications. This is an acrylic product.

EXP to review Dymonic – will be used at the top of fire-resistance rated masonry partitions in accordance to Section 0798500 – 3.2.1, 3.2.2 and 3.2.3

EXP to review Dow Corning 500 – upon approval from EXP this material which is compatible to Dymonic will be used at the top of fire-resistance rated masonry partitions in accordance to Section 0798500 – 3.2.1, 3.2.2 and 3.2.3

EXP to review Roxul Insulation – will be used on demising wall locations where TREMstop Fyre-Sil or Hilti CFS-WB will be used.

Hilti Spray Foam – will be used around perimeter of windows and maybe wall boxes

VENTi Box – will be used as a sleeve for vent boxes in window wall system instead of spray foam upon approval from EXP.

Teeple Architects Inc.

REVIEWED ( )
REVIEWED AS NOTED (X)
REVISE AND RESUBMIT ( )
NOT REVIEWED ( )
DATE: 2016-02-19
REVIEWED BY: TC

This review by Teeple Architects Inc. is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that Teeple Architects Inc. approves the detailed design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of the responsibility for errors or omissions in the shop drawings or of the responsibility for meeting all requirements of the Contracts Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of all trades.

EXP to review submittals noted above as some technical product data varies from specifications.

Submit colour samples noted above for Architect's approval.

**JB&FT Construction Ltd. Material Submission**

**Table of Contents**

**VENTi Box**
EXP Letter
Technical Data
Material Safety Data Sheet

Pages 143-163

**Tremco Incorporated**
3735 Green Road Beachwood, OH 44122 216.292.5000 www.tremcosealants.com

TREMCO®
Commercial Sealants & Waterproofing

# CERTIFICATION LETTER

We certify that Spectrem® 1 has been tested against ASTM C 920, Standard Specification for Elastomeric Joint Sealants and does conform to the specification requirements and is classified as follows:

Type: S (Single Component)
Grade: NS (Non-sag)
Class: 100/50 (+100/- 50% joint movement)
Use: NT (Non-traffic)
M (Mortar)
G (Glass)
A (Aluminum)

Spectrem 1 has been tested and passed ASTM C 1382, "Standard Test Method for Determining Tensile Adhesion Properties of Sealants when used in Exterior Insulation and Finish Systems (EIFS) Joints." Third party verification is available upon request.

Spectrem 1 was tested in accordance with procedures outlined in ASTM D 412, Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers – Tension. The sealant exhibited an ultimate tensile strength of 210psi and 2140% elongation.

We further certify that Spectrem 1 conforms to the requirements of the following Federal Specifications:

TT-S-00230C (COM-NBS), Type II, Class A

***TT-S-001543A (COM-NBS) Class A***

Spectrem 1 meets CAN/CGSB-19.13-M87, MCG-2-40-B-N.

Although Spectrem 1 is not NSF registered, or previously authorized by USDA, it does meet the requirements for use in Federally inspected food processing facilities provided it is not used in areas where food is being processed, prepared or packaged. The material must also be applied in a manner which prevents any direct or indirect contamination of food. Additionally, before any food product can be placed in the area of treatment, the sealant must be allowed to cure according to manufacturer's recommendations and the area should be sufficiently free of odor to prevent food contamination.

**Tremco Incorporated**
3735 Green Road Beachwood, OH 44122 216.292.5000 www.tremcosealants.com

TREMCO
Commercial Sealants & Waterproofing

July 13, 2015

**RE: Spectrem 1- Green Building Product Information (LEED® Information)**

Tremco, as an organization, is committed to quality, responsive to both internal and external customers, our employees, our community and environment, and we will treat all with respect and good stewardship.

Tremco Inc. certifies the following information for Spectrem 1

**Regional Materials:**
Spectrem 1 is manufactured in Toronto, Ontario, Canada.

No single extracted material is used to produce the majority of this product. Additionally, all raw materials come from one of several sources which in turn come from one of several raw material feed stocks. As such, point source for the raw materials cannot be determined.

**Recycled Content Information:**
Recycled content for Spectrem 1 is not available, and for the purposes of LEED reporting should be assumed to be zero.

**VOC Content Information:**
Spectrem 1 has a VOC content of 1g/l equaling 0% by weight as applied/mixed.

The VOC content is below limits set by SCAQMD.

**Additional Information:**

Should you have any questions or require additional information, please do not hesitate to contact Technical Services or your local Tremco Field Representative.

Sincerely,

Amy Woodard
Manager
Compliance and Regulatory

TREMCO®
Commercial Sealants & Waterproofing

# Spectrem® 1

## Single-Component, Moisture-Cure Silicone Sealant

### Product Description

Spectrem® 1 is a high-performance, single-component, moisture-cure, ultra-low modulus silicone sealant.

### Basic Uses

Spectrem 1 is the ideal sealant for the most demanding dynamically moving joints. This includes material having a high coefficient of linear expansion such as aluminum curtainwalls, precast concrete panels, metal panels and window perimeters.

### Features and Benefits

- Ultra-low modulus means high elasticity with movement accommodation of +100/-50%.
- With excellent adhesion to a variety of substrates, one product can be used for multiple applications on the same job from perimeter caulking to expansion joints.
- An excellent choice for sealing difficult-to-adhere-to substrates.
- Resistance to driving rain, ozone, ultra-violet light and temperature extremes safeguards against water penetration with exceptional weatherability in all climate zones.
- Wide variety of colors to choose from with custom colors and color matching also available for a particular project.
- No mixing required, so product is always ready to use for immediate application with conventional caulking equipment.
- Greenguard Gold certification ensures safety for use in the most sensitive indoor environments including hospitals and schools.

### Availability

Immediately available from your local Tremco Sales Representative, Tremco Distributor or Tremco Warehouse.

### Packaging

10.1-oz (300-mL) cartridges

20-oz (600-mL) sausages

2-gal (7.6-L) and 4.5-gal (17-L) pails

55-gal (208-L) drums

All colors are not available in all package sizes. Contact Tremco Customer Service for more information.

### Colors

Aluminum Stone, Anodized Aluminum, Gray, Limestone, White, Off White, Precast White, Bronze, Buff, Dark Bronze, Ivory, Rustic Brick, Sandstone, Black, Adobe Tan, Champagne, and Charcoal.

### Limitations

- Do not apply to damp or contaminated surfaces.
- Use with adequate ventilation.
- Not intended for continuous water immersion.

### Substrate Preparation

Surface must be sound, clean, and dry. Contact surfaces should be free of loose dirt, dust, oils, and any other contaminants. Tremco recommends that air temperatures be 40 °F (5 °C) or above before applying any sealant. If colder weather is imminent, please refer to the Tremco Guide for Cold Weather Applications at www.tremcosealants.com.

SEALANT • WATERPROOFING & RESTORATION INSTITUTE

**Issued to:** Tremco Incorporated
**Product:** Spectrem® 1
**C719:** Pass ✔ Ext:+100% Comp:-50%
**Substrate:** Mortar, Concrete, Aluminum, and Glass *[mortar and concrete tested unprimed and primed with Tremprime Silicone Porous Primer]*
**Validation Date:** 12/19/14 - 12/18/19
**No. 1014-S119**
*Copyright © 2015*

**SEALANT VALIDATION**
www.swrionline.org

### Applicable Standards

Spectrem 1 meets or exceeds the requirements of the following specifications:

- ASTM C920 Type S, Grade NS, Class 100/50, Use NT, M, G, A and O
- ASTM C1248
- ASTM C1382
- ASTM E84
- U.S. Federal Specification TT-S-001543A (COM-NBS) Class A
- U.S. Federal Specification TT-S-00230C (COM-NBS) Class A, Type II
- CAN/CGSB 19.13-M87, MCG-2-40-B-N
- EIMA Test Method 300.01
- Spectrem 1 has been tested as a component of several wall assemblies meeting ASTM E2357, the Standard Test Method for Determining Air Leakage of Air Barrier Assemblies, and NFPA 285, the Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

### Application

Spectrem 1 is easy to apply with conventional caulking equipment. Fill joint completely and tool. At 75 °F (23.9 °C), 50% RH, a durable skin will form within 10 to 30 min. Please visit www.tremcosealants.com for complete application instructions.

### Joint Design

May be used in any joint designed in accordance with accepted architectural/engineering practices. Joint width should be 4 times anticipated movement, but not less than 1/4" (6 mm) wide.

### Joint Backing

Closed-cell polyethylene backer rods or the Tremco sealant tape illmod® 600 is preferred as joint backing to control depth of sealant bead. Where depth of joint will prevent use of joint backing, an adhesive-backed polyethylene tape should be installed to prevent three-sided adhesion. Joint backing must be dry at time of the sealant application.

### Sealant Dimensions

For joints 1/4" (6 mm) to 1/2" (13 mm) wide, the width to depth ratio should be equal. Joints 1/2" (13 mm) wide or greater should have a depth of 1/2" (13 mm). Minimum joint size is 1/4" x 1/4" (6 mm x 6 mm).

## Compatibility and Continuity

Spectrem 1 Silicone Sealant is the recommended sealant for use when detailing over the ExoAir® Air Barrier system to ensure an airtight seal throughout the building envelope. Spectrem 1 has excellent adhesion to most polyethylene-backed, self-adhering air barrier membranes.

The performance of Spectrem 1 is exceptional when used on the polyethylene face of ExoAir 110, ExoAir TWF and the cured surface of ExoAir 120, ExoAir 220 and ExoAir 230.

Spectrem 1 is recommended for use with Tremco's Silicone Rubber extrusions and Tremco's patented solution, Proglaze® ETA (Engineered Transition Assembly), for sealing between challenging conditions such as the opaque wall air barrier and window/curtain wall assemblies. For more information on Proglaze ETA, ExoAir or Tremco's Silicone Rubber Extrusions, please visit the Tremco website at www.tremcosealants.com.

## Warranty

Tremco warrants its Products to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Tremco Products. Tremco's sole obligation shall be, at its option, to replace, or refund the purchase price of the quantity of Tremco Products proven to be defective and Tremco shall not be liable for any loss or damage.

Please refer to our website at www.tremcosealants.com for the most up-to-date Product Data Sheets.

## TYPICAL PHYSICAL PROPERTIES

| PROPERTY | TEST METHOD | TYPICAL VALUES |
|---|---|---|
| As Supplied: | | |
| Curing Time | | 7 to 14 days |
| Flow, sag or slump inches | ASTM C639 | Nil |
| Full Adhesion | | 14 to 21 days |
| Tack free time | ASTM C679 | 30 to 60 min |
| Tooling Time | Skin Formation | 10 to 20 min |
| Extension | | Plus 100 |
| As Cured: After 14 days at 77 °F (25 °C), 50%RH | | |
| Hardness (shore A) | ASTM C661 | Plus 15 |
| Peel Strength Aluminum and Glass | ASTM C794 | 5.2 kN/M (30 pli) |
| Stain & Color Change | ASTM C510 TT-S-001543A | None |
| Staining of Porous Substrates White Marble Primed & Unprimed | ASTM C1248 | No Stain |
| Tear strength, die ("C") | ASTM D624 | .7 kN/M (40 pli) |
| Tensile Strength at 100% Max Elongation | ASTM C1184 | .24 MPa (35 psi) |
| Tensile Strength at Max Elongation | ASTM D412 | 1.38 MPa (200 psi) |



**Tremco Commercial Sealants & Waterproofing**

3735 Green Rd
Beachwood OH 44122
216.292.5000 / 800.321.7906

1451 Jacobson Ave
Ashland OH 44805
419.289.2050 / 800.321.6357

220 Wicksteed Ave
Toronto ON M4H1G7
416.421.3300 / 800.363.3213

1445 Rue de Coulomb
Boucherville QC J4B 7L8
514.521.9555

www.tremcosealants.com

# SAFETY DATA SHEET

## 1. Identification

**Material name:** SPECTREM 1 WHITE
**Material:** 946806 323

**Recommended use and restriction on use**

**Recommended use:** Sealant
**Restrictions on use:** Not known.

**Manufacturer/Importer/Supplier/Distributor Information**

Tremco Canadian Sealants
220 Wicksteed Ave
Toronto ON M4H 1G7
CA

| | |
|---|---|
| **Contact person:** | EH&S Department |
| **Telephone:** | 1-800-263-6046 |
| **Emergency telephone number:** | 1-800-424-9300 (US); 1-613-996-6666 (Canada) |

## 2. Hazard(s) identification

**Hazard Classification**

**Health Hazards**

| | |
|---|---|
| Carcinogenicity | Category 2 |

**Unknown toxicity - Health**

| | |
|---|---|
| Acute toxicity, oral | 17.14 % |
| Acute toxicity, dermal | 19.51 % |
| Acute toxicity, inhalation, vapor | 99.92 % |
| Acute toxicity, inhalation, dust or mist | 99.86 % |

**Unknown toxicity - Environment**

| | |
|---|---|
| Acute hazards to the aquatic environment | 42.06 % |
| Chronic hazards to the aquatic environment | 100 % |

**Label Elements**

**Hazard Symbol:**

**Signal Word:** Warning

**Hazard Statement:** Suspected of causing cancer.

**Precautionary Statement:**

**Prevention:** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

**Response:** If exposed or concerned: Get medical advice/attention.

**Storage:** Store locked up.

**Disposal:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Other hazards which do not result in GHS classification:** None.

## 3. Composition/information on ingredients

**Mixtures**

| Chemical Identity | CAS number | Content in percent (%)* |
|---|---|---|
| Calcium carbonate | 471-34-1 | 30 - 60% |
| Titanium dioxide | 13463-67-7 | 1 - 5% |
| Stearic acid | 57-11-4 | 0.5 - 1.5% |
| Aluminum oxide | 1344-28-1 | 0.1 - 1% |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First-aid measures

**Ingestion:** Call a POISON CENTER/doctor/.../if you feel unwell. Rinse mouth.

**Inhalation:** Move to fresh air.

**Skin Contact:** Wash skin thoroughly with soap and water. Get medical attention if symptoms occur.

**Eye contact:** Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

**Most important symptoms/effects, acute and delayed**

**Symptoms:** May cause skin and eye irritation.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** Symptoms may be delayed.

## 5. Fire-fighting measures

**General Fire Hazards:** No unusual fire or explosion hazards noted.

## Suitable (and unsuitable) extinguishing media

| | |
|---|---|
| **Suitable extinguishing media:** | Use fire-extinguishing media appropriate for surrounding materials. |
| **Unsuitable extinguishing media:** | Do not use water jet as an extinguisher, as this will spread the fire. |
| **Specific hazards arising from the chemical:** | During fire, gases hazardous to health may be formed. |

**Special protective equipment and precautions for firefighters**

| | |
|---|---|
| **Special fire fighting procedures:** | No data available. |
| **Special protective equipment for fire-fighters:** | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. |

## 6. Accidental release measures

| | |
|---|---|
| **Personal precautions, protective equipment and emergency procedures:** | No data available. |
| **Methods and material for containment and cleaning up:** | Collect spillage in containers, seal securely and deliver for disposal according to local regulations. |
| **Notification Procedures:** | In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. |
| **Environmental Precautions:** | Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. |

## 7. Handling and storage

| | |
|---|---|
| **Precautions for safe handling:** | Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust. |
| **Conditions for safe storage, including any incompatibilities:** | Store locked up. |

## 8. Exposure controls/personal protection

**Control Parameters**

**Occupational Exposure Limits**

| Chemical Identity | type | Exposure Limit Values | Source |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Calcium carbonate - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Calcium carbonate - Respirable fraction. | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Titanium dioxide | TWA | 10 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Titanium dioxide - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Stearic acid | TWA | 10 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Aluminum oxide - Respirable fraction. | TWA | 1 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Aluminum oxide - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |

| Chemical name | type | Exposure Limit Values | Source |
|---|---|---|---|
| Calcium carbonate - Total dust. | STEL | 20 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium carbonate - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium carbonate - Total dust. | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium carbonate - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide | TWAEV | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |

**Appropriate Engineering Controls**

Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust.

**Individual protection measures, such as personal protective equipment**

**General information:**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory and eye protection may be needed in special circumstances, such as poorly ventilated spaces, heating, evaporation of liquids from large surfaces, spraying of mists, mechanical generation of dusts, drying of solids, etc.

**Eye/face protection:**

Wear safety glasses with side shields (or goggles).

**Skin Protection**

| | |
|---|---|
| **Hand Protection:** | Use suitable protective gloves if risk of skin contact. |
| **Other:** | Wear suitable protective clothing. |
| **Respiratory Protection:** | In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor. |
| **Hygiene measures:** | Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. |

## 9. Physical and chemical properties

| | |
|---|---|
| **Appearance** | |
| **Physical state:** | solid |
| **Form:** | Paste |
| **Color:** | White |
| **Odor:** | Mild pungent |
| **Odor threshold:** | No data available. |
| **pH:** | No data available. |
| **Melting point/freezing point:** | No data available. |
| **Initial boiling point and boiling range:** | No data available. |
| **Flash Point:** | No data available. |
| **Evaporation rate:** | Slower than Ether |
| **Flammability (solid, gas):** | No |
| **Upper/lower limit on flammability or explosive limits** | |
| **Flammability limit - upper (%):** | No data available. |
| **Flammability limit - lower (%):** | No data available. |
| **Explosive limit - upper (%):** | No data available. |
| **Explosive limit - lower (%):** | No data available. |
| **Vapor pressure:** | No data available. |
| **Vapor density:** | Vapors are heavier than air and may travel along the floor and in the bottom of containers. |
| **Relative density:** | 1.35 |
| **Solubility(ies)** | |
| **Solubility in water:** | Insoluble in water |
| **Solubility (other):** | No data available. |
| **Partition coefficient (n-octanol/water):** | No data available. |
| **Auto-ignition temperature:** | No data available. |
| **Decomposition temperature:** | No data available. |
| **Viscosity:** | No data available. |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity:** | No data available. |
| **Chemical Stability:** | Material is stable under normal conditions. |
| **Possibility of hazardous reactions:** | No data available. |

| | |
|---|---|
| **Conditions to avoid:** | Avoid heat or contamination. |
| **Incompatible Materials:** | Epoxides. Avoid contact with acids and oxidizing substances. Isocyanates. |
| **Hazardous Decomposition Products:** | Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors. |

## 11. Toxicological information

**Information on likely routes of exposure**

| | |
|---|---|
| **Ingestion:** | May be ingested by accident. Ingestion may cause irritation and malaise. |
| **Inhalation:** | In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes. |
| **Skin Contact:** | May be harmful in contact with skin. |
| **Eye contact:** | Eye contact is possible and should be avoided. |

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**
**Product:** No data available.

**Dermal**
**Product:** ATEmix: 4,190.17 mg/kg

**Inhalation**
**Product:** No data available.

**Repeated dose toxicity**
**Product:** No data available.

**Skin Corrosion/Irritation**
**Product:** No data available.

**Serious Eye Damage/Eye Irritation**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| Calcium carbonate | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Titanium dioxide | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Stearic acid | in vivo (Rabbit, 27 - 72 hrs): Not irritating |
| Aluminum oxide | in vivo (Rabbit, 24 hrs): Not irritating |

**Respiratory or Skin Sensitization**

**Product:** No data available.

**Carcinogenicity**
**Product:** Suspected of causing cancer.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

| | |
|---|---|
| Titanium dioxide | Overall evaluation: Possibly carcinogenic to humans. |

**US. National Toxicology Program (NTP) Report on Carcinogens:**
No carcinogenic components identified

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**
No carcinogenic components identified

**Germ Cell Mutagenicity**

**In vitro**
**Product:** No data available.

**In vivo**
**Product:** No data available.

**Reproductive toxicity**
**Product:** No data available.

**Specific Target Organ Toxicity - Single Exposure**
**Product:** No data available.

**Specific Target Organ Toxicity - Repeated Exposure**
**Product:** No data available.

**Aspiration Hazard**
**Product:** No data available.

**Other effects:** No data available.

## 12. Ecological information

**Ecotoxicity:**

**Acute hazards to the aquatic environment:**

**Fish**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| Calcium carbonate | LC 50 (Western mosquitofish (Gambusia affinis), 96 h): > 56,000 mg/l |

| | |
|---|---|
| | Mortality |
| Titanium dioxide | LC 50 (Mummichog (Fundulus heteroclitus), 96 h): > 1,000 mg/l Mortality |

**Aquatic Invertebrates**

| | |
|---|---|
| **Product:** | No data available. |

**Specified substance(s):**

| | |
|---|---|
| Titanium dioxide | EC 50 (Water flea (Daphnia magna), 48 h): > 1,000 mg/l Intoxication |

**Chronic hazards to the aquatic environment:**

**Fish**

| | |
|---|---|
| **Product:** | No data available. |

**Specified substance(s):**

| | |
|---|---|
| Titanium dioxide | LC 0 (Coregonus autumnalis migratorius G., 30 d): 3 mg/l experimental result |
| Aluminum oxide | NOAEL (Pimephales promelas, 28 d): 4.7 mg/l experimental result |

**Aquatic Invertebrates**

| | |
|---|---|
| **Product:** | No data available. |

**Toxicity to Aquatic Plants**

| | |
|---|---|
| **Product:** | No data available. |

**Persistence and Degradability**

**Biodegradation**

| | |
|---|---|
| **Product:** | No data available. |

**BOD/COD Ratio**

| | |
|---|---|
| **Product:** | No data available. |

**Bioaccumulative Potential**

**Bioconcentration Factor (BCF)**

| | |
|---|---|
| **Product:** | No data available. |

**Partition Coefficient n-octanol / water (log Kow)**

| | |
|---|---|
| **Product:** | No data available. |

**Specified substance(s):**

| | |
|---|---|
| Stearic acid | Log Kow: 8.23 |

| | |
|---|---|
| **Mobility in Soil:** | No data available. |
| **Other Adverse Effects:** | No data available. |

## 13. Disposal considerations

**Disposal instructions:** Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Contaminated Packaging:** No data available.

## 14. Transport information

**TDG:**

Not Regulated

**CFR / DOT:**

Not Regulated

**IMDG:**

Not Regulated

## 15. Regulatory information

**US Federal Regulations**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
None present or none present in regulated quantities.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**
None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

| Chemical Identity | Reportable quantity |
|---|---|
| Toluene | 1000 lbs. |
| Cyclohexylamine | 100 lbs. |
| 2-Butylamine | 1000 lbs. |

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**
Delayed (Chronic) Health Hazard

**SARA 302 Extremely Hazardous Substance**

| Chemical Identity | Reportable quantity | Threshold Planning Quantity |
|---|---|---|
| Cyclohexylamine | 10000 lbs. | 10000 lbs. |

**SARA 304 Emergency Release Notification**

| Chemical Identity | Reportable quantity |
|---|---|
| Toluene | 1000 lbs. |
| Cyclohexylamine | 100 lbs. |
| 2-Butylamine | 1000 lbs. |

**SARA 311/312 Hazardous Chemical**

| Chemical Identity | Threshold Planning Quantity |
|---|---|
| Cyclohexylamine | 500lbs |
| Calcium carbonate | 500 lbs |
| Titanium dioxide | 500 lbs |
| Stearic acid | 500 lbs |
| Aluminum oxide | 500 lbs |

**SARA 313 (TRI Reporting)**

None present or none present in regulated quantities.

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

None present or none present in regulated quantities.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

| Chemical Identity | Reportable quantity |
|---|---|
| Cyclohexylamine | 15000 lbs |

**US State Regulations**

**US. California Proposition 65**

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

**US. New Jersey Worker and Community Right-to-Know Act**

| Chemical Identity |
|---|
| Calcium carbonate |
| Titanium dioxide |

**US. Massachusetts RTK - Substance List**

| Chemical Identity |
|---|
| Calcium carbonate |
| Titanium dioxide |
| Cyclohexylamine |

**US. Pennsylvania RTK - Hazardous Substances**

| Chemical Identity |
|---|
| Calcium carbonate |
| Titanium dioxide |

**US. Rhode Island RTK**

No ingredient regulated by RI Right-to-Know Law present.

**Other Regulations:**

| | |
|---|---|
| **Regulatory VOC (less water and exempt solvent):** | 1 g/l |
| **VOC Method 310:** | 0.07 % |

**Inventory Status:**

| | |
|---|---|
| Australia AICS: | All components in this product are listed on or exempt from the Inventory. |
| Canada DSL Inventory List: | All components in this product are listed on or exempt from the Inventory. |

| | |
|---|---|
| EINECS, ELINCS or NLP: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan (ENCS) List: | One or more components in this product are not listed on or exempt from the Inventory. |
| China Inv. Existing Chemical Substances: | All components in this product are listed on or exempt from the Inventory. |
| Korea Existing Chemicals Inv. (KECI): | One or more components in this product are not listed on or exempt from the Inventory. |
| Canada NDSL Inventory: | One or more components in this product are not listed on or exempt from the Inventory. |
| Philippines PICCS: | All components in this product are listed on or exempt from the Inventory. |
| US TSCA Inventory: | All components in this product are listed on or exempt from the Inventory. |
| New Zealand Inventory of Chemicals: | All components in this product are listed on or exempt from the Inventory. |
| Japan ISHL Listing: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan Pharmacopoeia Listing: | One or more components in this product are not listed on or exempt from the Inventory. |

## 16.Other information, including date of preparation or last revision

| | |
|---|---|
| **Revision Date:** | 11/03/2015 |
| **Version #:** | 1.0 |
| **Further Information:** | No data available. |
| **Disclaimer:** | For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition. |

**Tremco Incorporated**
3735 Green Road Beachwood, OH 44122 216.292.5000 www.tremcosealants.com

TREMCO®
Commercial Sealants & Waterproofing

We certify that Tremflex® 834 has been tested against ASTM C 834, Standard Specification for Latex Sealants and does conform to the specification requirements and is classified as follows:

| | | |
|---|---|---|
| Type: | OP | (Opaque) |
| Grade: | -18°C | (Meets the requirements of low temperature flexibility) |

Tremflex 834 is classified as a Type S, single component, Grade NS, non-sag, and Use NT, non-traffic acrylic latex sealant.

Tremflex 834 meets CAN/CGSB-19-GP-17M.

Although Tremflex 834 is not NSF registered, or previously authorized by USDA, it does meet the requirements for use in Federally inspected food processing facilities provided it is not used in areas where food is being processed, prepared or packaged. The material must also be applied in a manner which prevents any direct or indirect contamination of food. Additionally, before any food product can be placed in the area of treatment, the sealant must be allowed to cure according to manufacturer's recommendations and the area should be sufficiently free of odor to prevent food contamination.

**Typical Physical Properties**

| **Property** | **Test Method** | **Results** |
|---|---|---|
| Movement | ASTM C 920 | +/- 12.5% |
| VOC Content | EPA Method 310 | 20g/L |
| Shelf Life | | Min.1 yr (@ 40-110°F (5-43°C)) |
| STC Rating | ASTM E-90 | Restored to 59 in a U411 wall |
| | | See tables below |
| pH | | 7-9 |
| Antifungal | | Contains antifungal additive |
| Peel Strength, pli | | 8-14 (substrate dependent) |

# Table 2. Acoustic Performance of Wall Systems

| Base Wall System (No Leaks) | STC |
|---|---|
| **Wall Type 1.** One layer 5/8" gypsum board, with joints taped and filled, either side of 3-5/8" steel studs, spaced 24" on centre, with absorptive material in cavity. | 45* |
| **Wall Type 2.** Two layers 1/2" gypsum board, with joints overlapped, taped and filled, either side of 3-5/8" steel studs, spaced 24" on centre, with absorptive material in cavity. | 53* |

**Predicted Acoustic Degradation due to Leakage and Performance of Tremco Sealant (STC)**

| Sealant Material | Acoustical Sealant | TREMstop Acrylic | TremFlex 834 |
|---|---|---|---|
| **Wall Type 1** with 1/4" gap along top or bottom of 8' high wall. | 26 (no sealant) | | |
| Above sealed with one 1/4" bead** on one side only. | 44 | 41 | 43 |
| Above sealed with one 1/4" bead on both sides. | 45 | 45 | 45 |
| Above sealed with two 1/4" beads on both sides. | 45 | 45 | 45 |
| **Wall Type 2** with 1/4" gap along top or bottom of 8' high wall. | 26 (no sealant) | | |
| Above sealed with one 1/4" bead on one side only. | 48 | 43 | 47 |
| Above sealed with one 1/4" bead on both sides. | 53 | 52 | 53 |
| Above sealed with two 1/4" beads on both sides. | 53 | 53 | 53 |

* as per National Building Code of Canada, Table A-9.10.3.A.
** depth of bead before shrinkage.

# Table 1. Acoustic Performance of Tremco Sealants

## Material Properties

| Material | Acoustical Sealant | TREMstop Acrylic | TremFlex 834 |
|---|---|---|---|
| Shear Modulus* ($G_R$), $N/m^2$ | 45,000 | 200,000 | 410,000 |
| Loss Factor* ($\tan(\delta_L)$), dimensionless | 0.33 | 0.56 | 0.67 |
| Density (cured), $kg/m^3$ | 1720 | 1100 | 1630 |
| Depth after Shrinkage of 1/2" bead, inches | 0.465 | 0.371 | 0.391 |
| **Predicted Acoustic Performance of Sealant Alone** | | | |
| Sound Transmission Loss (STC) of single 1/4", (as applied**) bead | 30 | 24 | 28 |
| Sound Transmission Loss (STC) of single 1/2", (as applied**) bead | 36 | 30 | 34 |
| STC of two 1/4", (as applied**) beads, separated by 3.5", with sound absorption material in between | 48 | 36 | 44 |
| STC of two 1/2", (as applied**) beads, separated by 3.5", with sound absorption material in between | 60 | 48 | 56 |

* based on tests at 25° C, and 100 rad/s. $G_R$ is the real component of the complex shear modulus.

** depth of bead before shrinkage.

**Tremco Incorporated**
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TREMCO
Commercial Sealants & Waterproofing

July 13, 2015

**RE: Tremflex 834- Green Building Product Information (LEED® Information)**

Tremco, as an organization, is committed to quality, responsive to both internal and external customers, our employees, our community and environment, and we will treat all with respect and good stewardship.

Tremco Inc. certifies the following information for Tremflex 834

**Regional Materials:**
Tremflex 834 is manufactured in Toronto, Ontario, Canada.

No single extracted material is used to produce the majority of this product. Additionally, all raw materials come from one of several sources which in turn come from one of several raw material feed stocks. As such, point source for the raw materials cannot be determined.

**Recycled Content Information:**
Recycled content for Tremflex 834 is not available, and for the purposes of LEED reporting should be assumed to be zero.

**VOC Content Information:**
Tremflex 834 has a VOC content of 31g/l equaling 1.29% by weight as applied/mixed.

Note: VOC content values are as reported for the highest VOC content color for all Tremflex 834 colors. Other colors may have a lower VOC content reported on their MSDS.

**Additional Information:**

Should you have any questions or require additional information, please do not hesitate to contact Technical Services or your local Tremco Field Representative.

Sincerely,

Amy Woodard
Manager
Compliance and Regulatory

TREMCO
Commercial Sealants & Waterproofing

# Tremflex® 834

Siliconized Acrylic Latex Sealant

## Product Description

Tremflex® 834 is a pure acrylic latex sealant formulated to provide a fast-setting pliable seal with minimal shrinkage.

## Basic Uses

Tremflex 834 can be used for general purpose interior and exterior caulking and as a back bedding glazing compound. It is also highly recommended as an acoustical seal in the construction of interior walls, ceilings and floors. It is suitable for use on vinyl, aluminum and wood siding as well as on bathroom and kitchen fixtures.

## Features and Benefits

- Tremflex 834 is an easy gunning, non-staining, general purpose sealant formulated from the highest quality acrylic polymer to offer exceptional flexibility and workability for any commercial construction acrylic sealant application.
- It can be used indoors or outdoors and is tack-free in 15 min and ready to paint in 30 to 45 min with latex or oil-based paint.
- It also has been tested for acoustical properties to reduce sound transmissions when constructing partition walls.

## Availability

Immediately available from your local Tremco Field Representative, Tremco Distributor or Tremco Warehouse.

## Coverage Rates

308' of joint per gal for a 1/4" x 1/4" (6 mm x 6 mm) joint. For specific coverage rates that include joint size, and usage efficiencies, visit our website usage calculator at www.tremcosealants.com

## Packaging

10.1-oz (300-mL) cartridges

20-oz. (600-mL) sausages

5-gal (18.9-L) pails

## Colors

Clear, Limestone, White

## Storage

Store Tremflex 834 in original, undamaged packaging in a clean, dry, protected location with temperatures between 40 to 110 °F (5 to 43 °C).

## Limitations

- Do not apply Tremflex 834 to damp or contaminated surfaces.
- Always utilize the sealant's MSDS found on our website at www.tremcosealants.com for information on proper ventilation, Personal Protective Equipment (PPE) and other health concerns.
- Keep product from freezing.
- Although Tremflex 834 is paintable, this does not imply adhesion to and compatibility with all paints. Please refer to Tremco Technical Bulletin No. S-09-05 for more information.

## Substrate Preparation

Surfaces must be sound, clean, and dry. All release agents, existing waterproofing, dust, loose mortar, laitance, paints, or other finishes must be removed. This can be accomplished with a thorough wire brushing, grinding, sandblasting, or solvent washing, depending on the contamination.

Tremco recommends that surface temperatures be 40 °F (5 °C) or above at the time the sealant is applied. If sealant must be applied in temperatures below 40 °F, please refer to the Tremco Guide for Applying Sealants in Cold Weather that can be found on our website at www.tremcosealants.com.

## Applicable Standards

- Tremflex 834 meets or exceeds the requirements of the following specifications:
- ASTM C834, Type OP, Grade -18 °C
- CAN/CGSB 19-GP-17M

## Application

Apply Tremflex 834 with conventional caulking equipment filling the joint from the bottom first.

Immediately tool the sealant with a spatula to ensure intimate contact with the joint walls. Dry tooling is preferred, although water can be used in limited amounts to slick the spatula if needed.

For window and door perimeter fillet bead applications, a 1/4" (6 mm) minimum surface area is recommended.

## Priming

Tremflex 834 adheres to common construction substrates without primers, however, Tremco always recommends that a mock-up or field adhesion test on the actual materials being used on the job be conducted to verify adhesion. The field adhesion test can be found in Appendix X1 of ASTM C1193, Standard Guide for Use of Joint Sealants.

## Joint Design

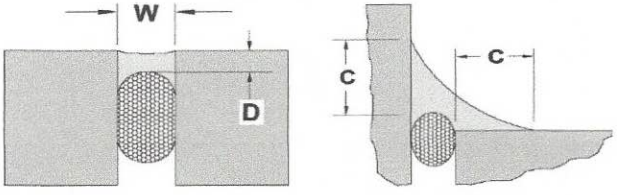
Tremflex 834 may be used in any vertical or horizontal joint designed in accordance with accepted architectural/engineering practices. Joint width should be 4 times anticipated movement, but not less than 1/4" (6.4 mm).

## Joint Backing

Closed cell or reticulated polyethylene backer rod is recommended as joint backing to control sealant depth and to ensure intimate contact of sealant with joint walls when tooling. Where depth of joint will prevent the use of backer rod, an adhesive backed polyethylene tape (bond breaker tape) should be used to prevent three-sided adhesion. All backing should be dry at time of sealant application.

## Sealant Dimensions

W = Sealant width, D = Sealant depth, C = Contact area.




Expansion Joints- The minimum width and depth of any sealant application should be 1/4" x 1/4" (6 mm x 6 mm).

The depth (D) of sealant may be equal to the width (W) of joints that are less than 1/2" wide. For joints ranging from 1/2" to 1" (13 mm to 25 mm) wide, the sealant should be approximately one-half of the joint width.

The maximum depth (D) of any sealant should be 1/2" (13 mm). For joints that are wider than 1" (25 mm), contact Tremco Technical Services or your local Tremco Sales Representative.

Window Perimeter- For fillet beads, or angle beads around windows and doors, the sealant should exhibit a minimum surface contact area [C] of 1/4" ( 6 mm) onto each substrate, with provisions for release at the heel of the angle using backer rod or bond breaker tape.

## Cure Time

At 72 °F (22 °C), 50% RH, Tremflex 834 is tack free in 15 min and dries at a rate of about 1/8" (3 mm) per day but can be painted after only 30 to 45 min with latexes, or oil-based paint. As the temperatures decrease, the dry time of Tremflex 834 will increase. A good rule of thumb is one additional day for every 10 °F (5.5 °C) decrease in temperature.

## Clean Up

Excess sealant and smears along the joint interface can be cleaned up or removed with soapy water before the sealant skins. Any utensils used for tooling can also be cleaned with soapy water.

## Warranty

Tremco warrants its Products to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Tremco Products. Tremco's sole obligation shall be, at its option, to replace, or refund the purchase price of the quantity of Tremco Products proven to be defective and Tremco shall not be liable for any loss or damage.

Please refer to our website at www.tremcosealants.com for the most up-to-date Product Data Sheets.

## TYPICAL PHYSICAL PROPERTIES

| PROPERTY | TEST METHOD | TYPICAL VALUES |
|---|---|---|
| Type | | Single-component Siliconized Acrylic Latex sealant |
| Color | | Clear, Limestone, White |
| Solids | | 84% |
| Specific Gravity | | 1.58 |
| Application | | gun-grade sealant, applied with typical caulking equipment |
| Extrudability | ASTM C1183 | 6 g/s |
| Artificial Weathering | ASTM C732 | None |
| Wash-out | ASTM C732 | None |
| Slump | ASTM C732 | None |
| Cracking | ASTM C732 | None |
| Discoloration | ASTM C732 | None |
| Adhesion Loss | ASTM C732 | None |
| Volume Shrinkage | ASTM C1241 | 22.4% (Type OP) 35.3% (Type C) |
| Low Temp. Flexibility | ASTM C734 | No cracks, no adhesion loss |
| Extension - Recovery | ASTM C736 | 93.7% |
| Extension - Adhesion | ASTM C736 | None |
| Slump | ASTM D2202 | 2 mm |
| Stain Index | ASTM D2203 | 0 mm |
| Tack-Free Time | ASTM C679 | 3 hr, 55 min |
| Movement Capability | | ±12.5% |
| Flame Spread | ASTM E84 | 10 |
| Smoke Development | ASTM E84 | 0 |

**1015/T834DS-ST**

**Tremco Commercial Sealants & Waterproofing**

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Beachwood OH 44122
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1445 Rue de Coulomb
Boucherville QC J4B 7L8
514.521.9555

www.tremcosealants.com

# SAFETY DATA SHEET

## 1. Identification

**Material name:** TREMFLEX 834 WHITE
**Material:** 9418064323

**Recommended use and restriction on use**

**Recommended use:** Sealant
**Restrictions on use:** Not known.

**Manufacturer/Importer/Supplier/Distributor Information**

Tremco Canadian Sealants
220 Wicksteed Ave
Toronto ON M4H 1G7
CA

| | |
|---|---|
| **Contact person:** | EH&S Department |
| **Telephone:** | 1-800-263-6046 |
| **Emergency telephone number:** | 1-800-424-9300 (US); 1-613-996-6666 (Canada) |

## 2. Hazard(s) identification

**Hazard Classification**

**Health Hazards**

| | |
|---|---|
| Skin sensitizer | Category 1 |
| Carcinogenicity | Category 1A |

**Unknown toxicity - Health**

| | |
|---|---|
| Acute toxicity, oral | 70.13 % |
| Acute toxicity, dermal | 71.2 % |
| Acute toxicity, inhalation, vapor | 100 % |
| Acute toxicity, inhalation, dust or mist | 91.09 % |

**Environmental Hazards**

| | |
|---|---|
| Acute hazards to the aquatic environment | Category 3 |

**Unknown toxicity - Environment**

| | |
|---|---|
| Acute hazards to the aquatic environment | 98.05 % |
| Chronic hazards to the aquatic environment | 100 % |

**Label Elements**

**Hazard Symbol:**

**Signal Word:** Danger

| | |
|---|---|
| **Hazard Statement:** | May cause an allergic skin reaction.<br>May cause cancer.<br>Harmful to aquatic life. |
| **Precautionary Statement:**<br>**Prevention:** | Avoid breathing dust/fume/gas/mist/vapors/spray. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. |
| **Response:** | IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Specific treatment (see this label). Wash contaminated clothing before reuse. |
| **Storage:** | Store locked up. |
| **Disposal:** | Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |
| **Other hazards which do not result in GHS classification:** | None. |

## 3. Composition/information on ingredients

**Mixtures**

| Chemical Identity | CAS number | Content in percent (%)* |
|---|---|---|
| Calcium Carbonate (Limestone) | 1317-65-3 | 40 - 70% |
| White mineral oil | 8042-47-5 | 3 - 7% |
| Titanium dioxide | 13463-67-7 | 0.5 - 1.5% |
| Crystalline Silica (Quartz)/ Silica Sand | 14808-60-7 | 0.1 - 1% |
| Amorphous silica | 7631-86-9 | 0.1 - 1% |
| Chlorothalonil | 1897-45-6 | 0.1 - 1% |
| Ammonium hydroxide | 1336-21-6 | 0.1 - 1% |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First-aid measures

| | |
|---|---|
| **Ingestion:** | Call a POISON CENTER/doctor/.../if you feel unwell. Rinse mouth. |
| **Inhalation:** | Move to fresh air. |
| **Skin Contact:** | If skin irritation occurs: Get medical advice/attention. Destroy or thoroughly clean contaminated shoes. Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. If skin irritation or an allergic skin reaction develops, get medical attention. |

**Eye contact:** Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

**Most important symptoms/effects, acute and delayed**

**Symptoms:** May cause skin and eye irritation.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** Symptoms may be delayed.

## 5. Fire-fighting measures

**General Fire Hazards:** No unusual fire or explosion hazards noted.

### Suitable (and unsuitable) extinguishing media

**Suitable extinguishing media:** Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media:** Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical:** During fire, gases hazardous to health may be formed.

**Special protective equipment and precautions for firefighters**

**Special fire fighting procedures:** No data available.

**Special protective equipment for fire-fighters:** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** See Section 8 of the SDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away.

**Methods and material for containment and cleaning up:** Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

**Notification Procedures:** In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

**Environmental Precautions:** Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

## 7. Handling and storage

**Precautions for safe handling:** Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust.

**Conditions for safe storage, including any incompatibilities:** Store locked up.

## 8. Exposure controls/personal protection

**Control Parameters**

**Occupational Exposure Limits**

| Chemical Identity | type | Exposure Limit Values | Source |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Calcium Carbonate (Limestone) - Respirable fraction. | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| White mineral oil - Inhalable fraction. | TWA | 5 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| White mineral oil - Mist. | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Titanium dioxide | TWA | 10 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Titanium dioxide - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction. | TWA | 0.025 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable. | TWA | 2.4 millions of particles per cubic foot of air | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| | TWA | 0.1 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| Crystalline Silica (Quartz)/ Silica Sand - Total dust. | TWA | 0.3 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| Amorphous silica | TWA | 20 millions of particles per cubic foot of air | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| | TWA | 0.8 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| Ammonium hydroxide | STEL | 35 ppm | US. ACGIH Threshold Limit Values |

| | | | |
|---|---|---|---|
| | | | (2011) |
| | TWA | 25 ppm | US. ACGIH Threshold Limit Values (2011) |
| | PEL | 50 ppm 35 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |

| Chemical name | type | Exposure Limit Values | Source |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Total dust. | STEL | 20 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium Carbonate (Limestone) - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium Carbonate (Limestone) - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| White mineral oil - Mist. | TWA | 1 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| White mineral oil - Mist. | TWAEV | 5 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| | STEL | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| White mineral oil - Mist. | TWA | 5 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| | STEL | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |

| | | | |
|---|---|---|---|
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide | TWAEV | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction. | TWA | 0.025 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable. | TWAEV | 0.10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable dust. | TWA | 0.1 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |

**Appropriate Engineering Controls** Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust.

**Individual protection measures, such as personal protective equipment**

**General information:** Use personal protective equipment as required.

**Eye/face protection:** Wear goggles/face shield.

**Skin Protection**

**Hand Protection:** Use suitable protective gloves if risk of skin contact.

**Other:** Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

**Respiratory Protection:** In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor.

**Hygiene measures:** Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin.

## 9. Physical and chemical properties

| | |
|---|---|
| **Appearance** | |
| **Physical state:** | solid |
| **Form:** | Paste |
| **Color:** | White |
| **Odor:** | Mild |
| **Odor threshold:** | No data available. |
| **pH:** | No data available. |
| **Melting point/freezing point:** | No data available. |
| **Initial boiling point and boiling range:** | No data available. |
| **Flash Point:** | No data available. |
| **Evaporation rate:** | Slower than Ether |
| **Flammability (solid, gas):** | No |
| **Upper/lower limit on flammability or explosive limits** | |
| **Flammability limit - upper (%):** | No data available. |
| **Flammability limit - lower (%):** | No data available. |
| **Explosive limit - upper (%):** | No data available. |
| **Explosive limit - lower (%):** | No data available. |
| **Vapor pressure:** | No data available. |
| **Vapor density:** | Vapors are heavier than air and may travel along the floor and in the bottom of containers. |
| **Relative density:** | 1.58 |
| **Solubility(ies)** | |
| **Solubility in water:** | Miscible with water. |
| **Solubility (other):** | No data available. |
| **Partition coefficient (n-octanol/water):** | No data available. |
| **Auto-ignition temperature:** | No data available. |
| **Decomposition temperature:** | No data available. |
| **Viscosity:** | No data available. |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity:** | No data available. |
| **Chemical Stability:** | Material is stable under normal conditions. |
| **Possibility of Hazardous Reactions:** | No data available. |
| **Conditions to Avoid:** | Avoid heat or contamination. |
| **Incompatible Materials:** | Strong acids. Avoid contact with oxidizing agents (e.g. nitric acid, peroxides and chromates). Strong bases. |
| **Hazardous Decomposition Products:** | Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors. |

## 11. Toxicological information

**Information on likely routes of exposure**

| | |
|---|---|
| **Ingestion:** | May be ingested by accident. Ingestion may cause irritation and malaise. |

| | |
|---|---|
| **Inhalation:** | In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes. |
| **Skin Contact:** | Causes mild skin irritation. May cause an allergic skin reaction. |
| **Eye contact:** | Eye contact is possible and should be avoided. |

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**
**Product:** ATEmix: 27,271.48 mg/kg

**Dermal**
**Product:** ATEmix: 6,632.52 mg/kg

**Inhalation**
**Product:** No data available.

**Repeated dose toxicity**
**Product:** No data available.

**Skin Corrosion/Irritation**
**Product:** No data available.

**Serious Eye Damage/Eye Irritation**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| White mineral oil | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Titanium dioxide | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Amorphous silica | in vivo (Rabbit, 24 hrs): Not irritating |
| Ammonium hydroxide | Severely Irritating |

**Respiratory or Skin Sensitization**
**Product:** No data available.

**Carcinogenicity**
**Product:** No data available.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

| | |
|---|---|
| Titanium dioxide | Overall evaluation: Possibly carcinogenic to humans. |
| Crystalline Silica (Quartz)/ Silica Sand | Overall evaluation: Carcinogenic to humans. |
| Chlorothalonil | Overall evaluation: Possibly carcinogenic to humans. |

**US. National Toxicology Program (NTP) Report on Carcinogens:**

| | | |
|---|---|---|
| Crystalline (Quartz)/ Sand | Silica | Known To Be Human Carcinogen. |

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**
No carcinogenic components identified

**Germ Cell Mutagenicity**

**In vitro**
**Product:** No data available.

**In vivo**
**Product:** No data available.

**Reproductive toxicity**
**Product:** No data available.

**Specific Target Organ Toxicity - Single Exposure**
**Product:** No data available.

**Specific Target Organ Toxicity - Repeated Exposure**
**Product:** No data available.

**Aspiration Hazard**
**Product:** No data available.

**Other effects:** No data available.

## 12. Ecological information

**Ecotoxicity:**

**Acute hazards to the aquatic environment:**

**Fish**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| Titanium dioxide | LC 50 (Mummichog (Fundulus heteroclitus), 96 h): > 1,000 mg/l Mortality |
| Chlorothalonil | LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 0.018 mg/l Mortality |
| Ammonium hydroxide | LC 50 (Western mosquitofish (Gambusia affinis), 96 h): 15 mg/l Mortality |

**Aquatic Invertebrates**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| Titanium dioxide | EC 50 (Water flea (Daphnia magna), 48 h): > 1,000 mg/l Intoxication |
| Chlorothalonil | LC 50 (Water flea (Daphnia magna), 48 h): 0.151 - 0.253 mg/l Mortality<br>LC 50 (Water flea (Moina macrocopa), 3 h): > 10 mg/l Mortality<br>LC 50 (Amphipod (Neoniphargus), 7 d): > 0.04 mg/l Mortality<br>LC 50 (Amphipod (Neoniphargus), 4 d): > 0.04 mg/l Mortality<br>LC 50 (Isopod (Colubotelson chiltoni minor), 4 d): > 0.04 mg/l Mortality |
| Ammonium hydroxide | LC 50 (Water flea (Daphnia magna), 25 h): 60 mg/l Mortality<br>LC 50 (Water flea (Ceriodaphnia dubia), 48 h): > 0 - 10 mg/l Mortality |

**Chronic hazards to the aquatic environment:**

**Fish**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| White mineral oil | NOAEL (Oncorhynchus mykiss, 28 d): >= 1,000 mg/l QSAR |
| Titanium dioxide | LC 0 (Coregonus autumnalis migratorius G., 30 d): 3 mg/l experimental result |

**Aquatic Invertebrates**
**Product:** No data available.

**Toxicity to Aquatic Plants**
**Product:** No data available.

**Persistence and Degradability**

**Biodegradation**
**Product:** No data available.

**BOD/COD Ratio**
**Product:** No data available.

**Bioaccumulative Potential**
**Bioconcentration Factor (BCF)**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| Chlorothalonil | Algae, algal mat (Algae), Bioconcentration Factor (BCF): 271 (Static) |

**Partition Coefficient n-octanol / water (log Kow)**
**Product:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse Effects:** Harmful to aquatic organisms.

## 13. Disposal considerations

**Disposal instructions:** Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Contaminated Packaging:** No data available.

## 14. Transport information

**TDG:**

Not Regulated

**CFR / DOT:**

Not Regulated

**IMDG:**

Not Regulated

## 15. Regulatory information

**US Federal Regulations**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
None present or none present in regulated quantities.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

| Chemical Identity | OSHA hazard(s) |
|---|---|
| Formaldehyde | Acute toxicity<br>Skin irritation<br>Skin sensitization<br>Flammability<br>respiratory tract irritation<br>Respiratory sensitization<br>Cancer<br>Eye irritation |

**CERCLA Hazardous Substance List (40 CFR 302.4):**

| Chemical Identity | Reportable quantity |
|---|---|
| Ammonium hydroxide | 1000 lbs. |
| Formaldehyde | 100 lbs. |
| Ethyl alcohol | 100 lbs. |
| Ammonia | 100 lbs. |

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**
Immediate (Acute) Health Hazards
Delayed (Chronic) Health Hazard

**SARA 302 Extremely Hazardous Substance**

| Chemical Identity | Reportable quantity | Threshold Planning Quantity |
|---|---|---|
| Formaldehyde | 100 lbs. | 500 lbs. |
| Ammonia | 100 lbs. | 500 lbs. |

**SARA 304 Emergency Release Notification**

| Chemical Identity | Reportable quantity |
|---|---|
| Ammonium hydroxide | 1000 lbs. |
| Formaldehyde | 100 lbs. |
| Ethyl alcohol | 100 lbs. |
| Ammonia | 100 lbs. |

**SARA 311/312 Hazardous Chemical**

| Chemical Identity | Threshold Planning Quantity |
|---|---|
| Formaldehyde | 500lbs |
| Ammonia | 500lbs |
| Calcium Carbonate (Limestone) | 500 lbs |
| White mineral oil | 500 lbs |
| Titanium dioxide | 500 lbs |
| Crystalline Silica (Quartz)/ Silica Sand | 500 lbs |
| Amorphous silica | 500 lbs |
| Chlorothalonil | 500 lbs |
| Ammonium hydroxide | 500 lbs |

**SARA 313 (TRI Reporting)**

| Chemical Identity |
|---|
| Chlorothalonil |

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**
None present or none present in regulated quantities.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

| Chemical Identity | Reportable quantity |
|---|---|
| Formaldehyde | 15000 lbs |
| Ammonia | 10000 lbs |
| Ammonia | 20000 lbs |

**US State Regulations**

**US. California Proposition 65**

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

**US. New Jersey Worker and Community Right-to-Know Act**

**Chemical Identity**
Calcium Carbonate (Limestone)
White mineral oil

**US. Massachusetts RTK - Substance List**

**Chemical Identity**
Calcium Carbonate (Limestone)
White mineral oil
Crystalline Silica (Quartz)/ Silica Sand
Chlorothalonil
Formaldehyde
Ammonia

**US. Pennsylvania RTK - Hazardous Substances**

**Chemical Identity**
Calcium Carbonate (Limestone)
White mineral oil

**US. Rhode Island RTK**

No ingredient regulated by RI Right-to-Know Law present.

**Other Regulations:**

| | |
|---|---|
| **Regulatory VOC (less water and exempt solvent):** | 14 g/l |
| **VOC Method 310:** | 0.67 % |

**Inventory Status:**

| | |
|---|---|
| Australia AICS: | One or more components in this product are not listed on or exempt from the Inventory. |
| Canada DSL Inventory List: | One or more components in this product are not listed on or exempt from the Inventory. |
| EINECS, ELINCS or NLP: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan (ENCS) List: | One or more components in this product are not listed on or exempt from the Inventory. |
| China Inv. Existing Chemical Substances: | One or more components in this product are not listed on or exempt from the Inventory. |
| Korea Existing Chemicals Inv. (KECI): | One or more components in this product are not listed on or exempt from the Inventory. |
| Canada NDSL Inventory: | One or more components in this product are not listed on or exempt from the Inventory. |

| | |
|---|---|
| Philippines PICCS: | One or more components in this product are not listed on or exempt from the Inventory. |
| US TSCA Inventory: | One or more components in this product are not listed on or exempt from the Inventory. |
| New Zealand Inventory of Chemicals: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan ISHL Listing: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan Pharmacopoeia Listing: | One or more components in this product are not listed on or exempt from the Inventory. |

## 16.Other information, including date of preparation or last revision

| | |
|---|---|
| **Revision Date:** | 07/31/2015 |
| **Version #:** | 1.0 |
| **Further Information:** | No data available. |
| **Disclaimer:** | For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition. |

**Tremco Incorporated**
3735 Green Road Beachwood, OH 44122 216.292.5000 www.tremcosealants.com

TREMCO®
Commercial Sealants & Waterproofing

July 13, 2015

**RE: TREMstop Fyre-Sil- Green Building Product Information (LEED® Information)**

Tremco, as an organization, is committed to quality, responsive to both internal and external customers, our employees, our community and environment, and we will treat all with respect and good stewardship.

Tremco Inc. certifies the following information for TREMstop Fyre-Sil

**Regional Materials:**
TREMstop Fyre-Sil is manufactured in Toronto, Ontario, Canada.

No single extracted material is used to produce the majority of this product. Additionally, all raw materials come from one of several sources which in turn come from one of several raw material feed stocks. As such, point source for the raw materials cannot be determined.

**Recycled Content Information:**
Recycled content for TREMstop Fyre-Sil is not available, and for the purposes of LEED reporting should be assumed to be zero.

**VOC Content Information:**
TREMstop Fyre-Sil has a VOC content of 26g/l equaling 1% by weight as applied/mixed.

TREMstop Fyre-Sil's VOC level is below limits set by SCAQMD.

**Additional Information:**

Should you have any questions or require additional information, please do not hesitate to contact Technical Services or your local Tremco Field Representative.

Sincerely,

Amy Woodard
Manager
Compliance and Regulatory

**Tremco Incorporated**
3735 Green Road Beachwood, OH 44122 216.292.5000 www.tremcosealants.com

TREMCO®
Commercial Sealants & Waterproofing

We certify that TREMstop Fyre-Sil Sealant and Fyre-Sil SL Sealant has been tested against ASTM E-814, **Standard Test Method for Fire Tests of Through Penetration Fire Stops** and **UL 2079 Fire-Tests for Fire Resistance of Building Joint Systems** and does conform to the specification requirements.

Although Fyre-Sil and Fyre-Sil SL is not NSF registered, or previously authorized by USDA, it does meet the requirements for use in Federally inspected food processing facilities provided it is not used in areas where food is being processed, prepared or packaged. The material must also be applied in a manner which prevents any direct or indirect contamination of food. Additionally, before any food product can be placed in the area of treatment, the sealant must be allowed to cure according to manufacturer's recommendations and the area should be sufficiently free of odor to prevent food contamination.

TREMCO
Commercial Sealants & Waterproofing

# TREMstop® Fyre-Sil

Gun-Grade Silicone Sealant

## Product Description

TREMstop® Fyre-Sil is a gun-grade, neutral-cure silicone sealant designed for use in firestop applications, including both joints and through-penetrations.

## Basic Uses

TREMstop Fyre-Sil is for use on metal pipe, plastic pipe, cables, cable trays, ducts and multiple through-penetrations as well as static joints and dynamic joints in concrete, wood floor/ceiling and gypsum wall assemblies and perimeter fire barrier joints.

## Features and Benefits

- TREMstop Fyre-Sil is a firestop product that also provides protection against washout conditions.
- When installed in accordance with a tested firestop system, it affords code compliance for both through-penetrations and fire-rated joints.

## Availability

Immediately available from your local Tremco Sales Representative, Tremco Distributor or Tremco Warehouse.

## Packaging

10.1-oz (300-mL) cartridge, 20-oz (600-mL) sausage, 28.7-oz (850-mL) cartridge, 5-gal (19-L) pail

## Colors

Rust Red, Limestone.

## Shelf Life

Maximum 1 year when stored at 40 to 110 °F (5 to 43 °C).

## Applicable Standards

- UL1479 (ASTM E 814)
- UL 723 (ASTM E 84)
- UL 2079 (ASTM E 1966)
- ASTM E1399
- CAN4-S115M

## Limitations

- Not recommended for use with passive fire containment systems not listed or approved by Tremco.

## Clean Up

Cleaning can be accomplished with solvent such as IPA or MEK while sealant is in an uncured state.

## Warranty

Tremco warrants its Products to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Tremco Products. Tremco's sole obligation shall be, at its option, to replace, or refund the purchase price of the quantity of Tremco Products proven to be defective and Tremco shall not be liable for any loss or damage.

Please refer to our website at www.tremcosealants.com for the most up-to-date Product Data Sheets.

## TYPICAL PHYSICAL PROPERTIES

| PROPERTY | TEST METHOD | TYPICAL VALUES |
|---|---|---|
| Flame Spread | ASTM E84 | 0 |
| Smoke Development | ASTM E84 | 15 |
| Movement Capability | ASTM C719 UL2079; class I, II, III | +/- 33% |
| Peel Strength | ASTM C794 | 5 to 40 substrate dependent |
| Effects of Accelerated Aging | ASTM C793 | Pass |
| pH | ASTM C793 | Neutral |
| VOC Content | EPA Method 310 | 0 g/L |
| Hardness (Shore A) | ASTM C2240 | 15 |
| Permeability (perms) | ASTM E96 | 2.3 wet |
| Antifungal | ASTM E96 | Contains antifungal additive |
| Tack Free Time | 73.4°F (23°C) 50% RH | 18 to 26 min |
| Service Temperature | | -40 to 300 °F (-40 to 149 °C) with peaks to 350 °F (177 °C). |

**00815/TSFSDS-ST**

Please refer to our website at www.tremcosealants.com for the most up-to-date Product Data Sheets.

CLASSIFIED C UL US — FILL VOID OR CAVITY MATERIAL FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS AND/OR JOINT SYSTEMS SEE UL FIRE RESISTANCE DIRECTORY 59S2

GREENGUARD GOLD

Tremco Incorporated UL REGISTERED FIRM R109001 A3129


**Tremco Commercial Sealants & Waterproofing**

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www.tremcosealants.com

# SAFETY DATA SHEET

## 1. Identification

**Material name:** TREMSTOP FYRE-SIL GG RUST RED 4.5 US GL
**Material:** 938874 805

**Recommended use and restriction on use**

**Recommended use:** Sealant
**Restrictions on use:** Not known.

**Manufacturer/Importer/Supplier/Distributor Information**

Tremco Canadian Sealants
220 Wicksteed Ave
Toronto ON M4H 1G7
CA

| | |
|---|---|
| **Contact person:** | EH&S Department |
| **Telephone:** | 1-800-263-6046 |
| **Emergency telephone number:** | 1-800-424-9300 (US); 1-613-996-6666 (Canada) |

## 2. Hazard(s) identification

**Hazard Classification**

**Health Hazards**

| | |
|---|---|
| Carcinogenicity | Category 1A |

**Unknown toxicity - Health**

| | |
|---|---|
| Acute toxicity, oral | 55.93 % |
| Acute toxicity, dermal | 58.25 % |
| Acute toxicity, inhalation, vapor | 99.97 % |
| Acute toxicity, inhalation, dust or mist | 99.26 % |

**Unknown toxicity - Environment**

| | |
|---|---|
| Acute hazards to the aquatic environment | 83.36 % |
| Chronic hazards to the aquatic environment | 100 % |

**Label Elements**

**Hazard Symbol:**

**Signal Word:** Danger

**Hazard Statement:** May cause cancer.

**Precautionary Statement:**

| | |
|---|---|
| **Prevention:** | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. |
| **Response:** | If exposed or concerned: Get medical advice/attention. |
| **Storage:** | Store locked up. |
| **Disposal:** | Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |
| **Other hazards which do not result in GHS classification:** | None. |

## 3. Composition/information on ingredients

**Mixtures**

| Chemical Identity | CAS number | Content in percent (%)* |
|---|---|---|
| Calcium Carbonate (Limestone) | 1317-65-3 | 30 - 60% |
| Amorphous silica | 7631-86-9 | 3 - 7% |
| Iron oxide | 1309-37-1 | 0.5 - 1.5% |
| Titanium dioxide | 13463-67-7 | 0.1 - 1% |
| Crystalline Silica (Quartz)/ Silica Sand | 14808-60-7 | 0.1 - 1% |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First-aid measures

| | |
|---|---|
| **Ingestion:** | Call a POISON CENTER/doctor/.../if you feel unwell. Rinse mouth. |
| **Inhalation:** | Move to fresh air. |
| **Skin Contact:** | Wash skin thoroughly with soap and water. If skin irritation occurs: Get medical advice/attention. |
| **Eye contact:** | Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention. |

**Most important symptoms/effects, acute and delayed**

| | |
|---|---|
| **Symptoms:** | May cause skin and eye irritation. |

**Indication of immediate medical attention and special treatment needed**

| | |
|---|---|
| **Treatment:** | Symptoms may be delayed. |

## 5. Fire-fighting measures

| | |
|---|---|
| **General Fire Hazards:** | No unusual fire or explosion hazards noted. |

## Suitable (and unsuitable) extinguishing media

| | |
|---|---|
| **Suitable extinguishing media:** | Use fire-extinguishing media appropriate for surrounding materials. |
| **Unsuitable extinguishing media:** | Do not use water jet as an extinguisher, as this will spread the fire. |
| **Specific hazards arising from the chemical:** | During fire, gases hazardous to health may be formed. |

**Special protective equipment and precautions for firefighters**

| | |
|---|---|
| **Special fire fighting procedures:** | No data available. |
| **Special protective equipment for fire-fighters:** | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. |

## 6. Accidental release measures

| | |
|---|---|
| **Personal precautions, protective equipment and emergency procedures:** | No data available. |
| **Methods and material for containment and cleaning up:** | Collect spillage in containers, seal securely and deliver for disposal according to local regulations. |
| **Notification Procedures:** | In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. |
| **Environmental Precautions:** | Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages. |

## 7. Handling and storage

| | |
|---|---|
| **Precautions for safe handling:** | Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust. |
| **Conditions for safe storage, including any incompatibilities:** | Store locked up. |

## 8. Exposure controls/personal protection

**Control Parameters**

**Occupational Exposure Limits**

| Chemical Identity | type | Exposure Limit Values | Source |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Calcium Carbonate (Limestone) - Respirable fraction. | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Amorphous silica | TWA | 20 millions of particles per cubic foot of air | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| | TWA | 0.8 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| Iron oxide - Respirable fraction. | TWA | 5 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Iron oxide - Fume. | PEL | 10 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Titanium dioxide | TWA | 10 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Titanium dioxide - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction. | TWA | 0.025 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable. | TWA | 2.4 millions of particles per cubic foot of air | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| | TWA | 0.1 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| Crystalline Silica (Quartz)/ Silica Sand - Total dust. | TWA | 0.3 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |

| Chemical name | type | Exposure Limit Values | Source |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Total dust. | STEL | 20 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |

| | | | |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium Carbonate (Limestone) - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Amorphous silica - Total | TWA | 4 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Amorphous silica - Respirable. | TWA | 1.5 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Amorphous silica | TWAEV | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Amorphous silica - Respirable dust. | TWA | 6 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide | TWAEV | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction. | TWA | 0.025 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable. | TWAEV | 0.10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable dust. | TWA | 0.1 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |

| | |
|---|---|
| **Appropriate Engineering Controls** | Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust. |

**Individual protection measures, such as personal protective equipment**

| | |
|---|---|
| **General information:** | Use personal protective equipment as required. |
| **Eye/face protection:** | Wear goggles/face shield. |
| **Skin Protection** | |
| **Hand Protection:** | Use suitable protective gloves if risk of skin contact. |
| **Other:** | No data available. |
| **Respiratory Protection:** | In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor. |
| **Hygiene measures:** | Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. |

## 9. Physical and chemical properties

| | |
|---|---|
| **Appearance** | |
| **Physical state:** | solid |
| **Form:** | Paste |
| **Color:** | Dark red |
| **Odor:** | Mild sharp |
| **Odor threshold:** | No data available. |
| **pH:** | No data available. |
| **Melting point/freezing point:** | No data available. |
| **Initial boiling point and boiling range:** | No data available. |
| **Flash Point:** | No data available. |
| **Evaporation rate:** | Slower than Ether |
| **Flammability (solid, gas):** | No |
| **Upper/lower limit on flammability or explosive limits** | |
| **Flammability limit - upper (%):** | No data available. |
| **Flammability limit - lower (%):** | No data available. |
| **Explosive limit - upper (%):** | No data available. |
| **Explosive limit - lower (%):** | No data available. |
| **Vapor pressure:** | No data available. |
| **Vapor density:** | Vapors are heavier than air and may travel along the floor and in the bottom of containers. |
| **Relative density:** | 1.37 |
| **Solubility(ies)** | |
| **Solubility in water:** | Practically Insoluble |
| **Solubility (other):** | No data available. |
| **Partition coefficient (n-octanol/water):** | No data available. |
| **Auto-ignition temperature:** | No data available. |
| **Decomposition temperature:** | No data available. |

**Viscosity:** No data available.

## 10. Stability and reactivity

**Reactivity:** No data available.

**Chemical Stability:** Material is stable under normal conditions.

**Possibility of Hazardous Reactions:** No data available.

**Conditions to Avoid:** Avoid heat or contamination.

**Incompatible Materials:** Alcohols. Strong acids. Avoid contact with oxidizing agents (e.g. nitric acid, peroxides and chromates). Strong bases. Water, moisture.

**Hazardous Decomposition Products:** Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

## 11. Toxicological information

**Information on likely routes of exposure**

**Ingestion:** May be ingested by accident. Ingestion may cause irritation and malaise.

**Inhalation:** In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes.

**Skin Contact:** Causes mild skin irritation.

**Eye contact:** Eye contact is possible and should be avoided.

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**
**Product:** ATEmix: 37,704.79 mg/kg

**Dermal**
**Product:** ATEmix: 26,959.71 mg/kg

**Inhalation**
**Product:** No data available.

**Repeated dose toxicity**
**Product:** No data available.

**Skin Corrosion/Irritation**
**Product:** No data available.

**Serious Eye Damage/Eye Irritation**

**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| Amorphous silica | in vivo (Rabbit, 24 hrs): Not irritating |
| Iron oxide | in vivo (Rabbit, 1 - 72 hrs): Not irritating |
| Titanium dioxide | in vivo (Rabbit, 24 - 72 hrs): Not irritating |

**Respiratory or Skin Sensitization**
**Product:** No data available.

**Carcinogenicity**
**Product:** No data available.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

| | |
|---|---|
| Titanium dioxide | Overall evaluation: Possibly carcinogenic to humans. |
| Crystalline Silica (Quartz)/ Silica Sand | Overall evaluation: Carcinogenic to humans. |

**US. National Toxicology Program (NTP) Report on Carcinogens:**

| | | |
|---|---|---|
| Crystalline (Quartz)/ Sand | Silica Silica | Known To Be Human Carcinogen. |

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**
No carcinogenic components identified

**Germ Cell Mutagenicity**

**In vitro**
**Product:** No data available.

**In vivo**
**Product:** No data available.

**Reproductive toxicity**
**Product:** No data available.

**Specific Target Organ Toxicity - Single Exposure**
**Product:** No data available.

**Specific Target Organ Toxicity - Repeated Exposure**
**Product:** No data available.

**Aspiration Hazard**
**Product:** No data available.

**Other effects:** No data available.

## 12. Ecological information

**Ecotoxicity:**

**Acute hazards to the aquatic environment:**

**Fish**

**Product:** No data available.

**Specified substance(s):**

Titanium dioxide — LC 50 (Mummichog (Fundulus heteroclitus), 96 h): > 1,000 mg/l Mortality

**Aquatic Invertebrates**

**Product:** No data available.

**Specified substance(s):**

Titanium dioxide — EC 50 (Water flea (Daphnia magna), 48 h): > 1,000 mg/l Intoxication

**Chronic hazards to the aquatic environment:**

**Fish**

**Product:** No data available.

**Specified substance(s):**

Iron oxide — LOAEL (Pimephales promelas, 33 d): 1.6 mg/l experimental result

Titanium dioxide — LC 0 (Coregonus autumnalis migratorius G., 30 d): 3 mg/l experimental result

**Aquatic Invertebrates**

**Product:** No data available.

**Toxicity to Aquatic Plants**

**Product:** No data available.

**Persistence and Degradability**

**Biodegradation**

**Product:** No data available.

**BOD/COD Ratio**

**Product:** No data available.

**Bioaccumulative Potential**

**Bioconcentration Factor (BCF)**

**Product:** No data available.

**Partition Coefficient n-octanol / water (log Kow)**

**Product:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse Effects:** No data available.

## 13. Disposal considerations

**Disposal instructions:** Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Contaminated Packaging:** No data available.

## 14. Transport information

**TDG:**

Not Regulated

**CFR / DOT:**

Not Regulated

**IMDG:**

Not Regulated

## 15. Regulatory information

**US Federal Regulations**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
None present or none present in regulated quantities.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**
None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

| Chemical Identity | Reportable quantity |
|---|---|
| Ethyl alcohol | 100 lbs. |

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**
Delayed (Chronic) Health Hazard

**SARA 302 Extremely Hazardous Substance**
None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

| Chemical Identity | Reportable quantity |
|---|---|
| Ethyl alcohol | 100 lbs. |

**SARA 311/312 Hazardous Chemical**

| Chemical Identity | Threshold Planning Quantity |
|---|---|
| Calcium Carbonate (Limestone) | 500 lbs |
| Amorphous silica | 500 lbs |
| Iron oxide | 500 lbs |
| Titanium dioxide | 500 lbs |
| Crystalline Silica (Quartz)/ Silica Sand | 500 lbs |

**SARA 313 (TRI Reporting)**

None present or none present in regulated quantities.

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

None present or none present in regulated quantities.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

None present or none present in regulated quantities.

**US State Regulations**

**US. California Proposition 65**

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

**US. New Jersey Worker and Community Right-to-Know Act**

| Chemical Identity |
|---|
| Calcium Carbonate (Limestone) |
| Amorphous silica |

**US. Massachusetts RTK - Substance List**

| Chemical Identity |
|---|
| Calcium Carbonate (Limestone) |
| Amorphous silica |
| Crystalline Silica (Quartz)/ Silica Sand |

**US. Pennsylvania RTK - Hazardous Substances**

| Chemical Identity |
|---|
| Calcium Carbonate (Limestone) |
| Amorphous silica |

**US. Rhode Island RTK**

No ingredient regulated by RI Right-to-Know Law present.

**Other Regulations:**

| | |
|---|---|
| **Regulatory VOC (less water and exempt solvent):** | 26 g/l |
| **VOC Method 310:** | 1.89 % |

**Inventory Status:**

Australia AICS: All components in this product are listed on or

| | |
|---|---|
| | exempt from the Inventory. |
| Canada DSL Inventory List: | All components in this product are listed on or exempt from the Inventory. |
| EINECS, ELINCS or NLP: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan (ENCS) List: | One or more components in this product are not listed on or exempt from the Inventory. |
| China Inv. Existing Chemical Substances: | All components in this product are listed on or exempt from the Inventory. |
| Korea Existing Chemicals Inv. (KECI): | All components in this product are listed on or exempt from the Inventory. |
| Canada NDSL Inventory: | One or more components in this product are not listed on or exempt from the Inventory. |
| Philippines PICCS: | All components in this product are listed on or exempt from the Inventory. |
| US TSCA Inventory: | All components in this product are listed on or exempt from the Inventory. |
| New Zealand Inventory of Chemicals: | All components in this product are listed on or exempt from the Inventory. |
| Japan ISHL Listing: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan Pharmacopoeia Listing: | One or more components in this product are not listed on or exempt from the Inventory. |

## 16.Other information, including date of preparation or last revision

| | |
|---|---|
| **Revision Date:** | 08/14/2015 |
| **Version #:** | 1.0 |
| **Further Information:** | No data available. |
| **Disclaimer:** | For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition. |

Tremco Incorporated
3735 Green Road • Beachwood, OH 44122 • 866-209-2404

TREMCO

Commercial Sealant and Waterproofing Division
Integrated Technical Solutions

# FACSIMILE

**TO:**
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**FROM:** Tremco Incorporated
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**CC:**
Peter Kubas
Tremco Canada

**PAGES SENT**: 2
(Including cover)

**DATE:** October 16, 2013

**SUBJECT:** Tremco Fire Protection Engineering Judgment TL/PH 120-01-555 for 1080 Bay St./ 65 St. Mary's St. project, in Toronto, ON.

For more information about Tremco Fire Protection Products, including firestop system search, data sheets, MSDS, news and more, visit Tremco Incorporated on the web at:
**www.tremcofirestop.com**

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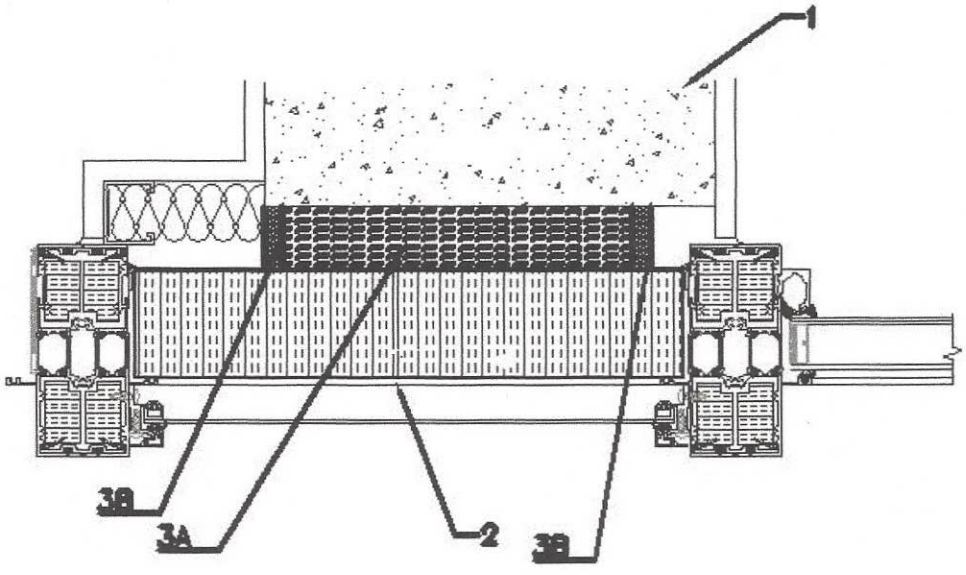
**System Number: TL/PH 120-01-555** (Engineering Judgment)

Project: 1080 Bay St./ 65 St. Mary's St.
Location: Toronto, ON
F Rating: 2 Hrs *See Note


**TREMCO INC.®**
3735 Green Road
Beachwood, Ohio 44122
www.tremcofirestop.com


Drawing not to scale




1. **Wall:** Minimum 4-1/2" thickness cast concrete wall assembly providing a 2 hour rating. Maximum joint width of 6". Wall may also be constructed of any UL classified concrete blocks.
2. **Window Wall:** Design by others.
3. **Firestop System Sealant-**The Firestop system will consist of the following components:
    a. **Mineral Wool Insulation:** Minimum thickness 4". When FRYE-Sil S.L. is used, mineral wool shall be minimum 3.5 pcf density compress 25%. when TREMstop Acrylic-SP is used, mineral wool shall be 6 pcf density compressed 35%.
    b. Option 1: **Tremco** FYRE-SIL S.L. self-leveling sealant applied to a depth of 1/4" minimum
    Option 2: **tremco** TREMstop Acrylic-SP applied to a depth of 1/8" and overlapping adjacent surfaces by 1/2".

Note-The performance of the firestop system is dependant upon the performance of the Window wall assembly. The performance of the system will not exceed the performance of the window wall assembly.


Date Created: 10/16/2013
Last Revised: 10/16/2013
File Name: tlph12001_555.doc

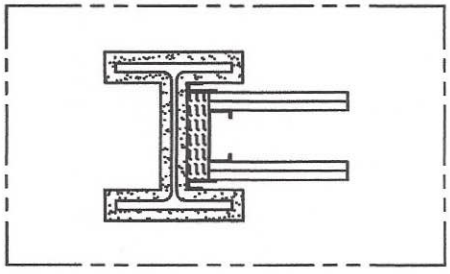
All configurations shown are suggestions only and must be approved by the specifying architects or engineers for the project. This is not a UL, cUL, ULC, OPL, ITS or FM classified system, but a modification to the closest system design noted above:

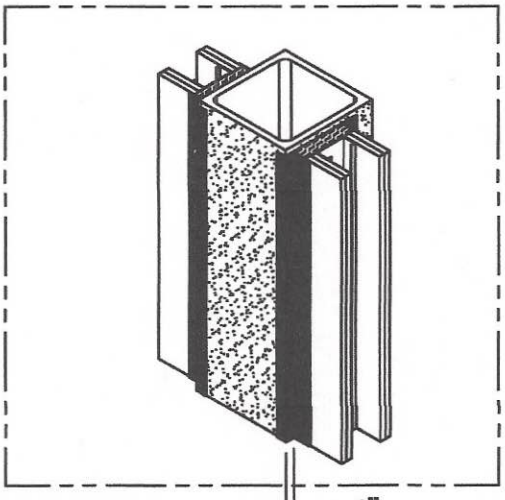
Drawn by: D. Marimpietri

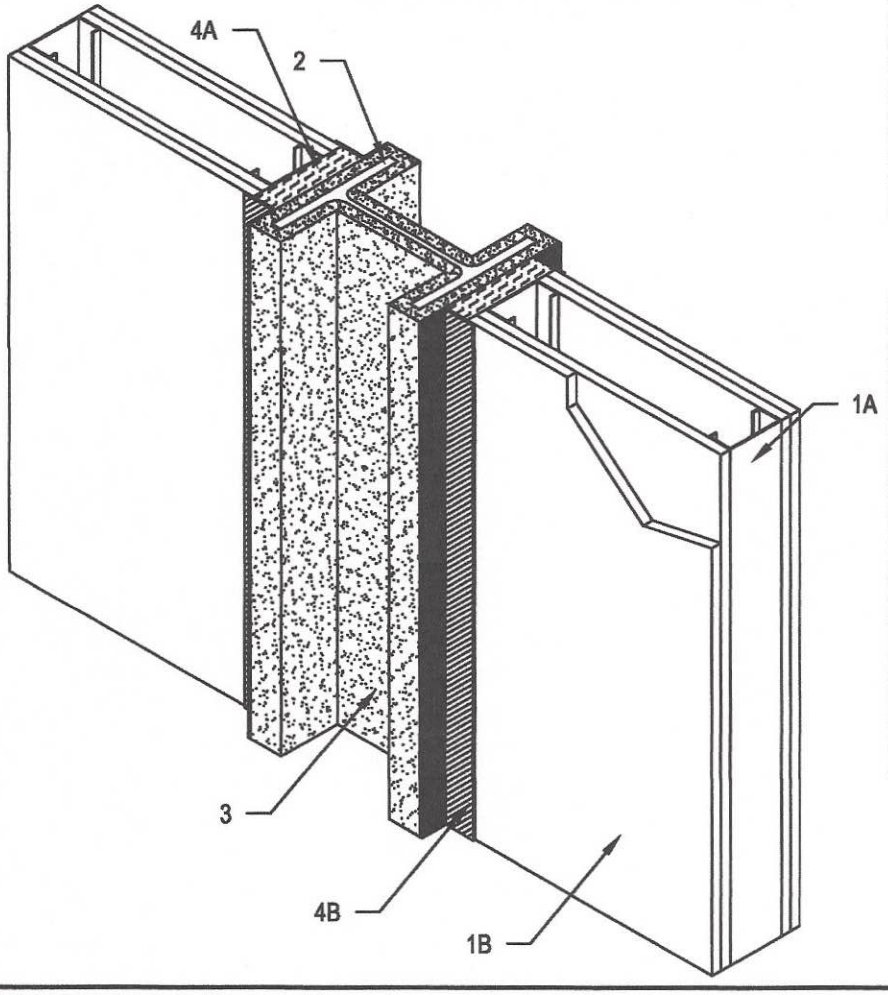

This information is intended for engineering purposes only and is based on internal and third party testing which we believe to be accurate. The user of this information must determine the suitability of the design to the application and the product to local building codes. Tremco Inc. shall not be liable for damages, direct or consequential, resulting from use of this material to design. Tremco Inc. shall only be responsible for replacing material found to be defective.

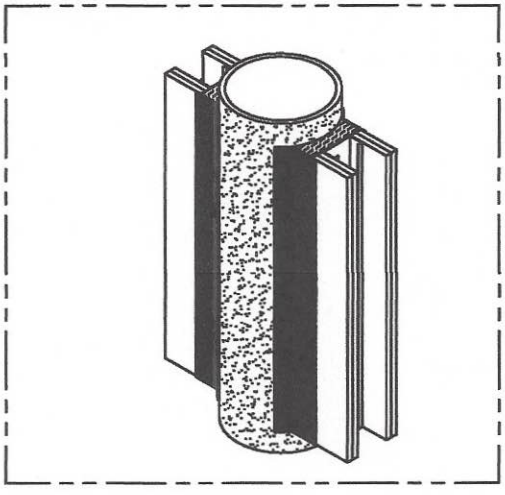
# Table Of Contents

**Design Number HI/JF 120-01**
**Vertical Joint System**
**Hilti Corporation**
**CFS-SP WB Firestop Joint Spray**
**ASTM E 1966**
**Rating: 120 Minutes**
**CAN/ULC S 115**
**FTH Rating: 120 Minutes**
**Leakage Rating: < 1 CFM/Ft.**
**Cycling: None**





Hilti Firestop Systems

Reproduced by HILTI, Inc.
Courtesy of Intertek Group
July 01, 2013

Intertek

# Design Number HI/JF 120-01
## Vertical Joint System
## Hilti Corporation
## CFS-SP WB Firestop Joint Spray
## ASTM E 1966
## Rating: 120 Minutes
## CAN/ULC S 115
## FTH Rating: 120 Minutes
## Leakage Rating: < 1 CFM/Ft.
## Cycling: None

1. WALL ASSEMBLY: Construct 2-hour rated wall assembly containing the following elements:
   A. STEEL STUDS: Install minimum 3-5/8 in. deep, 25 GA galvanized steel studs spaced maximum 24 in. on center (oc) and floated between 3-5/8 in. deep 25 GA top and bottom track (not shown).
   B. Gypsum Board: Install two layers of 5/8 in. Type X gypsum board to both sides of wall assembly secured to the steel studs (Item 1A). Secure base layer to steel studs (Item 1A) using minimum 1 in. long Type S self-drilling screws spaced maximum 16 in. oc around the perimeter and maximum 16 in. oc in the field. Install face layer with joints offset 24 in. from the base layer and secured using minimum 1-5/8 in. long Type S self-drilling screws spaced 16 in. oc around the perimeter and 16 oc in the field staggered 8 in. from the base layer fasteners.
   C. Joint Tape and Compound - (Not Shown) Apply a level 2 finish of vinyl or casein, dry or premixed joint compound as follows. Apply to gypsum board face layer (Item 1B) in two coats to all exposed fastener heads and gypsum board joints. Embed minimum 2 in. wide paper, plastic, or fiberglass tape in first layer of compound over joints in face layer of the gypsum board (Item 1B).
   D. Alternative Wall Construction - (Not Shown) Construct a 2-hour fire rated concrete or block wall assembly consisting of minimum 6-1/4 in. thick lightweight or normal weight (100-150 pcf) reinforced concrete or nominal 8 in. thick Concrete Masonry Units (CMU)
2. COLUMN: Install minimum 8 in. (width and depth, or diameter) W Shape, rectangular HSS or circular HSS structural steel column in accordance with the applicable building code requirements. Install W shape or rectangular HSS column centered or offset against the gypsum wall assembly. For circular HSS column, install centered against the gypsum wall assembly. When column is offset, maintain minimum 1 in. separation from column edge to the fire resistive joint system (Item 4) and gypsum wall assembly (Item 1).
3. FIREPROOF COATING: Apply Isolatek Cafco 300 or Grace Construction Products Monokote MK-6s® Fireproofing to the column per the manufacturer's installation instructions to maintain a minimum 2-hour fire resistance rating.
4. FIRE RESISTIVE JOINT SYSTEM: Install non-loadbearing fire resistive joint system between gypsum wall assembly (Item 1) and column (Item 2) containing the following elements. Maintain maximum joint width of 1-1/2 in.
   A. PACKING MATERIAL: Install nominal 4 pcf density mineral fiber insulation bearing the Intertek Certification Mark with minimum 6-1/8 in. total depth compressed minimum 50% in the joint opening flush with interior and exterior faces of the gypsum board (Item 1B). Insulation may be installed in two pieces from both sides of wall assembly (Item 1). For installation against circular HSS column, maintain the minimum compression across the entire depth of the joint system.
   B. CERTIFIED COMPANY: Hilti Corporation
   CERTIFIED PRODUCT: Fire Resistant Joint Sealants
   MODEL: Firestop Joint Spray CFS-SP WB
   FILL, VOID OR CAVITY MATERIAL: Apply minimum 1/8 in. (wet film thickness) thick layer of fill material over fire resistive joint system ensuring minimum 2 in. overlap onto fireproof coating (Item 3) and minimum 1/2 in. onto face of gypsum wall assembly (Item 1).

# Firestop Joint Spray (CFS-SP WB)

## Product description

- A sprayable fire-rated mastic for construction joints where maximum movement is required

## Product features

- Sprayable or apply by brush
- Maximum flexibility, meets 500 cycle requirements (Class II and III Approval) (ASTM E 1966 and UL 2079)
- Quick and easy installation with the Titan 600 or 1100 Sprayers can help save you time and money
- Contains no halogens, solvents or asbestos
- Water based formulation so spills and over-spray clean up quickly and easily
- Paintable
- Meets LEED™ requirements for indoor environmental quality credit 4.1 Low Emitting Materials, Sealants and Adhesives and 4.2 Paints and Coatings

## Areas of application

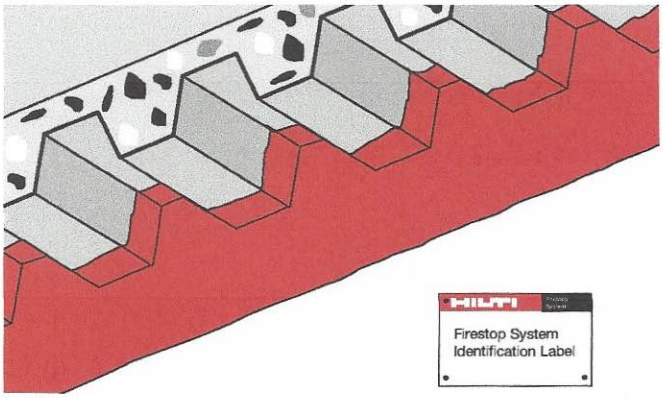
- Top-of-wall joints
- Curtain wall/edge of slab
- Expansion joints

## For use with

- Concrete, masonry and gypsum wall assemblies
- Wall and floor/wall assemblies rated up to 4 hours

## Examples

- Where a gypsum wall assembly meets the underside of a metal or concrete deck
- Where a concrete floor assembly meets with non-rated exterior wall (concrete, glass, etc.)
- Where two concrete floor/wall assemblies meet




| Technical Data* | CFS-SP WB |
|---|---|
| Density | Approx. 10.8 lb/gal (1.3 g/cm³) |
| Color | Available in red, white and gray** |
| Application temperature | 39°F to 104°F (4°C to 40°C) |
| Temperature resistance | -40°F to 176°F (-40°C to 80°C) |
| Consistency | Sprayable liquid |
| Chemical basis | Acrylic-water-based-dispersion |
| Curing time | Approx. 24 hours @ 73°F, 50% humidity for 1/8" depth |
| Average volume shrinkage (ASTM C1241) | 51.1% |
| Ph-value | Approx. 8-9 |
| Movement capability | Up to 50% |
| Surface burning characteristics (CAN/ULC-S102) | Flame spread: 15<br>Smoke development: 10 |
| Sound transmission classification (ASTM E 90-99) | 59<br>(per tested construction type) |

**Tested in accordance with**

- UL 2079
- ASTM E 1966
- ASTM E 84
- ASTM E 2837
- UL 1479
- ASTM E 814
- ASTM E 2307
- CAN/ULC-S115
- CAN/ULC-S102

*At 73°F (23°C) and 50% relative humidity
**Gray color requires six (6) weeks lead time

CLASSIFIED c UL us
FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS, AND/OR JOINT
SYSTEMS, AND/OR PERIMETER
FIRE CONTAINMENT SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

FM APPROVED

## Installation instructions for Firestop Joint Spray CFS-SP WB

### Notice

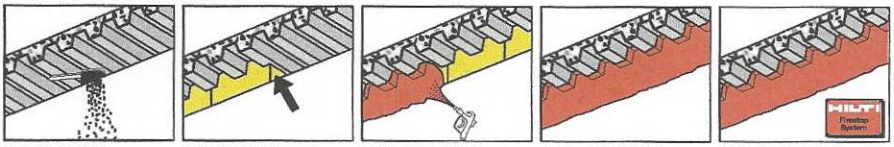
- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

### Opening

1. Clean the opening. Surfaces to which Firestop Joint Spray will be applied should be cleaned of loose debris, dirt, oil, wax and grease. The surface should be moisture and frost free.

### Application of Firestop Joint Spray

2. Mineral wool packing: Install the prescribed back filling material type and depth to obtain desired rating.
3. Application of Firestop Joint Spray: Apply Firestop Joint Spray to the required depth in order to obtain the desired rating. Make sure Firestop Joint Spray contacts all surfaces and overlaps beyond all surrounding surfaces (Refer to UL System). Titan Sprayers have been successful in applying Firestop Joint Spray. Hilti recommends the use of the Titan 600 (for application temperatures above 50°F) or Firestop Joint Spray may also be brushed on with a paint brush. Contact Hilti Technical Support for more information.
4. Curing time: Allow approx. 24 hours for typical application thickness (@ 73°F / 23°C) 50% humidity for 1/8" depth for the Firestop Joint Spray to fully cure.
5. Identification: For maintenance reasons all Firestop Joint Spray applications can be permanently marked with an identification plate and fastened in a visible position next to the seal.



1. Clean opening
2. Pack in mineral wool compressed per UL System
3. Spray or brush on Firestop Spray
4. Allow Firestop Spray to cure
5. Fasten identification plate (if required)

### Not for use

- In areas immersed in water
- On hot surfaces (above 176°F)

### Storage

- Store only in the original packaging at temperatures 39°F to 77°F (4°C to 25°C)
- Observe expiration date on package

# Certificate of Compliance

Certificate Number **20100527-R13240**
Report Reference **2010 May 27**
Issue Date **2010 May 27**



Underwriters Laboratories Inc.®

*Issued to:* Hilti, Inc.

54 S 122ND East AVe
Tulsa, OK 74146 USA

*This is to certify that representative samples of* Fill, Void or Cavity Materials
CFS-SP WB

***Have been investigated by Underwriters Laboratories Inc.® (UL) or any authorized licensee of UL in accordance with the Standard(s) indicated on this Certificate.***

*Standard(s) for Safety:* ANSI/UL 2079 "Tests for Fire Resistance of Building Joint Systems," Fourth Edition, revised June 30, 2008. ANSI/ASTM E2307-04, "Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus."
Standard CAN/ULC-S115-05, Standard Method of Fire Tests of Firestop Systems

*Additional Information:* CFS-SP WB Firestop Spray for use in Joint System, Perimeter Fire Containment System and Through-Penetration Firestop Systems Certified for Canada as currently described in the UL Fire Resistance Directory.

**Only those products bearing the UL Classification Mark should be considered as being covered by UL's Classification and Follow-Up Service.**

The UL Classification Mark includes: UL in a circle symbol: with the word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

**Look for the UL Classification Mark on the product**

Issued by:
Mona Couloute
Underwriters Laboratories Inc.

Reviewed by:
Steven Hoffman
Underwriters Laboratories Inc.

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# Material Safety Data Sheet
acc. to ISO 11014

Printing date 03/06/2015 | Version number 4 | Reviewed on 03/06/2015

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## 1 Identification

· **Product identifier**

· **Trade name:**
CP 672
Hilti Firestop Joint Spray CFS-SP WB
· **Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.
· **Application of the substance / the mixture** Construction chemicals

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Hilti (Canada) Corp.
2360 Meadowpine Boulevard
Mississauga, Ontario L5N 6S2
Phone: (800) 363-4458
Fax: (800) 363-4459

· **Information department:**
chemicals.hse@hilti.com
see section 16
· **Emergency telephone number:**
Schweizerisches Toxikologisches Informationszentrum - 24 h Service
Tel.: 0041 / 44 251 51 51 (international)
.
Chem-Trec
Tel.: 1 800 424 9300

* 

## 2 Hazard(s) identification

· **Classification of the substance or mixture**

| | | |
|---|---|---|
| Repr. 2 | H361 | Suspected of damaging fertility or the unborn child. |
| Aquatic Chronic 3 | H412 | Harmful to aquatic life with long lasting effects. |

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** not applicable
· **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS08

· **Signal word** Warning

· **Hazard-determining components of labeling:**
Zinc borate
[Zn4B12O22*7H20]
· **Hazard statements**
H361 Suspected of damaging fertility or the unborn child.
H412 Harmful to aquatic life with long lasting effects.
· **Precautionary statements**
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P308+P313 IF exposed or concerned: Get medical advice/attention.
· **Hazard description:**
· **WHMIS classification**

D2A - Very toxic material causing other toxic effects

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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## 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Watery, intumescent fire prevention coating

| · **Dangerous components:** | | | |
|---|---|---|---|
| 138265-88-0 | Zinc borate<br>[Zn4B12O22*7H20] | Xn R63; N R50/53-51<br>Repr. Cat. 3 | <2.5% |

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HILTI

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· **Additional information** For the wording of the listed risk phrases refer to section 16.

## 4 First-aid measures

· **Description of first aid measures**
· **General information** No special measures required.
· **After inhalation** Take affected persons into fresh air and keep quiet.
· **After skin contact** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing** Seek immediate medical advice.
· **Information for doctor**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

## 5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Carbon monoxide (CO)
Carbondioxide (CO2)
· **Advice for firefighters**
· **Protective equipment:** Ensure adequate ventilation

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
Wear protective clothing.
Particular danger of slipping on leaked/spilled product.
· **Environmental precautions:** Do not allow product to reach sewage system or any water course.
· **Methods and material for containment and cleaning up:**
Pick up mechanically.
Dispose contaminated material as waste according to item 13.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

## 7 Handling and storage

· **Handling**
· **Precautions for safe handling** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:** keep containers securely closed and dry, store at 5 - 25 °C / 41 - 77 °F
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Protect from frost.

· **Storage class** 12
· **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
The usual precautionary measures for handling chemicals should be followed.
Avoid contact with the eyes and skin.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
· **Breathing equipment:** Not necessary if room is well-ventilated.

(Contd. on page 3)

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· **Protection of hands:**

Protective gloves.

EN 374
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves** Nitrile rubber, NBR
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**

Tightly sealed goggles.

EN 166 + EN 170
· **Body protection:**

Protective work clothing.

## 9 Physical and chemical properties

| | |
|---|---|
| · **Information on basic physical and chemical properties** | |
| · **General Information** | |
| · **Appearance:** | |
| **Form:** | Fluid |
| **Color:** | Various colors |
| · **Odor:** | Characteristic |
| · **Change in condition** | |
| **Melting point/Melting range:** | Not determined. |
| **Boiling point/Boiling range:** | undetermined |
| · **Flash point:** | Not applicable |
| · **Auto igniting:** | Product is not selfigniting. |
| · **Danger of explosion:** | Product does not present an explosion hazard. |
| · **Density:** | Not determined |
| · **Solubility in / Miscibility with** | |
| **Water:** | Not miscible or difficult to mix |
| · **Other information** | VOC Content: 34 g/l (EPA Method 24) |

## 10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known

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## 11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

| · **IARC (International Agency for Research on Cancer)** |
|---|
| None of the ingredients is listed. |

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| · NTP (National Toxicology Program) |
|---|
| None of the ingredients is listed |

| · OSHA-Ca (Occupational Safety & Health Administration) |
|---|
| None of the ingredients is listed. |

## 12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Ecotoxical effects:** Not determined
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.
Do not allow product to reach ground water, water course or sewage system.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

| · European waste catalogue: | |
|---|---|
| 08 04 10 | waste adhesives and sealants other than those mentioned in 08 04 09 |

· **Uncleaned packagings:**
· **Recommendation:**
Disposal must be made according to official regulations.
Dispose of packaging according to regulations on the disposal of packagings.

## 14 Transport information

| · UN-Number<br>· DOT, TDG, IMDG, IATA | Void |
|---|---|
| · UN proper shipping name<br>· DOT, TDG, IMDG, IATA | Void |
| · Transport hazard class(es)<br>· DOT, TDG, IMDG, IATA<br>· Class | Void |
| · Packing group<br>· DOT, TDG, IMDG, IATA | Void |
| · Environmental hazards:<br>· Marine pollutant: | No |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · Transport/Additional information: | Not dangerous according to the above specifications. |

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## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

| · Section 313 (Specific toxic chemical listings): |
|---|
| None of the ingredients are listed. |

| · TSCA (Toxic Substances Control Act): |
|---|
| All ingredients are listed. |

· **Proposition 65:**

| · Chemicals known to cause cancer: | |
|---|---|
| 28553-12-0 | di-"isononyl" phthalate |

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· **Cancerogenity categories**

| · EPA (Environmental Protection Agency) |
|---|
| None of the ingredients is listed. |

| · TLV (Threshold Limit Value established by ACGIH) |
|---|
| None of the ingredients is listed. |

| · MAK (German Maximum Workplace Concentration) |
|---|
| None of the ingredients is listed. |

| · NIOSH-Ca (National Institute for Occupational Safety and Health) |
|---|
| None of the ingredients is listed. |

· **Chemical safety assessment:** not required.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:**
Hilti Corporation
Business Unit Chemicals
Quality/Safety/Environment
FL-9494 Schaan / Liechtenstein

chemicals.hse@hilti.com
Tel.: +423 234 3004
FAX.: +423 234 3462

· **Date of preparation / last revision** 03/06/2015 / 3

· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
WHMIS: Workplace Hazardous Materials Information System (Canada)
Repr. 2: Reproductive toxicity, Hazard Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3

· *** Data compared to the previous version altered.**

August 13, 2013

To Whom It May Concern:

Re: Hilti CFS-SP WB Firestop Joint Spray – LEED Info

The Hilti CFS-SP WB Firestop Joint Spray is manufactured in Florida.

The Hilti CFS-SP WB Firestop Joint Spray pail is made of polyethylene and can be completely recycled. There is no post-consumer or post-industrial content in CFS-SP WB Firestop Joint Spray and it cannot be recycled. The CFS-SP WB Firestop Joint Spray not contain any Rapidly Renewable Materials. The VOC content of CFS-SP WB Firestop Joint Spray is 34 g/l.

CFS-SP WB Firestop Joint Spray is not regulated as a hazardous waste by the Canadian EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary province to province and even city to city. For this reason, you should consult your local and provincial regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager Safety, Environmental, & Facilities
Hilti Inc
918 872 3704
jerry.metcalf@hilti.com

Rev. Date: 6/28/11

**Hilti, Inc.**
5400 South 122nd East Avenue
Tulsa, OK 74146

1-800-879-8000
www.hilti.com

Underwriters Laboratories Inc.®

**Northbrook Division**
333 Pfingsten Road
Northbrook, IL 60062-2096 USA
www.ul.com
tel: 1 847 272 8800

# CERTIFICATE OF COMPLIANCE

**CERTIFICATE NUMBER:** 20040809-R10905
**ISSUE DATE:** August 9, 2004



**Issued to:** Thermafiber Inc.
3711 W Mill St Ext
Wabash, IN 46992

**Report Reference:** R10905

**This is to Certify that representative samples of:** Forming Material, designated as Type SAF mineral wool batts.

**Have been investigated by Underwriters Laboratories Inc.® in accordance with the Standard(s) indicated on this Certificate.**

**Standard(s) for Safety:** ANSI/UL 1479, Fire Tests of Through-Penetration Firestops. ANSI/UL 2079, Test for Fires Resistance of Building Joint Systems. ASTM E2307-04, Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediae-Scale, Multi-story Test Apparatus

**Additional Information:** Type SAF mineral wool batts for use as a forming material for use in various Through-Penetration FireStop Systems, Joint Systems and Perimeter Fire Barrier Systems as Specified in UL's Fire Resistance Directory Volume 2.

**Only those products bearing the UL Classification Marking should be considered as being covered by UL's Classification and Follow-Up Service.**

The UL Classification Marking includes: UL in a circle symbol: with the word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

Engineer:
Mona Couloute
Underwriters Laboratories Inc.

Review Engineer:
Chris Johnson
Underwriters Laboratories Inc.

# MATERIAL SAFETY DATA SHEET

**Product identifier:** **Mineral Wool**

**Product use:** Back-fill for firestopping. Also called slag wool or synthetic vitreous fibers.

**Supplier:** Hilti (Canada) Corporation, 2360 Meadowpine Blvd., Mississauga, Ontario L5N 6S2

**Originator** Hilti, Inc., P. O. Box 21148, Tulsa, Oklahoma, USA 74121

**Emergency phone:** **Chem-Trec: 1 800 424 9300**

## HAZARDOUS INGREDIENTS

| Ingredient | CAS Number | % (wt.) | $LC_{50}$, (rat) | $LD_{50}$ (rat) | TLV | STEL |
|---|---|---|---|---|---|---|
| Slag wool fiber | 65997-17-3 | 95 - 99 | N/Av | N/Av | 1 fiber / cc | N/E |
| Phenolic resin | 09003-35-4 | 1 - 5 | N/Av | >5 gm/kg | N/E | N/E |
| Polyvinyl alcohol | 09002-89-5 | < 1 | N/Av | > 20 gm/kg | N/E | N/E |

## PHYSICAL PROPERTIES

| | | | |
|---|---|---|---|
| **Appearance / Physical state:** | 2' x 4' x 4" sheets / grey solid. | **Odour:** | Negligible odour. |
| **Specific gravity (at 20°C):** | Not applicable. | **VOC Content** | <1% w/w |
| **Vapour pressure (at 20°C):** | Not applicable. | **Vapour density:** | Not applicable. |
| **Evaporation rate:** | Not applicable. | **Boiling point:** | Not applicable. |
| **Freezing point:** | Not applicable. | **pH:** | Not applicable. |
| **Coefficient of $H_20$ / oil distrib:** | Not applicable. | **Solubility in water:** | Insoluble. |

## FIRE AND EXPLOSION DATA

| | | | |
|---|---|---|---|
| **Flash point / Method:** | Not applicable. | **Flammable limits:** | Not applicable. |
| **Conditions of flammability:** | Not applicable. | **Auto-ignition temperature:** | Not applicable. |
| **Means of extinction:** | Not applicable. As appropriate for surrounding fire (e.g. Water, $CO_2$, Dry Chemical, Foam). | | |
| **Special fire fighting procedures:** | Soak cartons to help prevent the spread of fire. Wear full protective clothing. A NIOSH-approved self-contained breathing apparatus (SCBA) should be worn when fighting fires involving chemicals. | | |
| **Hazardous combustion products:** | Thermal decomposition products can be formed at temperatures exceeding 2000° F. Thermal decomposition can yield CO and $CO_2$. | | |
| **Sensitivity to mechanical impact / static discharge:** | Not susceptible to mechanical impact or to a static discharge. | | |

## REACTIVITY DATA

| | | | |
|---|---|---|---|
| **Stability:** | Stable. | **Incompatible materials:** | Strong acids. |
| **Conditions of reactivity:** | None known. | | |
| **Hazardous decomposition products:** | Thermal decomposition products can be formed at temperatures exceeding 2000° F. Thermal decomposition can yield CO and $CO_2$. | | |

## TOXICOLOGICAL PROPERTIES

| | |
|---|---|
| **Routes of exposure:** | ☒ Skin contact ☐ Skin absorption ☒ Eye contact ☒ Inhalation ☐ Ingestion |
| **Exposure limits:** | See "Ingredients" section above. |
| **Acute effects of exposure:** | **Eyes** – Can cause itching, irritation and watering. **Skin** – Can cause mechanical irritation. **Inhalation** – Irritation of the nose, throat and upper respiratory tract. **Ingestion** – Not considered a route of exposure. Effects of ingestion have not been determined. Considered to have a low acute oral toxicity. |
| **Chronic effects of exposure:** | Slag wool has been classified by the IARC as Group 3 – Unclassifiable as to Carcinogenicity in Humans. |
| **Synergistic materials:** | None known. |

HILTI ® is a registered trademark of Hilti Corp.

## FIRST AID MEASURES

| | |
|---|---|
| **Eyes:** | Flush with plenty of water while holding the eyelids apart. Avoid rubbing the eyes; this can cause mechanical abrasion. Call a physician if symptoms occur. |
| **Skin:** | Wash with soap and water. Seek medical attention if any effects persist. Launder clothing before reuse. |
| **Inhalation:** | No ill effects expected. Should discomfort occur, move to fresh air. |
| **Ingestion:** | Not a likely route of exposure. |
| **Other:** | Referral to a physician is recommended if there is any question about the seriousness of the injury/exposure. |

## PREVENTIVE MEASURES

| | |
|---|---|
| **Engineering controls:** | General (natural or mechanically induced fresh air movements). |
| **Eye protection:** | Safety goggles recommended to prevent fibers / particulates from irritating the eyes. |
| **Skin protection:** | Cloth gloves and long sleeves are recommended to protect from irritating fibers. |
| **Respiratory protection:** | None normally required. |
| **Other:** | No additional measures are normally required. |
| **Handling procedures and equipment:** | Fibrous dust is hazardous; avoid generating or breathing dust. Local exhaust may be required to control dusts if power tools are used for cutting or trimming. Wear appropriate personal protective equipment. |
| **Storage requirements:** | Store away from moisture; keep dry. |
| **Spill, leak or release:** | Not applicable. |
| **Waste disposal:** | Consult with regulatory agencies or your corporate personnel for disposal methods that comply with local, provincial, and federal safety, health and environmental regulations. |
| **Special shipping instructions:** | None known. |

## REGULATORY INFORMATION

| | |
|---|---|
| **WHMIS classification:** | D2A, D2B |
| **HMIS codes:** | Health 1, Flammability 0, Reactivity 0, PPE B |
| **TDG shipping name:** | Not regulated. |

## PREPARATION INFORMATION / CONTACTS

| | | | |
|---|---|---|---|
| **Prepared by:** | Hilti, Inc., Tulsa, OK USA | Date of Preparation: May 24, 2012 | **Emergency phone number:** 1 800 424 9300 |
| **Customer Service:** | Hilti (Canada) Corporation, Mississauga, Ontario; 1 800 363 4458 | | |
| **Health / Safety contacts:** | Hilti, Inc., Tulsa, OK USA; 1 800 879 6000, Jerry Metcalf (x1003704) | | |
| **Abbreviations used:** | **N/E** = None Established. **N/A** = Not Applicable. **N/Av** = Not Available. **H** = Hours. **HMIS:** Hazardous Materials Identification System. **w/w** weight/weight | | |

The information and recommendations contained herein are based upon data believed to be correct; however, no guarantee or warranty of any kind expressed or implied is made with respect to the information provided.

August 13, 2013

To Whom It May Concern:

Re: Hilti Mineral Wool – LEED Info

The Hilti Mineral Wool is manufactured in Wabash, Indiana.

The post-consumer recycled content in the Hilti Mineral Wool is 0%. The pre-consumer recycled content in the Hilti Mineral Wool is 90%. There is no detectable VOC content in this product.

Hilti Mineral Wool is not regulated as a hazardous waste by the Canadian EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from province to province and even city to city. For this reason, you should consult your local and provincial regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Safety/Environmental Manager
Hilti Inc.
918 872 3704
jerry.metcalf@hilti.com

Rev. Date: 8/13/10

**Hilti, Inc.**
5400 South 122nd East Avenue
Tulsa, OK 74146

1-800-879-8000
www.hilti.com

**Tremco Incorporated**
3735 Green Road Beachwood, OH 44122 216.292.5000 www.tremcosealants.com

TREMCO®
Commercial Sealants & Waterproofing

We certify that Dymonic® has been tested against ASTM C 920, Standard Specification for Elastomeric Joint Sealants and does conform to the specification requirements and is classified as follows:

| | | |
|---|---|---|
| Type: | S | (Single Component) |
| Grade: | NS | (Non-sag) |
| Class: | 25 | (+/- 25% joint movement) |
| Use: | NT | (Non-traffic) |
| | M | (Mortar) |
| | A | (Aluminum) |
| | O | (Other) |

We further certify that Dymonic conforms to the requirements of Federal Specification TT-S-00230C, Type II, Class A.

Dymonic meets CAN/CGSB 19.13, M.87.

Although Dymonic is not NSF registered, or previously authorized by USDA, it does meet the requirements for use in Federally inspected food processing facilities provided it is not used in areas where food is being processed, prepared or packaged. The material must also be applied in a manner which prevents any direct or indirect contamination of food. Additionally, before any food product can be placed in the area of treatment, the sealant must be allowed to cure according to manufacturer's recommendations and the area should be sufficiently free of odor to prevent food contamination.

Dymonic may be used in registered establishments operating under the **Canadian Food Inspection Agency**. The Canadian Food Inspection Agency has approved Dymonic for use in CFIA regulated facilities for situations involving non food contact.

Dymonic is listed with **Underwriters Laboratories of Canada** in the following system: JF19

Dymonic is listed with **Warnock-Hersey** in the following system: TL/PV 120-02

**Tremco Incorporated**
3735 Green Road Beachwood, OH 44122 216.292.5000 www.tremcosealants.com

TREMCO
Commercial Sealants & Waterproofing

July 13, 2015

**RE: Dymonic- Green Building Product Information (LEED® Information)**

Tremco, as an organization, is committed to quality, responsive to both internal and external customers, our employees, our community and environment, and we will treat all with respect and good stewardship.

Tremco Inc. certifies the following information for Dymonic

**Regional Materials:**
Dymonic is manufactured in Toronto, Ontario, Canada.

No single extracted material is used to produce the majority of this product. Additionally, all raw materials come from one of several sources which in turn come from one of several raw material feed stocks. As such, point source for the raw materials cannot be determined.

**Recycled Content Information:**
Recycled content for Dymonic is not available, and for the purposes of LEED reporting should be assumed to be zero.

**VOC Content Information:**
Dymonic has a VOC content of 60g/l equaling 2.59% by weight as applied/mixed.

Note: VOC content values are as reported for the highest VOC content color for all Dymonic colors. Other colors may have a lower VOC content reported on their MSDS.

**Additional Information:**

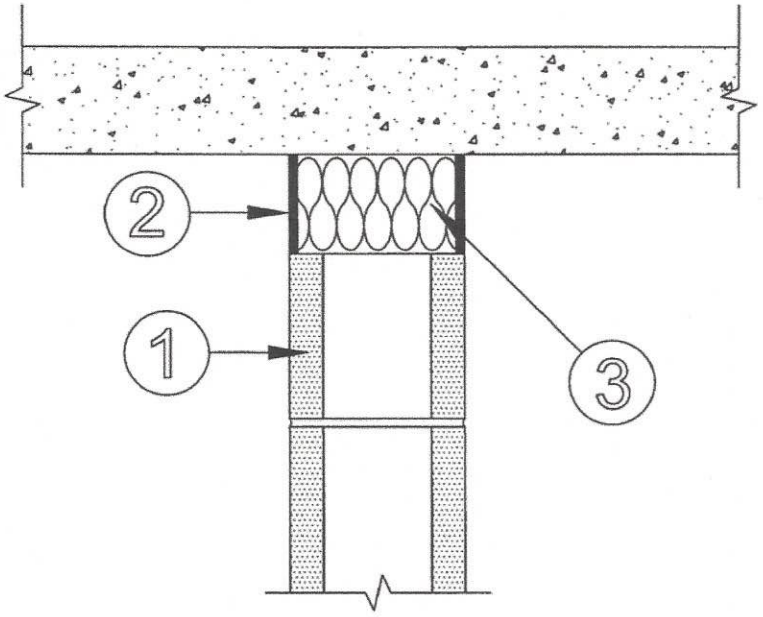
Should you have any questions or require additional information, please do not hesitate to contact Technical Services or your local Tremco Field Representative.

Sincerely,

Amy Woodard
Manager
Compliance and Regulatory

# Design No. TL/PV 120-02

January 22, 2003
Vertical (Wall)/Horizontal (Floor)
Ratings: F, FT - 2 HOURS
FH, FTH Rating - 0 HOURS
Test Pressure Differential - 2.5 Pa (0.01" of Water)




1. **Wall Assembly:** Concrete Masonry Unit wall assembly, filled or unfilled, having a nominal 8" thickness, maximum joint width of 6".
2. **Firestop Sealant: Tremco** DyMonic urethane sealant applied in beads and smoothed out to provide a 1/4" minimum thickness.
3. **Mineral Wool Insulation:** 3.5 pcf mineral wool insulation compressed 25%, minimum thickness 7-1/2"

Testing Standard - CAN/ULC-S115

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**Tremco Commercial Sealants & Waterproofing**
3735 Green Road, Beachwood, OH 44122 // Phone: 216.292.5000 // 800.321.7906
220 Wicksteed Avenue, Toronto, ON M4H 1G7 // Phone: 416.421.3300 // 800.363.3213
1451 Jacobson Avenue, Ashland OH 44805 // Phone: 419.289.2050 // 800.321.6357

TREMCO

# Dymonic®

## High-Performance, Low-Modulus, Expansion Joint Sealant

### Product Description

Dymonic® is a high-performance, low-modulus, one-component, moisture-curing, polyurethane joint sealant.

### Features and Benefits

Dymonic has a movement capability of ±25% of the original joint width, making it ideal for dynamically moving joints. Dymonic is available in 16 standard colors with several additional made-to-order colors.

### Uses

Dymonic is specifically designed for sealing expansion and control joints in pre-cast tilt-up concrete, curtain wall joints and perimeter caulking around windows and doors. It can also be used for radon mitigation and bedding of mullions and frames. Dymonic exhibits tenacious adhesion, which will not diminish over product life.

### Colors

Aluminum Stone, Anodized Aluminum, Beige, Black, Bronze, Buff, Hartford Green, Ivory, Light Bronze, Limestone, Off White, Precast White, Redwood Tan, Sandalwood, Gray Stone and White.

### Packaging

10.1 oz (300 mL) cartridges, 20 oz. (600 mL) sausages, and 3 gallon (11.3 L) pails.

### Coverage Rate

308 linear feet of joint per gallon for a 1/4" x 1/4" joint. For specific coverage rates that include other joint sizes and usage efficiencies, visit our website usage calculator at www.tremcosealants.com.

### Applicable Standards

Dymonic meets or exceeds the requirements of the following specifications:

- ASTM C 920 Type S, Grade NS, Class 25, Use NT, M, A and O
- U.S. Federal Specification TT-S-00230C Class A, Type II
- CAN/CGSB 19.13-M87
- CFIA approved
- ULC registered

### Joint Design

Dymonic may be used in any vertical or horizontal joint designed in accordance with accepted architectural/engineering practices. Joint width should be 4 times anticipated movement, but not less than 1/4" (6.4mm).

### Joint Backing

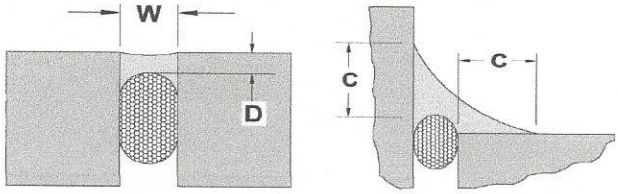
Closed cell or reticulated polyethylene backer rod is recommended as joint backing to control sealant depth and to ensure intimate contact of sealant with joint walls when tooling. Where depth of joint will prevent the use of backer rod, an adhesive backed polyethylene tape (bond breaker tape) should be used to prevent three-sided adhesion. All backing should be dry at time of sealant application.

## TYPICAL PHYSICAL PROPERTIES

| Property | Test Method | Typical Value |
|---|---|---|
| Rheological Properties | ASTM C 639 | Non-sag (NS), 0" of sag in channel |
| Extrusion Rate | ASTM C 1183 | 51.8 ml/min. |
| Hardness Properties, scale "A" | ASTM C 661 | 20 ±3 |
| Weight Loss | ASTM C 1246 | Pass |
| Tack Free Time | ASTM C 679 | Pass (18 hours) |
| Stain & Color Change | ASTM C 510 | No visible color change/No stain |
| Adhesion-in-Peel | ASTM C 794 | Concrete 20-28pli (89-125N), No Adhesion Loss |
| Effects of Accelerated Aging | ASTM C 793 | Pass |
| Movement Capability | ASTM C 719 | ± 25% |

## Sealant Dimensions

W = Sealant width, D = Sealant depth, C = Contact area.




EXPANSION JOINTS - The minimum width and depth of any sealant application should be 1/4" by 1/4" (6mm by 6mm).

The depth (D) of sealant may be equal to the width (W) of joints that are less than 1/2" wide. For joints ranging from 1/2" to 1" (13mm to 25mm) wide, the sealant depth should be approximately one-half of the joint width.

The maximum depth (D) of any sealant application should be 1/2" (13mm). For joints that are wider than 1" (25 mm) contact Tremco's Technical Service Department, or your local Tremco field representative.

WINDOW PERIMETERS – For fillet beads, or angle beads around windows and doors, the sealant should exhibit a minimum surface contact area (C) of 1/4" onto each substrate.

## Surface Preparations

Surfaces must be sound, clean, and dry. All release agents, existing waterproofing, dust, loose mortar, laitance, paints, or other finishes must be removed. This can be accomplished with a thorough wire brushing, grinding, sandblasting, or solvent washing, depending on the contamination.

Tremco recommends that surface temperatures be 40°F (5°C) or above at the time the sealant is applied. If sealant must be applied in temperatures below 40°F, please refer to the Tremco Guide for Applying Sealants in Cold Weather that can be found on our website at www.tremcosealants.com.

## Priming

Where deemed necessary, use Tremco Primer #171 for porous surfaces, and TREMprime Non-Porous Primer for metals or plastics. Dymonic typically adheres to common construction substrates without primers; however, due to the variability of substrate finishes such as Kynar and anodized aluminum, Tremco always recommends that a mock-up or field adhesion test be performed on the actual materials being used on the job to verify the need for a primer. A description of the field adhesion test can be found in appendix X1 of ASTM C 1193, Standard Guide for Use of Joint Sealants.

Tested system number TL/PV 120-02

## Application

Dymonic is easy to apply with conventional caulking equipment. Ensure that the backer rod is friction fitted properly and any primers have been applied. Fill the joint completely with a proper width-to-depth ratio and tool to ensure intimate contact of sealant with joint walls. Dry tooling is always preferred, although xylene can be used in limited amounts to slick the spatula if needed.

For a cleaner finish, mask the sides of the joint with tape prior to filling.

## Cure Time

Dymonic cures at a rate of about 1/16" per day at 70°F and 50% relative humidity. Dymonic will skin within 24 hours and be tack-free in 3 days. The cure time can increase as the temperatures and/or humidity decrease. A good rule of thumb is one additional day of cure for every 10°F decrease in temperature.

## Clean up

Excess sealant and smears adjacent to the joint interface can be carefully removed with xylene or mineral spirits before the sealant cures. Any utensils used for tooling can also be cleaned with xylene or mineral spirits.

## Limitations

- Do not apply over damp or contaminated surfaces.
- Use with adequate ventilation.
- Always utilize the accompanying MSDS for information on Personal Protective Equipment (PPE) and health hazards.

## Warranty

Tremco warrants its sealants to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Tremco sealants. Tremco's sole obligation shall be, at its option, to replace or refund the purchase of the quantity of Tremco sealant proven to be defective and Tremco shall not be liable for any loss or damage.

Please refer to our website at www.tremcosealants.com for the most up-to-date Product Data Sheets.

**Tremco Commercial Sealants & Waterproofing**
3735 Green Road, Beachwood, OH 44122 // Phone: 216.292.5000 // 800.321.7906
220 Wicksteed Avenue, Toronto, ON M4H 1G7 // Phone: 416.421.3300 // 800.363.3213
1451 Jacobson Avenue, Ashland OH 44805 // Phone: 419.289.2050 // 800.321.6357

An RPM Company

www.tremcosealants.com

# SAFETY DATA SHEET

## 1. Identification

**Material name:** DYMONIC WHITE
**Material:** 955806 323

**Recommended use and restriction on use**

**Recommended use:** Sealant
**Restrictions on use:** Not known.

**Manufacturer/Importer/Supplier/Distributor Information**

Tremco Canadian Sealants
220 Wicksteed Ave
Toronto ON M4H 1G7
CA

| | |
|---|---|
| **Contact person:** | EH&S Department |
| **Telephone:** | 1-800-263-6046 |
| **Emergency telephone number:** | 1-800-424-9300 (US); 1-613-996-6666 (Canada) |

## 2. Hazard(s) identification

**Hazard Classification**

**Health Hazards**

| | |
|---|---|
| Carcinogenicity | Category 1A |
| Toxic to reproduction | Category 2 |

**Unknown toxicity - Health**

| | |
|---|---|
| Acute toxicity, oral | 14.47 % |
| Acute toxicity, dermal | 30.9 % |
| Acute toxicity, inhalation, vapor | 98.27 % |
| Acute toxicity, inhalation, dust or mist | 86.33 % |

**Environmental Hazards**

| | |
|---|---|
| Acute hazards to the aquatic environment | Category 3 |

**Unknown toxicity - Environment**

| | |
|---|---|
| Acute hazards to the aquatic environment | 80.64 % |
| Chronic hazards to the aquatic environment | 100 % |

**Label Elements**

**Hazard Symbol:**

**Signal Word:** Danger

| | |
|---|---|
| **Hazard Statement:** | May cause cancer.<br>Suspected of damaging fertility or the unborn child.<br>Harmful to aquatic life. |
| **Precautionary Statement:**<br>**Prevention:** | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. |
| **Response:** | If exposed or concerned: Get medical advice/attention. |
| **Storage:** | Store locked up. |
| **Disposal:** | Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |
| **Other hazards which do not result in GHS classification:** | None. |

## 3. Composition/information on ingredients

**Mixtures**

| Chemical Identity | CAS number | Content in percent (%)* |
|---|---|---|
| Calcium Carbonate (Limestone) | 1317-65-3 | 10 - 30% |
| Calcium salt | 7778-18-9 | 10 - 30% |
| Titanium dioxide | 13463-67-7 | 3 - 7% |
| White mineral oil | 8042-47-5 | 1 - 5% |
| Petroleum distillates | 64742-47-8 | 1 - 5% |
| Toluene | 108-88-3 | 1 - 5% |
| Paraffin | 8002-74-2 | 0.5 - 1.5% |
| Methyl isobutyl ketone | 108-10-1 | 0.1 - 1% |
| Aluminum oxide | 1344-28-1 | 0.1 - 1% |
| Crystalline Silica (Quartz)/ Silica Sand | 14808-60-7 | 0.1 - 1% |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First-aid measures

| | |
|---|---|
| **Ingestion:** | Call a POISON CENTER/doctor/.../if you feel unwell. Rinse mouth. |
| **Inhalation:** | Move to fresh air. |
| **Skin Contact:** | Wash skin thoroughly with soap and water. If skin irritation occurs: Get medical advice/attention. |
| **Eye contact:** | Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention. |

**Most important symptoms/effects, acute and delayed**

**Symptoms:** May cause skin and eye irritation.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** Symptoms may be delayed.

## 5. Fire-fighting measures

**General Fire Hazards:** No unusual fire or explosion hazards noted.

### Suitable (and unsuitable) extinguishing media

**Suitable extinguishing media:** Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media:** Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical:** During fire, gases hazardous to health may be formed.

**Special protective equipment and precautions for firefighters**

**Special fire fighting procedures:** No data available.

**Special protective equipment for fire-fighters:** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** No data available.

**Methods and material for containment and cleaning up:** Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

**Notification Procedures:** In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

**Environmental Precautions:** Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

## 7. Handling and storage

**Precautions for safe handling:** Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust.

**Conditions for safe storage, including any incompatibilities:** Store locked up.

## 8. Exposure controls/personal protection

**Control Parameters**

**Occupational Exposure Limits**

| Chemical Identity | type | Exposure Limit Values | Source |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Calcium Carbonate (Limestone) - Respirable fraction. | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Calcium salt - Inhalable fraction. | TWA | 10 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Calcium salt - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Calcium salt - Respirable fraction. | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Titanium dioxide | TWA | 10 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Titanium dioxide - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| White mineral oil - Inhalable fraction. | TWA | 5 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| White mineral oil - Mist. | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor | TWA | 200 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| | TWA | 200 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Toluene | TWA | 20 ppm | US. ACGIH Threshold Limit Values (2011) |
| | TWA | 200 ppm | US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006) |
| | Ceiling | 300 ppm | US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006) |
| | MAX. CONC | 500 ppm | US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006) |

| | | | |
|---|---|---|---|
| Paraffin - Fume. | TWA | 2 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Methyl isobutyl ketone | TWA | 20 ppm | US. ACGIH Threshold Limit Values (2011) |
| | STEL | 75 ppm | US. ACGIH Threshold Limit Values (2011) |
| | PEL | 100 ppm 410 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Aluminum oxide - Respirable fraction. | TWA | 1 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Aluminum oxide - Total dust. | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction. | TWA | 0.025 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable. | TWA | 2.4 millions of particles per cubic foot of air | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| | TWA | 0.1 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |
| Crystalline Silica (Quartz)/ Silica Sand - Total dust. | TWA | 0.3 mg/m3 | US. OSHA Table Z-3 (29 CFR 1910.1000) (2000) |

| **Chemical name** | **type** | **Exposure Limit Values** | **Source** |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Total dust. | STEL | 20 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |

| | | | |
|---|---|---|---|
| Calcium Carbonate (Limestone) - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium Carbonate (Limestone) - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Calcium salt - Inhalable | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Calcium salt - Inhalable fraction. | TWAEV | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Calcium salt - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Calcium salt - Respirable dust. | TWA | 5 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide - Respirable fraction. | TWA | 3 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Titanium dioxide | TWAEV | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Titanium dioxide - Total dust. | TWA | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| White mineral oil - Mist. | TWA | 1 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| White mineral oil - Mist. | TWAEV | 5 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| | STEL | 10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |

| | | | |
|---|---|---|---|
| White mineral oil - Mist. | TWA | 5 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| | STEL | 10 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor | TWA | 200 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Petroleum distillates | TWAEV | 525 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor | TWAEV | 200 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| | TWAEV | 200 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Toluene | TWA | 20 ppm | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Toluene | TWAEV | 20 ppm | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Toluene | TWA | 50 ppm 188 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| Methyl isobutyl ketone | TWA | 20 ppm | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (09 2011) |
| | STEL | 75 ppm | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Methyl isobutyl ketone | TWAEV | 50 ppm | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| | STEL | 75 ppm | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Methyl isobutyl ketone | STEL | 75 ppm 307 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |
| | TWA | 50 ppm 205 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the |

| | | | |
|---|---|---|---|
| | | | Quality of the Work Environment) (12 2008) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction. | TWA | 0.025 mg/m3 | Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable. | TWAEV | 0.10 mg/m3 | Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010) |
| Crystalline Silica (Quartz)/ Silica Sand - Respirable dust. | TWA | 0.1 mg/m3 | Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008) |

**Biological Limit Values**

| Chemical Identity | Exposure Limit Values | Source |
|---|---|---|
| Toluene (o-Cresol, with hydrolysis: Sampling time: End of shift.) | 0.3 mg/g (Creatinine in urine) | ACGIH BEL (03 2013) |
| Toluene (toluene: Sampling time: Prior to last shift of work week.) | 0.02 mg/l (Blood) | ACGIH BEL (03 2013) |
| Toluene (toluene: Sampling time: End of shift.) | 0.03 mg/l (Urine) | ACGIH BEL (03 2013) |
| Methyl isobutyl ketone (methyl isobutyl ketone: Sampling time: End of shift.) | 1 mg/l (Urine) | ACGIH BEL (03 2013) |

**Appropriate Engineering Controls** Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust.

**Individual protection measures, such as personal protective equipment**

**General information:** Use personal protective equipment as required.

**Eye/face protection:** Wear goggles/face shield.

**Skin Protection**

**Hand Protection:** Use suitable protective gloves if risk of skin contact.

**Other:** No data available.

**Respiratory Protection:** In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor.

**Hygiene measures:** Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.

## 9. Physical and chemical properties

| | |
|---|---|
| **Appearance** | |
| **Physical state:** | solid |
| **Form:** | Paste |
| **Color:** | White |
| **Odor:** | Mild |
| **Odor threshold:** | No data available. |
| **pH:** | No data available. |
| **Melting point/freezing point:** | No data available. |
| **Initial boiling point and boiling range:** | No data available. |
| **Flash Point:** | No data available. |
| **Evaporation rate:** | Slower than n-Butyl Acetate |
| **Flammability (solid, gas):** | No |
| **Upper/lower limit on flammability or explosive limits** | |
| **Flammability limit - upper (%):** | No data available. |
| **Flammability limit - lower (%):** | No data available. |
| **Explosive limit - upper (%):** | No data available. |
| **Explosive limit - lower (%):** | No data available. |
| **Vapor pressure:** | No data available. |
| **Vapor density:** | Vapors are heavier than air and may travel along the floor and in the bottom of containers. |
| **Relative density:** | 1.286 |
| **Solubility(ies)** | |
| **Solubility in water:** | Insoluble in water |
| **Solubility (other):** | No data available. |
| **Partition coefficient (n-octanol/water):** | No data available. |
| **Auto-ignition temperature:** | No data available. |
| **Decomposition temperature:** | No data available. |
| **Viscosity:** | No data available. |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity:** | No data available. |
| **Chemical Stability:** | Material is stable under normal conditions. |
| **Possibility of Hazardous Reactions:** | No data available. |
| **Conditions to Avoid:** | Avoid heat or contamination. |
| **Incompatible Materials:** | Alcohols. Amines. Strong acids. Strong bases. Water, moisture. |
| **Hazardous Decomposition Products:** | Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors. |

## 11. Toxicological information

**Information on likely routes of exposure**

| | |
|---|---|
| **Ingestion:** | May be ingested by accident. Ingestion may cause irritation and malaise. |
| **Inhalation:** | In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes. |
| **Skin Contact:** | Causes mild skin irritation. |
| **Eye contact:** | Eye contact is possible and should be avoided. |

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**
**Product:** ATEmix: 40,135.46 mg/kg

**Dermal**
**Product:** ATEmix: 7,910.98 mg/kg

**Inhalation**
**Product:** No data available.

**Repeated dose toxicity**
**Product:** No data available.

**Skin Corrosion/Irritation**
**Product:** No data available.

**Serious Eye Damage/Eye Irritation**
**Product:** No data available.

**Specified substance(s):**

| | |
|---|---|
| Calcium salt | in vivo (Rabbit, 72 hrs): Not irritating |
| Titanium dioxide | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| White mineral oil | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Petroleum distillates | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Toluene | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Paraffin | in vivo (Rabbit, 24 - 72 hrs): Not irritating |
| Methyl isobutyl ketone | in vivo (Rabbit, 24 - 72 hrs): Slightly irritating (Not Classified) |
| Aluminum oxide | in vivo (Rabbit, 24 hrs): Not irritating |

**Respiratory or Skin Sensitization**
**Product:** No data available.

**Carcinogenicity**

**Product:** No data available.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

| | |
|---|---|
| Titanium dioxide | Overall evaluation: Possibly carcinogenic to humans. |
| Methyl isobutyl ketone | Overall evaluation: Possibly carcinogenic to humans. |
| Crystalline Silica (Quartz)/ Silica Sand | Overall evaluation: Carcinogenic to humans. |

**US. National Toxicology Program (NTP) Report on Carcinogens:**

| | | |
|---|---|---|
| Crystalline (Quartz)/ Sand | Silica Silica | Known To Be Human Carcinogen. |

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**

No carcinogenic components identified

**Germ Cell Mutagenicity**

**In vitro**

**Product:** No data available.

**In vivo**

**Product:** No data available.

**Reproductive toxicity**

**Product:** Suspected of damaging fertility or the unborn child.

**Specific Target Organ Toxicity - Single Exposure**

**Product:** No data available.

**Specific Target Organ Toxicity - Repeated Exposure**

**Product:** No data available.

**Aspiration Hazard**

**Product:** No data available.

**Other effects:** No data available.

## 12. Ecological information

**Ecotoxicity:**

**Acute hazards to the aquatic environment:**

**Fish**

| | |
|---|---|
| **Product:** | No data available. |
| **Specified substance(s):** | |
| Calcium salt | LC 50 (Fathead minnow (Pimephales promelas), 96 h): > 1,970 mg/l Mortality |
| Titanium dioxide | LC 50 (Mummichog (Fundulus heteroclitus), 96 h): > 1,000 mg/l Mortality |
| Petroleum distillates | LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 2.9 mg/l Mortality |
| Toluene | LC 50 (Fathead minnow (Pimephales promelas), 96 h): 71.7 - 82.8 mg/l Mortality |
| Methyl isobutyl ketone | LC 50 (Fathead minnow (Pimephales promelas), 96 h): 496 - 514 mg/l Mortality |

**Aquatic Invertebrates**

| | |
|---|---|
| **Product:** | No data available. |
| **Specified substance(s):** | |
| Calcium salt | LC 50 (Water flea (Daphnia magna), 24 h): > 1,970 mg/l Mortality<br>LC 50 (Water flea (Ceriodaphnia dubia), 24 h): > 1,940 mg/l Mortality<br>LC 50 (Water flea (Ceriodaphnia dubia), 48 h): > 1,970 mg/l Mortality<br>LC 50 (Water flea (Ceriodaphnia dubia), 48 h): > 1,910 mg/l Mortality |
| Titanium dioxide | EC 50 (Water flea (Daphnia magna), 48 h): > 1,000 mg/l Intoxication |
| Toluene | LC 50 (Water flea (Daphnia magna), 24 h): 240 - 420 mg/l Mortality<br>EC 50 (Water flea (Daphnia magna), 48 h): < 9.83 mg/l Intoxication |
| Methyl isobutyl ketone | LC 50 (Water flea (Daphnia magna), 24 h): 4,280 mg/l Mortality |

**Chronic hazards to the aquatic environment:**

**Fish**

| | |
|---|---|
| **Product:** | No data available. |
| **Specified substance(s):** | |
| Titanium dioxide | LC 0 (Coregonus autumnalis migratorius G., 30 d): 3 mg/l experimental result |
| White mineral oil | NOAEL (Oncorhynchus mykiss, 28 d): >= 1,000 mg/l QSAR |
| Petroleum distillates | NOAEL (Oncorhynchus mykiss, 28 d): 0.098 mg/l QSAR |
| Toluene | NOAEL (Pimephales promelas, 32 d): 4 mg/l experimental result |
| Paraffin | NOAEL (Oncorhynchus mykiss, 28 d): >= 1,000 mg/l QSAR |
| Aluminum oxide | NOAEL (Pimephales promelas, 28 d): 4.7 mg/l experimental result |

**Aquatic Invertebrates**

| | |
|---|---|
| **Product:** | No data available. |

**Toxicity to Aquatic Plants**

**Product:** No data available.

**Persistence and Degradability**

**Biodegradation**
**Product:** No data available.

**BOD/COD Ratio**
**Product:** No data available.

**Bioaccumulative Potential**
**Bioconcentration Factor (BCF)**
**Product:** No data available.

**Specified substance(s):**
Toluene — Green algae (Selenastrum capricornutum), Bioconcentration Factor (BCF): 3,016 (Static)

**Partition Coefficient n-octanol / water (log Kow)**
**Product:** No data available.

**Specified substance(s):**
Toluene — Log Kow: 2.73

Methyl isobutyl ketone — Log Kow: 1.31

**Mobility in Soil:** No data available.

**Other Adverse Effects:** Harmful to aquatic organisms.

## 13. Disposal considerations

**Disposal instructions:** Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Contaminated Packaging:** No data available.

## 14. Transport information

**TDG:**

Not Regulated

**CFR / DOT:**

Not Regulated

**IMDG:**

Not Regulated

## 15. Regulatory information

### US Federal Regulations

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

None present or none present in regulated quantities.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

| Chemical Identity | OSHA hazard(s) |
|---|---|
| Benzene | Blood |
| | respiratory tract irritation |
| | Central nervous system |
| | Flammability |
| | Cancer |
| | Skin |
| | Aspiration |
| | Eye |

**CERCLA Hazardous Substance List (40 CFR 302.4):**

| Chemical Identity | Reportable quantity |
|---|---|
| Toluene | 1000 lbs. |
| Methyl isobutyl ketone | 5000 lbs. |
| Benzene | 10 lbs. |
| Methanol | 5000 lbs. |

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**

Delayed (Chronic) Health Hazard

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

| Chemical Identity | Reportable quantity |
|---|---|
| Toluene | 1000 lbs. |
| Methyl isobutyl ketone | 5000 lbs. |
| Benzene | 10 lbs. |
| Methanol | 5000 lbs. |

**SARA 311/312 Hazardous Chemical**

| Chemical Identity | Threshold Planning Quantity |
|---|---|
| Calcium Carbonate (Limestone) | 500 lbs |
| Calcium salt | 500 lbs |
| Titanium dioxide | 500 lbs |
| White mineral oil | 500 lbs |
| Petroleum distillates | 500 lbs |
| Toluene | 500 lbs |
| Paraffin | 500 lbs |
| Methyl isobutyl ketone | 500 lbs |
| Aluminum oxide | 500 lbs |
| Crystalline Silica (Quartz)/ Silica Sand | 500 lbs |

**SARA 313 (TRI Reporting)**

| Chemical Identity |
|---|
| Toluene |

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

None present or none present in regulated quantities.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

None present or none present in regulated quantities.

**US State Regulations**

**US. California Proposition 65**

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

**US. New Jersey Worker and Community Right-to-Know Act**

| Chemical Identity |
|---|
| Calcium Carbonate (Limestone) |
| Calcium salt |
| Titanium dioxide |
| White mineral oil |
| Petroleum distillates |
| Toluene |

**US. Massachusetts RTK - Substance List**

| Chemical Identity |
|---|
| Calcium Carbonate (Limestone) |
| Calcium salt |
| Titanium dioxide |
| White mineral oil |
| Petroleum distillates |
| Toluene |
| Crystalline Silica (Quartz)/ Silica Sand |
| Benzene |

**US. Pennsylvania RTK - Hazardous Substances**

**Chemical Identity**
Calcium Carbonate (Limestone)
Calcium salt
Titanium dioxide
White mineral oil
Petroleum distillates
Toluene

**US. Rhode Island RTK**

**Chemical Identity**
Toluene

**Other Regulations:**

| | |
|---|---|
| **Regulatory VOC (less water and exempt solvent):** | 57 g/l |
| **VOC Method 310:** | 2.61 % |

**Inventory Status:**

| | |
|---|---|
| Australia AICS: | One or more components in this product are not listed on or exempt from the Inventory. |
| Canada DSL Inventory List: | One or more components in this product are not listed on or exempt from the Inventory. |
| EINECS, ELINCS or NLP: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan (ENCS) List: | One or more components in this product are not listed on or exempt from the Inventory. |
| China Inv. Existing Chemical Substances: | One or more components in this product are not listed on or exempt from the Inventory. |
| Korea Existing Chemicals Inv. (KECI): | One or more components in this product are not listed on or exempt from the Inventory. |
| Canada NDSL Inventory: | One or more components in this product are not listed on or exempt from the Inventory. |
| Philippines PICCS: | One or more components in this product are not listed on or exempt from the Inventory. |
| US TSCA Inventory: | One or more components in this product are not listed on or exempt from the Inventory. |
| New Zealand Inventory of Chemicals: | One or more components in this product are not listed on or exempt from the Inventory. |
| Japan ISHL Listing: | One or more components in this product are |

| | |
|---|---|
| | not listed on or exempt from the Inventory. |
| Japan Pharmacopoeia Listing: | One or more components in this product are not listed on or exempt from the Inventory. |

## 16.Other information, including date of preparation or last revision

| | |
|---|---|
| **Revision Date:** | 07/28/2015 |
| **Version #:** | 1.0 |
| **Further Information:** | No data available. |
| **Disclaimer:** | For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition. |

DOW CORNING

# ENVIRONMENTAL PRODUCT INFORMATION

FOR LEED® GREEN BUILDING CERTIFICATION PROGRAM

## LEED PROJECT INFORMATION

**Thank you for your LEED inquiry. Following is the product information requested.**

## PRODUCT CONTENT INFORMATION

**Materials and Resources Credit 5: This credit relates to 10-20% of the total material cost of products extracted, harvested, or recovered, as well as manufactured, within 500 miles of the building site location. Because of Dow Corning's supply chain and distances between suppliers and manufacturing sites, Dow Corning sealants cannot contribute to this credit.**

**Materials and Resources Credit 4: The percentage of postconsumer and preconsumer recycled content of Dow Corning sealants, primers, and coatings is zero.**

## PRODUCT VOC INFORMATION

**This document confirms VOC quantitative data of the products listed below, as a contribution toward satisfying IEQ Credit 4 under LEED. Products are not reviewed or certified under LEED. LEED credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED, visit www.usgbc.org/leed**

| | Product Type | Product Manufacturer | Product Name / Model | Product VOC Content | Allowable VOC Content |
|---|---|---|---|---|---|
| 1 | Architectural Sealant | Dow Corning | 500 FRS | 23 | 250 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

### FOR ALL RATING SYSTEMS ASSOCIATED WITH

- [X] LEED Building Design and Construction
- [ ] LEED Interior Design and Construction
- [ ] LEED Operations and Maintenance
- [ ] LEED for Homes
- [ ] LEED for Neighborhood Development

### VOC METHOD

- [X] South Coast SCAQMD Rule #1168 (Sealants)
- [ ] South Coast SCAQMD Rule #1113 (Coatings)
- [X] Bay Area BAAQMD Regulation 8 Rule 51
- [X] California Specification 01350

### LIMITED WARRANTY INFORMATION

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.
Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

## DECLARATION HOLDER

**The declaration holder is liable for the information and evidence on which this declaration is based.**


| Name | Phone number | | Email |
|---|---|---|---|
| Chris Gronski | 989 | 496-7788 | chris.gronski@dowcorning.com |

| Occupation | Dow Corning Office |
|---|---|
| Product Specialist | Corporate |

**Address**
2200 W Salzburg Rd., Midland, MI 48686


DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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**Product Information**
High Performance Building

DOW CORNING

# *Dow Corning*® 500 Fire Rated Sealant

## FEATURES & BENEFITS

- Easy application over a wide temperature range – use in cold-weather applications without heating or mixing
- Non-sag
- Excellent unprimed adhesion to masonry and concrete substrates
- Suitable for new construction joints
- Low odor
- Low VOC content; LEED-compliant
- Excellent weathering properties and resistance to sunlight, rain, snow and temperature extremes

## COMPOSITION

- Ultralow-modulus, one-part, neutral-cure silicone sealant

One-component silicone sealant tested in accordance with CAN/ULC S115, for use in firestop systems described in the Products Certified for Canada Directory (see Table 1 for system numbers/applicable rating information)

## APPLICATIONS

- Wall and floor joint openings where a fire rating is required

## TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

| Test | Property | Unit | Result |
|---|---|---|---|
| **As Supplied** | | | |
| ASTM[(1)] C679 | Tack-Free Time, 50% RH | hours | 1 |
| | Curing Time, 50% RH at 25°C (77°F), 3/8" depth | days | 7-14 |
| | Full Adhesion, cured joint | days | 14-21 |
| ASTM D2202 | Flow, Sag or Slump | | None |
| CTM[(2)] 98 B | Working Time | minutes | 10-20 |
| | Installation Temperature | °C<br>(°F) | -29 to 49<br>(-20 to 120) |
| EPA Method 24 | VOC Content[(3)], maximum<br>inclusive<br>exclusive | <br>g/l<br>g/l | <br>21<br>23 |
| **As Cured – After 7 days at 25°C (77°F) and 50% RH** | | | |
| ASTM C661 | Durometer Hardness, Shore A | points | 15 |
| ASTM D412 | Tensile Strength, maximum | psi<br>($kg/mm^2$) | 100<br>(0.070) |
| ASTM C794 | Peel Strength | lb/in (kg/cm) | 25 (4.46) |

[(1)] ASTM: American Society for Testing and Materials.
[(2)] CTMs (Corporate Test Methods) correspond to standard ASTM tests in most instances. Copies of CTMs are available upon request.
[(3)] Based on South Coast Air Quality Management Division of California. Maximum VOC is listed both inclusive and exclusive of water and exempt compounds. For a VOC data sheet for a specific sealant color, please send your request to product.inquiry@dowcorning.com.

## DESCRIPTION

Suitable for new construction or remedial applications, *Dow Corning*® 500 Fire Rated Sealant provides excellent performance. The non-sag sealant provides easy application over a wide temperature range, enabling use in cold-weather applications without heating or mixing.

Low-odor *Dow Corning* 500 Fire Rated Sealant features excellent unprimed adhesion to masonry and concrete substrates and excellent resistance to weather and temperature extremes.

*Dow Corning* 500 Fire Rated Sealant is available in white and limestone.

## APPROVALS/ SPECIFICATIONS

This sealant meets or exceeds the requirements of:

- ASTM Specification C920, Type S, Grade NS, Class 50, Use T, NT, M, G, A and O
- CAN/ULC S115 (see Table 1 for specific system numbers and the applicable rating information)

## HOW TO USE

1. Surface should be clean, dry and frost-free.
2. Apply sealant by pushing ahead of nozzle to fill the joint and "wet" the side surfaces.
3. Tooling should be done immediately after sealant application and before a skin forms (10-20 minutes). Do not disturb the completed joint for 48 hours to allow for cure.

For detailed technical information, call 800-322-8723 or 989-496-6000. Please contact your local Dow Corning Sales Application Engineer for specific advice.

## HANDLING PRECAUTIONS

**PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING WEBSITE AT DOWCORNING.COM, OR FROM YOUR DOW CORNING SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CORNING CUSTOMER SERVICE.**

**Table 1. CAN/ULC S115 – *Dow Corning*® 500 Fire Rated Sealant for use in firestop systems described in the Products Certified for Canada Directory**

| | Fire Rating, hours | | | |
|---|---|---|---|---|
| System No. | F | FT | FH | FTH |
| C-BJ-0003 | 4 | 3 | 4 | 3 |

**Figure 1. Vertical section – through-floor assembly**

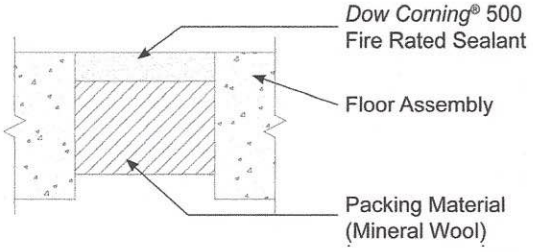
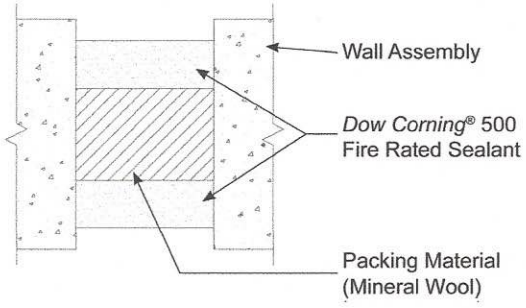



**Figure 2. Horizontal section – through-wall assembly**




1. **Floor or Wall Assembly** – Minimum 140 mm (5½ inch) thick reinforced lightweight or normal-weight 1,600-2,400 kg/m$^3$ (100-150 lb/ft$^3$) concrete. Wall also may be constructed of any UL Classified concrete blocks* having a minimum 4-hour fire-rated wall. Maximum width between floor sections or between wall sections is 152 mm (6 inches). See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Packing Material** – Minimum 114 mm (4½ inch) thickness of minimum 64 kg/m$^3$ (4.0 lb/ft$^3$) mineral wool batt insulation firmly packed into joint as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
3. **Fill, Void or Cavity Material* – Sealant** – Minimum 13 mm (½ inch) thickness of fill material applied within the joint, flush with top surface of floor or with both surfaces of wall.

*Bearing the UL Classification marking.

## USABLE LIFE AND STORAGE

When stored at or below 32°C (90°F), *Dow Corning* 500 Fire Rated Sealant has a shelf life of 12 months from date of manufacture. Refer to product packaging for "Use By" date.

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## PACKAGING INFORMATION

*Dow Corning* 500 Fire Rated Sealant is packaged in 20 fl oz (591 mL) E-Z Pak foil sausages that fit caulking guns, as well as in 2 gal (11.3 kg) bulk pails. It can be dispensed by many air-operated guns and most types of bulk dispensing equipment.

## LIMITATIONS

*Dow Corning* 500 Fire Rated Sealant should not be applied:

- In structural applications.
- Below-grade or to materials that outgas, which can cause bubbling in curing sealant.
- To surfaces that are continuously immersed in water.
- For use as an interior penetration firestop sealing system.
- In totally confined spaces, because the sealant requires atmospheric moisture for cure.
- To surfaces that will be painted after application. Painting sealant will void fire rating.
- To surfaces in direct or indirect contact with food.
- To wet or frost-laden surfaces.
- In applications where solvents or primers are not fully dried prior to sealant application. Uncured sealant is very sensitive to many solvents, primers and cleaning agents; these may cause the sealant to remain uncured or tacky.

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

## HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, dowcorning.com or consult your local Dow Corning representative.

## LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customers' tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

**TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.**

**DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

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AGP13507

2014, April 14
Form No. 63-6120-01

DOW CORNING

# DOW CORNING(R) 500 FIRE RATED SEALANT LIMESTONE

| Version | Revision Date: | SDS Number: | Date of last issue: 10/08/2015 |
|---|---|---|---|
| 1.6 | 01/12/2016 | 840649-00007 | Date of first issue: 11/26/2014 |

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : DOW CORNING(R) 500 FIRE RATED SEALANT LIMESTONE

Product code : 000000000004118973, 000000000004118973

Chemical nature : Silicone, Sealant

**Manufacturer or supplier's details**

Company name of supplier : Dow Corning Corporation

Address : South Saginaw Road
Midland Michigan 48686

Telephone : (800) 248-2481

Emergency telephone : Product Safety : (888) 335-1331 NEWALTA : (800) 567-7455

**Recommended use of the chemical and restrictions on use**

Recommended use : Construction materials and additives

## SECTION 2. HAZARDS IDENTIFICATION

**Emergency Overview**

| WARNING | |
|---|---|
| Appearance | paste |
| Color | in accordance with the product description |
| Odor | Fishy |
| Hazard Summary | Irritant<br>Possible reproductive hazard<br>Possible birth defect hazard |

**WHMIS Regulatory status** : This product, material or substance is a WHMIS controlled product per Sections 33 - 66, Part IV of the CPR.

**Potential Health Effects**

Target Organs : Reproductive organs

Inhalation : No significant effects expected from a single short-term exposure.

Skin : May cause skin irritation.

Eyes : Causes eye irritation.

| | | |
|---|---|---|
| Ingestion | : | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |
| Chronic Exposure | : | May cause adverse reproductive effects.<br>May cause birth defects. |
| Aggravated Medical Condition | : | None known. |

**Carcinogenicity:**

| | | |
|---|---|---|
| **IARC** | Group 2B: Possibly carcinogenic to humans | |
| | Titanium dioxide | 13463-67-7 |
| | Carbon black | 1333-86-4 |
| | Group 1: Carcinogenic to humans | |
| | Quartz | 14808-60-7 |
| | Antimony nickel titanium oxide yellow | 8007-18-9 |
| | Cobalt titanite green spinel | 68186-85-6 |
| **ACGIH** | Confirmed human carcinogen | |
| | Antimony nickel titanium oxide yellow | 8007-18-9 |
| | Cobalt titanite green spinel | 68186-85-6 |
| | Suspected human carcinogen | |
| | Quartz | 14808-60-7 |
| | Confirmed animal carcinogen with unknown relevance to humans | |
| | Carbon black | 1333-86-4 |
| | Cobalt titanite green spinel | 68186-85-6 |

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Silicone Sealant

**Hazardous ingredients**

| Chemical name | CAS-No. | Concentration (% w/w) |
|---|---|---|
| Titanium dioxide | 13463-67-7 | >= 1 - < 5 |
| Methylvinyl bis(N-ethylacetamido)silane | 87855-59-2 | >= 1 - < 5 |
| Antimony nickel titanium oxide yellow | 8007-18-9 | >= 1 - < 5 |
| Dimethyl, methylhydrogen siloxane, dehydrogenated, reaction with hydroxydiethylamine | 68952-53-4 | >= 1 - < 5 |
| Carbon black | 1333-86-4 | >= 0.1 - < 1 |
| Quartz | 14808-60-7 | >= 0.1 - < 1 |
| Cobalt titanite green spinel | 68186-85-6 | >= 0.1 - < 1 |
| N-ethylacetamide | 625-50-3 | >= 0.1 - < 1 |
| Octamethylcyclotetrasiloxane | 556-67-2 | >= 0.1 - < 1 |
| Impurities in methylvinylbis(N-ethylacetamido)silane | Not Assigned | >= 0.1 - < 1 |

## SECTION 4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.
Get medical attention.

In case of skin contact : In case of contact, immediately flush skin with plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention.

If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.

Notes to physician : Treat symptomatically and supportively.

## SECTION 5. FIRE-FIGHTING MEASURES

| | | |
|---|---|---|
| Suitable extinguishing media | : | Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO2)<br>Dry chemical |
| Unsuitable extinguishing media | : | None known. |
| Specific hazards during fire fighting | : | Exposure to combustion products may be a hazard to health. |
| Hazardous combustion products | : | Carbon oxides<br>Metal oxides<br>Silicon oxides<br>Formaldehyde<br>Nitrogen oxides (NOx) |
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.<br>Use water spray to cool unopened containers.<br>Remove undamaged containers from fire area if it is safe to do so.<br>Evacuate area. |
| Special protective equipment for fire-fighters | : | In the event of fire, wear self-contained breathing apparatus.<br>Use personal protective equipment. |

## SECTION 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.<br>Follow safe handling advice and personal protective equipment recommendations. |
| Environmental precautions | : | Discharge into the environment must be avoided.<br>Prevent further leakage or spillage if safe to do so.<br>Retain and dispose of contaminated wash water.<br>Local authorities should be advised if significant spillages cannot be contained. |
| Methods and materials for containment and cleaning up | : | Soak up with inert absorbent material.<br>For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container.<br>Clean up remaining materials from spill with suitable absorbent.<br>Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.<br>Sections 13 and 15 of this SDS provide information regarding |

certain local or national requirements.

## SECTION 7. HANDLING AND STORAGE

| | | |
|---|---|---|
| Technical measures | : | See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section. |
| Local/Total ventilation | : | Use only with adequate ventilation. |
| Advice on safe handling | : | Do not get on skin or clothing.<br>Do not swallow.<br>Do not get in eyes.<br>Handle in accordance with good industrial hygiene and safety practice.<br>Take care to prevent spills, waste and minimize release to the environment. |
| Conditions for safe storage | : | Keep in properly labeled containers.<br>Store in accordance with the particular national regulations. |
| Materials to avoid | : | Do not store with the following product types:<br>Strong oxidizing agents |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ingredients with workplace control parameters**

| Ingredients | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|---|---|---|---|---|
| Limestone | 1317-65-3 | TWA | 10 mg/m3 | CA AB OEL |
| | | TWA | 10 mg/m3 | CA BC OEL |
| | | STEL | 20 mg/m3 | CA BC OEL |
| | | TWAEV (total dust) | 10 mg/m3 | CA QC OEL |
| Titanium dioxide | 13463-67-7 | TWA | 10 mg/m3 | CA AB OEL |
| | | TWA | 10 mg/m3 | CA BC OEL |
| | | TWAEV (total dust) | 10 mg/m3 | CA QC OEL |
| | | TWA | 10 mg/m3 (Titanium dioxide) | ACGIH |
| Antimony nickel titanium oxide yellow | 8007-18-9 | TWA | 0.5 mg/m3 (antimony) | CA AB OEL |
| | | TWA | 0.2 mg/m3 (Nickel) | CA AB OEL |
| | | TWAEV | 0.5 mg/m3 (antimony) | CA QC OEL |
| | | TWAEV | 1 mg/m3 (Nickel) | CA QC OEL |
| | | TWA | 0.5 mg/m3 | CA BC OEL |

| | | | | |
|---|---|---|---|---|
| | | | (antimony) | |
| | | TWA | 0.05 mg/m3 (Nickel) | CA BC OEL |
| | | TWA (Inhalable fraction) | 0.2 mg/m3 (Nickel) | CA ON OEL |
| | | TWA | 0.5 mg/m3 (antimony) | ACGIH |
| | | TWA | 10 mg/m3 (Titanium dioxide) | ACGIH |
| | | TWA (Inhalable fraction) | 0.2 mg/m3 (Nickel) | ACGIH |
| Magnesium carbonate | 546-93-0 | TWA | 10 mg/m3 | CA BC OEL |
| | | TWAEV (total dust) | 10 mg/m3 | CA QC OEL |
| Carbon black | 1333-86-4 | TWA | 3.5 mg/m3 | CA AB OEL |
| | | TWA (Inhalable) | 3 mg/m3 | CA BC OEL |
| | | TWAEV | 3.5 mg/m3 | CA QC OEL |
| | | TWA (Inhalable fraction) | 3 mg/m3 | ACGIH |
| Quartz | 14808-60-7 | TWA (Respirable fraction) | 0.1 mg/m3 | CA ON OEL |
| | | TWA (Respirable particulates) | 0.025 mg/m3 | CA AB OEL |
| | | TWAEV (respirable dust) | 0.1 mg/m3 | CA QC OEL |
| | | TWA (Respirable) | 0.025 mg/m3 (Silica) | CA BC OEL |
| | | TWA (Respirable fraction) | 0.025 mg/m3 (Silica) | ACGIH |
| Cobalt titanite green spinel | 68186-85-6 | TWA | 0.02 mg/m3 (Cobalt) | CA AB OEL |
| | | TWAEV | 0.02 mg/m3 (Cobalt) | CA QC OEL |
| | | TWA | 0.02 mg/m3 (Cobalt) | CA BC OEL |
| | | TWA | 0.2 mg/m3 (Nickel) | CA AB OEL |
| | | TWAEV | 1 mg/m3 (Nickel) | CA QC OEL |
| | | TWA | 0.05 mg/m3 (Nickel) | CA BC OEL |
| | | TWA (Inhalable fraction) | 0.2 mg/m3 (Nickel) | CA ON OEL |
| | | TWA | 0.02 mg/m3 (Cobalt) | ACGIH |
| | | TWA (Inhalable fraction) | 0.2 mg/m3 (Nickel) | ACGIH |

| | | | | |
|---|---|---|---|---|
| Octamethylcyclotetrasiloxane | 556-67-2 | TWA | 10 ppm | DCC OEL |

**Engineering measures** : Processing may form hazardous compounds (see section 10).
Ensure adequate ventilation, especially in confined areas.
Minimize workplace exposure concentrations.
Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable particles.

**Personal protective equipment**

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Filter type : Particulates type

Hand protection
Material : Impervious gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Eye protection : Wear the following personal protective equipment:
Safety goggles

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.
These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | paste |
| Color | : | in accordance with the product description |
| Odor | : | Fishy |
| Odor Threshold | : | No data available |
| pH | : | Not applicable |
| Melting point/freezing point | : | No data available |
| Initial boiling point and boiling range | : | Not applicable |
| Flash point | : | Not applicable |
| Evaporation rate | : | Not applicable |
| Flammability (solid, gas) | : | Not classified as a flammability hazard |
| Upper explosion limit | : | No data available |
| Lower explosion limit | : | No data available |
| Vapor pressure | : | Not applicable |
| Relative vapor density | : | No data available |
| Relative density | : | 1.48 |
| Solubility(ies) | | |
| Water solubility | : | No data available |
| Partition coefficient: n-octanol/water | : | No data available |
| Autoignition temperature | : | No data available |
| Decomposition temperature | : | No data available |
| Viscosity | | |
| Viscosity, dynamic | : | Not applicable |
| Explosive properties | : | Not explosive |
| Oxidizing properties | : | The substance or mixture is not classified as oxidizing. |
| Molecular weight | : | No data available |

## SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Use at elevated temperatures may form highly hazardous compounds.
Can react with strong oxidizing agents.
Hazardous decomposition products will be formed at elevated temperatures.

Conditions to avoid : None known.

Incompatible materials : Oxidizing agents

Hazardous decomposition products
Thermal decomposition : Formaldehyde

## SECTION 11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

Not classified based on available information.

**Ingredients:**

**Titanium dioxide:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 6.82 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

**Methylvinyl bis(N-ethylacetamido)silane:**

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg
Method: Expert judgment

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: Based on test data

**Antimony nickel titanium oxide yellow:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

**Carbon black:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

| | | |
|---|---|---|
| Acute inhalation toxicity | : | LC50 (Rat): > 0.0046 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist |

**Quartz:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 5,000 mg/kg |

**Cobalt titanite green spinel:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Remarks: Based on data from similar materials |

**N-ethylacetamide:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): 3,950 mg/kg<br>Remarks: Based on data from similar materials |
| Acute inhalation toxicity | : | LC0 (Rat): 2.19 mg/l<br>Exposure time: 8 h<br>Test atmosphere: vapor<br>Remarks: Based on data from similar materials |

**Octamethylcyclotetrasiloxane:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 4,800 mg/kg<br>Assessment: The substance or mixture has no acute oral toxicity<br>Remarks: Based on test data |
| Acute inhalation toxicity | : | LC50 (Rat): 2975 ppm<br>Exposure time: 4 h<br>Test atmosphere: vapor<br>Assessment: The substance or mixture has no acute inhalation toxicity<br>Remarks: Based on test data |
| Acute dermal toxicity | : | LD50 (Rabbit): > 2.5 ml/kg<br>Assessment: The substance or mixture has no acute dermal toxicity<br>Remarks: Based on test data |

**Impurities in methylvinylbis(N-ethylacetamido)silane:**

| | | |
|---|---|---|
| Acute oral toxicity | : | Acute toxicity estimate: 500 mg/kg<br>Method: Expert judgment |
| Acute dermal toxicity | : | LD50 (Rat): > 2,000 mg/kg<br>Assessment: The substance or mixture has no acute dermal toxicity<br>Remarks: Based on data from similar materials |

**Skin corrosion/irritation**

May cause skin irritation.

**Ingredients:**

**Titanium dioxide:**

Species: Rabbit
Result: No skin irritation

**Methylvinyl bis(N-ethylacetamido)silane:**
Species: Rabbit
Result: No skin irritation
Remarks: Based on test data

**Antimony nickel titanium oxide yellow:**
Species: Rabbit
Result: No skin irritation

**Dimethyl, methylhydrogen siloxane, dehydrogenated, reaction with hydroxydiethylamine:**
Result: Skin irritation
Remarks: Based on data from similar materials

**Carbon black:**
Species: Rabbit
Result: No skin irritation

**Cobalt titanite green spinel:**
Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials

**N-ethylacetamide:**
Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials

**Octamethylcyclotetrasiloxane:**
Species: Rabbit
Result: No skin irritation
Remarks: Based on test data

**Impurities in methylvinylbis(N-ethylacetamido)silane:**
Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials

**Serious eye damage/eye irritation**

Causes eye irritation.

**Ingredients:**

**Titanium dioxide:**
Species: Rabbit
Result: No eye irritation

**Methylvinyl bis(N-ethylacetamido)silane:**
Species: Rabbit
Result: Irreversible effects on the eye
Remarks: Based on test data

**Dimethyl, methylhydrogen siloxane, dehydrogenated, reaction with hydroxydiethylamine:**
Result: Irritation to eyes, reversing within 21 days
Remarks: Based on data from similar materials

**Carbon black:**
Species: Rabbit
Result: No eye irritation

**N-ethylacetamide:**
Species: Rabbit
Result: No eye irritation
Remarks: Based on data from similar materials

**Octamethylcyclotetrasiloxane:**
Species: Rabbit
Result: No eye irritation
Remarks: Based on test data

**Impurities in methylvinylbis(N-ethylacetamido)silane:**
Species: Rabbit
Result: Irreversible effects on the eye
Remarks: Based on data from similar materials

**Respiratory or skin sensitization**

Skin sensitization: Not classified based on available information.
Respiratory sensitization: Not classified based on available information.

Ingredients:

**Titanium dioxide:**
Test Type: Local lymph node assay (LLNA)
Routes of exposure: Skin contact
Species: Mouse
Result: negative

**Methylvinyl bis(N-ethylacetamido)silane:**
Assessment: Does not cause skin sensitization.

Test Type: Buehler Test
Species: Guinea pig
Remarks: Based on test data

**Carbon black:**
Test Type: Buehler Test
Routes of exposure: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

**Cobalt titanite green spinel:**
Assessment: Probability or evidence of low to moderate skin sensitization rate in humans
Remarks: Based on data from similar materials

**N-ethylacetamide:**

Test Type: Intracutaneous test
Routes of exposure: Skin contact
Species: Guinea pig
Result: negative
Remarks: Based on data from similar materials

**Octamethylcyclotetrasiloxane:**
Assessment: Does not cause skin sensitization.

Test Type: Maximization Test
Species: Guinea pig
Remarks: Based on test data

**Impurities in methylvinylbis(N-ethylacetamido)silane:**
Assessment: Does not cause skin sensitization.

Test Type: Buehler Test
Species: Guinea pig
Remarks: No known sensitising effect.
Based on data from similar materials

**Germ cell mutagenicity**

Not classified based on available information.

**Ingredients:**

**Titanium dioxide:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse
Result: negative

**Methylvinyl bis(N-ethylacetamido)silane:**

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Result: negative
Remarks: Based on test data

: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Based on test data

**Antimony nickel titanium oxide yellow:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

**Carbon black:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

**Cobalt titanite green spinel:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Remarks: Based on data from similar materials

: Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
Remarks: Based on data from similar materials

**N-ethylacetamide:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Based on test data

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

**Octamethylcyclotetrasiloxane:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Based on test data

: Test Type: Mutagenicity (in vitro mammalian cytogenetic test)
Result: negative
Remarks: Based on test data

: Test Type: Chromosome aberration test in vitro
Result: negative
Remarks: Based on test data

: Test Type: In vitro sister chromatid exchange assay in mammalian cells
Result: negative
Remarks: Based on test data

: Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Result: negative
Remarks: Based on test data

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Rat
Application Route: inhalation (vapor)
Result: negative
Remarks: Based on test data

Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Rat
Application Route: Ingestion
Result: negative

Remarks: Based on test data

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

**Impurities in methylvinylbis(N-ethylacetamido)silane:**

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Result: negative
Remarks: Based on data from similar materials

: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Based on data from similar materials

**Carcinogenicity**

Not classified based on available information.

**Ingredients:**

**Titanium dioxide:**

Species: Rat
Application Route: inhalation (dust/mist/fume)
Exposure time: 24 Months
Method: OECD Test Guideline 453
Result: positive
Remarks: The mechanism or mode of action may not be relevant in humans.
The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in inhalation studies with animals.

**Antimony nickel titanium oxide yellow:**

Remarks: The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Sufficient evidence of carcinogenicity in animal experiments

**Carbon black:**

Species: Rat
Application Route: Inhalation
Exposure time: 2 Years
Result: positive
Target Organs: Lungs
Remarks: The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

**Quartz:**

Species: Humans
Application Route: inhalation (dust/mist/fume)

Result: positive
Remarks: IARC (International Agency for Research on Cancer)
The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Positive evidence from human epidemiological studies (inhalation)

**Cobalt titanite green spinel:**
Species: Rat
Application Route: inhalation (dust/mist/fume)
Exposure time: 2 Years
Result: positive
Remarks: Based on data from similar materials
The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Positive evidence from human epidemiological studies (inhalation)

**N-ethylacetamide:**
Species: Mouse
Application Route: inhalation (vapor)
Exposure time: 18 Months
Result: negative
Remarks: Based on data from similar materials

**Reproductive toxicity**

May cause birth defects.
May cause adverse reproductive effects.

**Ingredients:**

**Methylvinyl bis(N-ethylacetamido)silane:**

Effects on fertility : Species: Rat, male
Application Route: Ingestion
Symptoms: Effects on fertility.
Remarks: Based on test data

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments.

**Antimony nickel titanium oxide yellow:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion

Method: OECD Test Guideline 422
Result: negative

**Cobalt titanite green spinel:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative

**N-ethylacetamide:**

Effects on fetal development : Test Type: Embryo-fetal development
Species: Mouse
Application Route: Ingestion
Result: positive
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

**Octamethylcyclotetrasiloxane:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat, male and female
Application Route: inhalation (vapor)
Symptoms: Effects on fertility.
Remarks: Based on test data

Effects on fetal development : Test Type: Prenatal development toxicity study (teratogenicity)
Species: Rabbit
Application Route: inhalation (vapor)
Symptoms: No effects on fetal development.
Remarks: Based on test data

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments.

**Impurities in methylvinylbis(N-ethylacetamido)silane:**

Effects on fertility : Species: Rat, male
Application Route: Ingestion
Symptoms: Effects on fertility.
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments.

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Ingredients:**

**Carbon black:**
Routes of exposure: inhalation (dust/mist/fume)
Assessment: No significant health effects observed in animals at concentrations of 0.2 mg/l/6h/d or less.

**Quartz:**
Routes of exposure: inhalation (dust/mist/fume)
Target Organs: Lungs
Assessment: Shown to produce significant health effects in animals at concentrations of 0.02 mg/l/6h/d or less.

**Cobalt titanite green spinel:**
Routes of exposure: inhalation (dust/mist/fume)
Target Organs: Lungs
Assessment: Shown to produce significant health effects in animals at concentrations of 0.02 mg/l/6h/d or less.
Remarks: The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

**Repeated dose toxicity**

**Ingredients:**

**Titanium dioxide:**
Species: Rat
NOAEL: 24,000 mg/kg
Application Route: Ingestion
Exposure time: 28 d

Species: Rat
NOAEL: 10 mg/m3
Application Route: inhalation (dust/mist/fume)
Exposure time: 2 y
Remarks: The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

**Antimony nickel titanium oxide yellow:**
Species: Rat
NOAEL: >= 450 mg/kg
Application Route: Ingestion
Exposure time: 90 Days

**Carbon black:**
Species: Rat
NOAEL: 1 mg/m3
LOAEL: 7 mg/m3
Application Route: Inhalation

Test atmosphere: dust/mist
Exposure time: 90 d
Remarks: The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

**Quartz:**
Species: Humans
LOAEL: 0.053 mg/m3
Application Route: Inhalation
Remarks: OECD SIDS
The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

**Cobalt titanite green spinel:**
Species: Mouse
LOAEL: 0.00125 mg/l
Application Route: inhalation (dust/mist/fume)
Exposure time: 2 yr
Remarks: Based on data from similar materials
The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

**N-ethylacetamide:**
Species: Rabbit
NOAEL: 0.09 mg/l
LOAEL: 0.36 mg/l
Application Route: inhalation (vapor)
Exposure time: 24 Months
Remarks: Based on data from similar materials

**Octamethylcyclotetrasiloxane:**
Species: Rat
Application Route: Ingestion
Remarks: Based on test data

Species: Rat
Application Route: inhalation (vapor)
Remarks: Based on test data

Species: Rabbit
Application Route: Skin contact
Remarks: Based on test data

**Aspiration toxicity**

Not classified based on available information.

**Further information**

**Ingredients:**

**Octamethylcyclotetrasiloxane:**
Remarks: Results from a 2 year repeated vapor inhalation exposure study to rats of octamethylcyclotetrasiloxane (D4) indicate effects (benign uterine adenomas) in the uterus of female animals. This finding occurred at the highest exposure dose (700 ppm) only. Studies to date have

not demonstrated if these effects occur through pathways that are relevant to humans. Repeated exposure in rats to D4 resulted in protoporphyrin accumulation in the liver. Without knowledge of the specific mechanism leading to the protoporphyrin accumulation the relevance of this finding to humans is unknown.

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Ingredients:**

**Titanium dioxide:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 100 mg/l<br>Exposure time: 48 h |
| Toxicity to algae | : | EC50 (Skeletonema costatum (marine diatom)): > 10,000 mg/l<br>Exposure time: 72 h |
| Toxicity to bacteria | : | EC50: > 1,000 mg/l<br>Exposure time: 3 h<br>Method: OECD Test Guideline 209 |

**Methylvinyl bis(N-ethylacetamido)silane:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 69 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202 |
| Toxicity to algae | : | EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201 |

**Antimony nickel titanium oxide yellow:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Leuciscus idus (Golden orfe)): > 10,000 mg/l<br>Exposure time: 96 h |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 100 mg/l<br>Exposure time: 48 h |
| Toxicity to algae | : | EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201 |
| Toxicity to daphnia and other aquatic invertebrates (Chron- | : | NOEC (Daphnia magna (Water flea)): > 1 mg/l<br>Exposure time: 21 d |

ic toxicity) Method: OECD Test Guideline 211

**Dimethyl, methylhydrogen siloxane, dehydrogenated, reaction with hydroxydiethylamine:**
Ecotoxicology Assessment
Acute aquatic toxicity : No toxicity at the limit of solubility.

**Carbon black:**
Toxicity to fish : LC0 (Danio rerio (zebra fish)): 1,000 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 5,600 mg/l
Exposure time: 24 h
Method: OECD Test Guideline 202

Toxicity to algae : NOEC (Desmodesmus subspicatus (green algae)): 10,000 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

**Quartz:**
Ecotoxicology Assessment
Acute aquatic toxicity : No toxicity at the limit of solubility.

Chronic aquatic toxicity : No toxicity at the limit of solubility.

**Cobalt titanite green spinel:**
Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 100 mg/l
Exposure time: 96 h
Method: DIN 38412
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Remarks: Based on data from similar materials

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 1 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211
Remarks: Based on data from similar materials

Toxicity to bacteria : EC50: 33 mg/l
Exposure time: 30 min
Method: ISO 8192

Remarks: Based on data from similar materials

**N-ethylacetamide:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 3,390 mg/l
Exposure time: 96 h
Method: DIN 38412
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 580 mg/l
Exposure time: 48 h
Method: DIN 38412
Remarks: Based on data from similar materials

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

Toxicity to bacteria : EC10 (Pseudomonas putida): > 10,000 mg/l
Exposure time: 17 h
Method: DIN 38 412 Part 8
Remarks: Based on data from similar materials

**Octamethylcyclotetrasiloxane:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.022 mg/l
Exposure time: 96 h
Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia sp.): > 0.015 mg/l
Exposure time: 48 h
Remarks: No toxicity at the limit of solubility.

Toxicity to algae : EC50: > 0.022 mg/l
Exposure time: 96 h
Remarks: No toxicity at the limit of solubility.

NOEC: 0.022 mg/l
Exposure time: 96 h
Remarks: No toxicity at the limit of solubility.

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): >= 0.0044 mg/l
Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 0.0079 mg/l
Exposure time: 21 d
Remarks: No toxicity at the limit of solubility.

Toxicity to bacteria : IC50: > 10,000 mg/l
Method: ISO 8192

Ecotoxicology Assessment
Chronic aquatic toxicity : May cause long lasting harmful effects to aquatic life.

**Persistence and degradability**

Ingredients:

**Methylvinyl bis(N-ethylacetamido)silane:**

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 62.66 %
Method: OECD Test Guideline 301B

**Dimethyl, methylhydrogen siloxane, dehydrogenated, reaction with hydroxydiethylamine:**

Biodegradability : Result: Not readily biodegradable.
Remarks: Based on data from similar materials

**N-ethylacetamide:**

Biodegradability : Result: Inherently biodegradable.
Biodegradation: 100 %
Exposure time: 6 d
Remarks: Based on data from similar materials

**Octamethylcyclotetrasiloxane:**

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 3.7 %
Exposure time: 28 d
Method: OECD Test Guideline 310

Stability in water : Degradation half life: 69.3 - 144 h (24.6 °C) pH: 7
Method: OECD Test Guideline 111

**Bioaccumulative potential**

Ingredients:

**Octamethylcyclotetrasiloxane:**

Partition coefficient: n-octanol/water : log Pow: 6.48 (25.1 °C)

**Mobility in soil**

No data available

**Other adverse effects**

Ingredients:

**Octamethylcyclotetrasiloxane:**

Results of PBT and vPvB assessment : Remarks: Octamethylcyclotetrasiloxane (D4) meets the current REACh Annex XIII criteria for PBT and vPvB. In Canada, D4 has been assessed and deemed to meet the PiT criteria. However, D4 does not behave similarly to known PBT/vPvB substances. The weight of scientific evidence from field studies shows that D4 is not biomagnifying in aquatic and terrestrial food webs. D4 in air will degrade by reaction with naturally occurring hydroxyl radicals in the atmosphere. Any D4 in air that does not degrade by reaction with hydroxyl radicals is not expected to deposit from the air to water, to land, or to living organisms.

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

## SECTION 14. TRANSPORT INFORMATION

**International Regulation**

**UNRTDG**
Not regulated as a dangerous good

**IATA-DGR**
Not regulated as a dangerous good

**IMDG-Code**
Not regulated as a dangerous good

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not applicable for product as supplied.

**Domestic regulation**

**TDG**
Not regulated as a dangerous good

## SECTION 15. REGULATORY INFORMATION

**WHMIS Classification** : D2A: Very Toxic Material Causing Other Toxic Effects
D2B: Toxic Material Causing Other Toxic Effects

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**The ingredients of this product are reported in the following inventories:**

NZIoC : All ingredients listed or exempt.

TSCA : All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

AICS : All ingredients listed or exempt.

REACH : All ingredients (pre-)registered or exempt.

IECSC : One or more components of this product may not be listed on

the IECSC inventory, but this component(s) is (are) registered with volume limitation under Dow Corning entity in China. Consult your local Dow Corning office.

PICCS : Consult your local Dow Corning office.

DSL : All chemical substances in this product comply with the CEPA 1999 and NSNR and are on or exempt from listing on the Canadian Domestic Substances List (DSL).

TCSI : All ingredients listed or exempt.

**Additional regulatory information**

Methylvinyl bis(N-ethylacetamido)silane 87855-59-2

This product contains a substance regulated by Significant New Activity (SNAc) Notice No. 17116 under CEPA 1999 81(4). A significant new activity is the use of the substance in Canada in a quantity greater than 1,000 kilograms per calendar year in consumer products as defined in section 2 of the Canada Consumer Products Safety Act when it is an unreacted form.

## SECTION 16. OTHER INFORMATION

**Full text of other abbreviations**

| | |
|---|---|
| ACGIH | : USA. ACGIH Threshold Limit Values (TLV) |
| CA AB OEL | : Canada. Alberta, Occupational Health and Safety Code (table 2: OEL) |
| CA BC OEL | : Canada. British Columbia OEL |
| CA ON OEL | : Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act. |
| CA QC OEL | : Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants |
| DCC OEL | : Dow Corning Guide |
| ACGIH / TWA | : 8-hour, time-weighted average |
| CA AB OEL / TWA | : 8-hour Occupational exposure limit |
| CA BC OEL / TWA | : 8-hour time weighted average |
| CA BC OEL / STEL | : short-term exposure limit |
| CA ON OEL / TWA | : Time-Weighted Average Limit (TWA) |
| CA QC OEL / TWAEV | : Time-weighted average exposure value |
| DCC OEL / TWA | : Time weighted average |

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk;

IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

| | | |
|---|---|---|
| Sources of key data used to compile the Material Safety Data Sheet | : | Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, http://echa.europa.eu/ |

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

CA / Z8

ROXUL®
The Better Insulation™

# Technical Product Information

## ROXUL AFB

BATT INSULATION 07210 & 09820*

BLANKET INSULATION 07 21 16**

ACOUSTIC BLANKET INSULATION 09 81 16**

## General Product Information:

ROXUL® products are mineral wool fibre insulations made from basalt rock and slag. This combination results in a non-combustible product with a melting point of approximately 2150°F (1177°C), which gives it excellent fire resistance properties. ROXUL mineral wool is a water repellent yet vapour permeable material.

## Description & Common Applications:

ROXUL AFB® (Acoustical Fire Batt) is a batt insulation product designed specifically for application in wall/floor systems where acoustical performance and fire resistance are the primary concerns. This noncombustible lightweight product has excellent acoustical dampening properties and is dimensionally stable which makes it ideal for friction fit into wall partitions and system applications from party walls to plant/manufacturing walls. The product is chemically inert which means that it will not promote corrosion. The AFB product comes in a number of thicknesses to meet the requirements of both retrofit and new construction applications.

## Compliance and Performance:

| | | |
|---|---|---|
| CAN/ULC-S702-09 | Mineral Fibre Thermal Insulation for Buildings | Type 1, Complies |
| ASTM C 665 | Mineral-Fiber Blanket Thermal Insulation | Type 1, Complies |
| ASTM C 553 | Mineral Fiber Blanket Thermal Insulation | Complies |
| MEA Approval | New York City Approval | 338-97-M |
| City Of Los Angeles approval | | RR 25444 |
| ULC Design Nos. | U311, W406, W408, W419, W423, W440, W441, W442, W508, W600, Z500 | |
| UL Design Nos. | U305, U311, U317, U411, U412, U448, U465, V417, V418, V419 | |

## Fire Performance:

| | | |
|---|---|---|
| CAN/ULC-S114 | Test for Non-Combustibility | Non-Combustible |
| ASTM E 136 | Behaviour of Materials at 750°C (1382°F) | Non-Combustible |
| CAN/ULC-S102 | Surface Burning Characteristics | Flame Spread = 0<br>Smoke Developed = 0 |
| ASTM E 84 (UL 723) | Surface Burning Characteristics | Flame Spread = 0<br>Smoke Developed = 0 |
| CAN/ULC-S129 | Smoulder Resistance | 0.09% |

## Acoustical Performance:

| | | |
|---|---|---|
| ASTM E 90 | Airborne Sound Transmission Loss | Tested |
| ASTM E 413 | Rating Sound Insulation | Tested |
| ASTM C 423 | Sound Absorption Coefficients | Tested |
| ASTM E 1050 | Impedance and Absorption of Acoustical Materials<br>(Please contact ROXUL for Rated Wall System Designs) | Tested |

## Air Erosion:

| | | |
|---|---|---|
| UL 181 | Maximum Air Velocity | 1000 fpm (5.08 m/s) |

## Corrosive Resistance:

| | | |
|---|---|---|
| ASTM C 665 | Corrosiveness to Steel | Pass |
| ASTM C 795 *** | Stainless Steel Stress Corrosion Specification as per Test Methods C871 and C692: U.S. Nuclear Regulatory Commission, Reg. Guide #1.36: U.S. Military Specifications MIL-I-24244 (all versions including B and C) | Conforms |

*MASTER FORMAT 1995 EDITION **MASTER FORMAT 2004 EDITION

# ROXUL AFB

## Acoustical Performance:

**ASTM C 423**
**CO-EFFICIENTS AT FREQUENCIES**

| Thickness | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | NRC |
|---|---|---|---|---|---|---|---|
| 1.0" | 0.14 | 0.25 | 0.65 | 0.90 | 1.01 | 1.01 | 0.70 |
| 1.5" | 0.18 | 0.44 | 0.94 | 1.04 | 1.02 | 1.03 | 0.85 |
| 2.0" | 0.28 | 0.60 | 1.09 | 1.09 | 1.05 | 1.07 | 0.95 |
| 3.0" | 0.52 | 0.96 | 1.18 | 1.07 | 1.05 | 1.05 | 1.05 |
| 4.0" | 0.86 | 1.11 | 1.20 | 1.07 | 1.08 | 1.07 | 1.10 |

## Density:
2.8 lb/ft$^3$ 45 kg/m$^3$

## Dimensions:
16" (width) x 48" (length)
413 mm (width) x 1219 mm (length)

24" (width) x 48" (length)
616 mm (width) x 1219 mm (length)

## Thickness:
Product thickness is available in 1" to 4" with 1/2" increments as well as 5" and 6" offerings.

For additional sizes, please contact ROXUL by phone at 1-800-265-6878.

## Key Application Qualifiers:
- Easily cut
- Non-combustible
- Excellent sound absorbency
- Chemically inert
- Does not rot or sustain vermin
- Does not promote growth of fungi or mildew
- Low moisture sorption
- Water resistant
- CFC and HCFC free product and process
- Made from natural & recycled materials

## Other ROXUL Products:
Please consult ROXUL for all your insulation needs. We have an extensive range of products for all applications from pipe insulation to commercial products to residential batts. ROXUL invites all inquiries and will act promptly to service all of your requirements.

*** "Provisions for lot testing may be required, consult manufacturer."

Note:
As ROXUL Inc. has no control over installation design and workmanship, accessory materials or application conditions, ROXUL Inc. does not warranty the performance or results of any installation containing ROXUL Inc's. products. ROXUL Inc's. overall liability and the remedies available are limited by the general terms and conditions of sale. This warranty is in lieu of all other warranties and conditions expressed or implied, including the warranties of merchantability and fitness for a particular purpose.

**ROXUL INC.**
**www.roxul.com**
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Revised: October 27, 2014
Supersedes: July 06, 2013

ROXUL®
The Better Insulation™

# Material Safety Data Sheet

## Material Name: Mineral Wool Insulation

### 1. Identification:

1.1 Product Generic Name: Mineral Wool Insulation

1.2 Product Use: Commercial, Industrial, Residential, and Marine Insulation

1.3 Products:
AFB®, CAVITYROCK®, COMFORTBATT®, COMFORTBOARD™, CONROCK®, CURTAINROCK®, DRAINBOARD®, ENERWRAP®, FABROCK™, FIREWALL®, MONOBOARD®, ProRox®, RHM®, RHT®, ROCKBOARD®, ROCKFILL™, ROXUL Plus®, SAFE®, SAFE'n'SOUND®[1], SeaRox®, STURDIROCK®, TECHTON 1200®, TECHTON 1200® MARINE, TOPROCK®

1.4 Company Address:
ROXUL Inc.
420 Bronte St. S.
Suite 105
Milton, Ontario
Canada
L9T 0H9

1.5 Web Site: www.roxul.com

1.6 If further information is required, please call or fax ROXUL Inc.
Telephone: 1-800-265-6878 or 905-878-8474 Fax: 905-878-8077

1. SAFE'n'SOUND® is a registered Trademark used under license by ROXUL Inc.

### 2. Information on Ingredients:

| Ingredient Name | CAS Number | % |
|---|---|---|
| Mineral Fiber | RN 65997-17-3 | 94-99 |
| Cured Urea Extended Phenolic Formaldehyde Binder | 25104-55-6 | 1-6 |

### 3. Hazards Identification:

3.1 Appearance and Odor: Grey, green, brown fibrous batt, blanket, preformed pipe or board.

3.2 Emergency Overview: Acrid smoke may be generated during a fire.

Exposure to dust may be irritating to the eyes, nose and throat.

3.3 Potential Health Effects:

3.3.1 Inhalation: Temporary mechanical irritation of the upper respiratory tract (scratchy throat, coughing, congestion) may result from exposures to dusts and fibers in excess of applicable exposure limits.

3.3.2 Skin Contact: Dusts and fibers may cause temporary mechanical irritation (itching) or redness to the skin.

3.3.3 Eye Contact: Dusts and fibers may cause temporary mechanical irritation (itching) or redness to the eyes.

3.3.4 Ingestion: Ingestion of this product is unlikely and not intended under normal conditions of use. Ingestion of this product may cause gastrointestinal irritation.

3.3.5 Existing Medical Conditions: Pre-existing chronic eye, skin and respiratory conditions may temporarily worsen due to exposure to dusts and fibers.

## 4. First-Aid Measures:

4.1 Inhalation: If irritation occurs, remove the affected person to fresh air. Drink water, and blow nose, to clear dusts and fibers from throat and nose. If irritation persists, consult a physician.

4.2 Skin: If irritation occurs, do not rub or scratch. Rinse under running water prior to washing with mild soap and water. Use a washcloth to help remove fibers. If irritation persists, consult a physician.

4.3 Eyes: If irritation occurs, flush eyes with plenty of water for at least 15 minutes. Do not rub the eyes. Consult a physician if irritation persists.

4.4 Ingestion: Ingestion of this product is unlikely and not intended under normal conditions of use. If it does occur, rinse mouth with plenty of water to help remove dust and fibers, and drink plenty of water to help reduce potential gastrointestinal irritation. Do not induce vomiting unless directed to do so by a physician.

## 5. Fire-Fighting Measures:

The products are non-combustible and do not pose a fire hazard. However, packaging material may burn.

| | | |
|---|---|---|
| 5.1 | Suitable extinguishing media: | Water, foam, carbon dioxide or dry powder |
| 5.2 | Extinguishing media which must not be used for safety reasons: | None |
| 5.3 | Combustion products: | Carbon dioxide, carbon monoxide and trace gases |
| 5.4 | Special protective equipment for fire-fighters: | Observe normal fire fighting procedures |
| 5.5 | Flash point: None | Flash Point Method Used: Not Applicable |
| | Upper Flammable Limit (UFL): Not Applicable | Lower Flammable Limit: Not Applicable |
| | Autoignition: Not Applicable | Explosive Properties: Not Applicable |

## 6. Accidental Release Measures:

6.1 Containment Procedures: Pick up large pieces and scoop up dusts and fibers after they have settled out of air. These materials will disperse and settle along the bottom of waterways and ponds. It cannot easily be removed once it is waterborne, but is considered non-hazardous in water.

6.2 Cleanup Procedures: Use OSHA-recommended work practices and protective equipment as described in Section 8 of this Material Safety Data Sheet. Avoid generating airborne dusts and fibers during cleanup. Do not use compressed air. Vacuum dusts and fibers. Place material in an appropriate container for disposal as non-hazardous waste.

6.3 Response Procedures: Isolate area. Keep unnecessary personnel away. If dry methods or compressed air are used to collect dusts and fibers, all personnel in the area should wear OSHA-approved protective equipment (see Section 8 of this Material Safety Data Sheet).

## 7. Handling and Storage:

7.1 General Precautions:

- Utilize OSHA-recommended work practices and protective equipment when using the products (see Section 8 of this Material Safety Data Sheet).

7.2 Handling:

- Unpack material at application site to avoid unnecessary handling of product.
- Keep work areas clean. Avoid unnecessary handling of scrap material and debris by placing such materials in suitable containers, which should be kept as close to the work area as possible.
- Ensure good ventilation. Local exhaust ventilation may be required if the method of use produces dust levels which exceed applicable exposure limits (see Section 8 of this Material Safety Data Sheet).
- Avoid excessive eye and skin contact with dusts and fibers.
- Use recommended cleanup procedures to avoid buildup of dusts and fibers in the work area.

7.3 Storage:

- Keep material in original packaging until it is to be used.
- Store material to protect against adverse conditions including precipitation.

## 8. Exposure Controls/Personal Protection:

8.1 Exposure Guidelines:

8.1.1 General Product Information: Follow all applicable exposure limits. Local regulations may apply. Roxul recommends that users of the products adhere to the OSHA-recommended PEL of 1 f/cc TWA (fibers longer than 5 μm with diameters less than 3 μm). This recommended PEL, together with recommended work practices and personal protective equipment, were adopted in a Health and Safety Partnership Program (HSPP) agreement in 1999 between OSHA and the North American Insulation Manufacturers Association (NAIMA), of which Roxul is a member. Adherence to the OSHA-recommended PEL, work practices and protective equipment in the HSPP is expected to provide appropriate protection against all inhalation-related health risks that may be associated with exposures to mineral wool fibers (ACGIH 1997; NAIMA 1999; OSHA 1999; National Research Council 2000, IARC 2001), and to minimize eye and skin irritation.

8.1.2 Component Exposure Limits:

| Source | Legal or Recommended Exposure Limit | Exposure |
|---|---|---|
| OSHA | 1 f/cc TWA (recommended) | Synthetic Vitreous Fibers, > 5 μm length, < 3 μm diameter |
| ACGIH | 1 f/cc TWA (threshold limit value – TLV) | Synthetic Vitreous Fibers, > 5 μm length, < 3 μm diameter |
| OSHA | 15 mg/m³ TWA-PEL (total particulate)<br>5 mg/m³ TWA-PEL (respirable particulate) | Inert dust and particulates not otherwise regulated |
| ACGIH | 10 mg/m³ TWA-TLV (inhalable particulate)<br>3 mg/m³ TWA-TLV (respirable particulate) | Particulates not otherwise classified, containing no asbestos and <1% crystalline silica |

8.2 Equipment and Work Practices: Follow OSHA-recommended equipment and work practices. A complete copy of these practices can be obtained from Roxul Inc. (see Section 1 of this Material Safety Data Sheet), and is available on the OSHA website (http://www.osha.gov/SLTC/syntheticmineralfibers).

8.2.1 Follow OSHA-recommended safe handling practices listed in Section 7.2 above.

8.2.2 Where feasible, general dilution ventilation or local exhaust ventilation should be used as necessary to maintain exposures below applicable exposure limits. Dust collection systems should be used in cutting or machining operations and may be needed when using power tools.

8.2.3 Follow OSHA-recommended work practices when fabricating, installing or removing product.

8.3 Personal Protective Equipment::

8.3.1 Respiratory:

8.3.1.1 General:
In poorly ventilated areas when dusty conditions exist and/or dust levels exceed applicable exposure limits, wear a NIOSH certified dust respirator with an efficiency rating of N95 or higher. Use disposable face masks complying with NIOSH respirator standards, such as a 3M Model 8210 (or 8710) (3M Model 9900 in high humidity environments) or equivalent. For exposures up to five times the established exposure limits use a quarter-mask respirator, rated N95 or higher; and for exposures up to ten times the established exposure limits use a half-mask respirator (e.g. MSA's DM-11, Racal's Delta N95, 3M's 8210), rated N95 or higher. For exposures up to 50 times the established exposure limits use a full-face respirator, rated N99 or higher.

8.3.1.2 Specific Operations:
In poorly ventilated areas when dusty conditions exist and/or dust levels exceed applicable exposure limits, wear a NIOSH certified dust respirator with an efficiency rating of N95 or higher, such as a 3M Model 8210 (or 8710) (3M Model 9900 in high humidity environments) or equivalent, when fabricating, installing or removing product.

8.3.2 Skin:
Wear loose fitting, long sleeved and long-legged clothing to prevent irritation. A head cover is also recommended, especially when working with material overhead. The use of suitable gloves is also recommended. Skin irritation cannot occur if there is no contact with the skin. Do not tape sleeves or pants at wrists or ankles. Remove fibers from the work clothes, before leaving work to reduce potential skin irritation. If working in a very dusty environment it is advisable to shower and change clothes

8.3.3 Eyes/Face:
Wear safety goggles or safety glasses with side shields.

## 9. Physical and Chemical Properties:

| | | |
|---|---|---|
| 9.1 | Appearance: | Grey, green fibrous batt or board |
| 9.2 | State: | Solid |
| 9.3 | Odor: | May have slight resin odour |
| 9.4 | Boiling point:: | n.a. |
| 9.5 | Melting point: | Approximately 2150 °F (1177 °C) |
| 9.6 | Vapour pressure: | n.a. |
| 9.7 | Vapour Density: | n.a. |
| 9.8 | Specific Gravity: | n.a. |
| 9.9 | Evaporation Rate: | n.a. |
| 9.10 | Freezing Point: | n.a. |
| 9.11 | Viscosity: | n.a. |
| 9.12 | Solubility: | Insoluble ($H_2O$) |
| 9.13 | Partition coefficient: | n.a. |

n.a. = not applicable

## 10. Stability and Reactivity:

10.1 Stability: Stable

10.2 Reactivity: Not reactive

10.3 Thermal decomposition products:
Primary combustion products of the cured urea extended phenolic formaldehyde binder, when heated above 390 °F (200 °C), are carbon monoxide, carbon dioxide, ammonia, water and trace amounts of formaldehyde. Other undetermined compounds could be released in trace quantities. Emission usually only occurs during the first heating. The released gases may be irritating to the eyes, nose and throat during initial heat-up. Use appropriate respirators (air supplied) particularly in tightly confined or poorly ventilated areas during initial heat-up.

10.4 Hazardous Polymerization: Will not occur

10.5 Incompatible Materials: This product reacts with hydrofluoric acid.

## 11. Toxicological Information:

11.1 Acute Toxicity:
Coarse fibers and dust from mineral wool products can cause temporary mechanical irritation (itching, redness) of the skin, and of the mucous membranes in the eyes and in the upper respiratory tract (nose and throat). The itching and possible inflammation are a mechanical reaction to dust and coarse fibers (of more than about 5 µm in diameter), and are not damaging in the way chemical irritants may be. They generally abate within a short time after the end of exposure. When products are handled continually, the skin itching generally diminishes.

11.2 Chronic Toxicity:

11.2.1 Summary: In October 2001, IARC completed a re-evaluation of respirable mineral wool fibers and classified them in Group 3 (not classifiable as to their carcinogenicity to humans). A summary of the most important scientific studies appears below:

11.2.2 Human Data:

11.2.2.1 The possible carcinogenic effects of exposure to mineral wool fibers has been evaluated in a number of epidemiological (human) studies. Most of this research, including large long-tem studies of mineral wool production workers in the U.S. and Europe, has been sponsored or supported by the North American and International thermal insulation industries, including Roxul Inc. Published reports of the early results of these studies identified significantly elevated rates of respiratory cancer in several subcohorts of the worker populations under evaluation (e.g., Simonato et al. 1987; Enterline et al. 1987). However, the studies had several methodological limitations, including failure to control for confounding exposures to other possible causes of the elevated cancer risk, including tobacco use and occupational exposures to recognized carcinogens such as asbestos. For these reasons, the authors of these reports did not interpret the results as establishing an association between exposure to mineral wool fibers and an increased risk of cancer. Several of these earlier reports formed part of the basis for IARC's previous classification of mineral wool fibers in Group 2B (possibly carcinogenic to humans) (IARC 1987).

11.2.2.2 Follow-up studies, including case-control studies designed to exclude the contribution of confounding exposures to the cancer experience of the study populations, found no evidence that mineral wool fibers are associated with an increased cancer risk (Marsh et al. 1996; Wong, et al. 1991; Kjaerheim et al. 2001). In announcing the new Group 3 classification for mineral wool fibers, IARC stated: "Epidemiologic studies published during the 15 years since the previous IARC Monographs review of these fibers in 1988 provide no evidence of increased risks of lung cancer or of mesothelioma (cancer of the lining of the body cavities) from occupational exposures during manufacture of these materials" (IARC 2001).

11.2.3 Animal Data:

11.2.3.1 Several studies of intraperitoneal injection of high doses of mineral wool fibers have produced significant increases in the incidence of mesothelioma (IARC 2002). The intraperitoneal injection studies formed part of the basis for IARC's previous (IARC 1987) Group 2B classification for mineral wool fibers. Leading scientists agree that intraperitoneal injection studies (i.e., surgical implantation or injection into the chest or abdomen) are the least relevant type of animal study for evaluating

potential human risk for fiber exposures, because such studies bypass the animals' natural defense mechanisms and involve a type and pattern of exposure (implantation of a high dose early in life) that does not mimic human patterns of exposure (inhalation of much lower doses over a lifetime) (National Research Council 2000).

11.2.3.2 A well-designed long-term inhalation study in rats exposed to mineral wool fibers found no significant increase in lung tumor incidence, and no mesotheliomas (IARC 2002). Likewise, in two intratracheal instillation studies of mineral wool fibers, no significant increase in the incidence of lung tumors or mesotheliomas was found (IARC 2002). Inhalation studies are regarded as the most relevant type of animal data for evaluating potential human risk, and intratracheal instillation studies, while less relevant, are considered valuable for the initial screening of fibrous compounds (National Research Council 2000). Thus, evaluating all the available animal studies in conjunction with the human data, IARC's most recent review finds "inadequate evidence overall for any cancer risk" from mineral wool fibers (IARC 2001).

11.3 Evaluations of Potential Carcinogenicity:

| Source | Classification | Description |
|---|---|---|
| IARC | Group 3 | Not Classifiable as a Human Carcinogen |
| ACGIH | Group A3 | Confirmed Animal Carcinogen with Unknown Relevance to Humans |

## 12. Ecological Information:

12.1 Ecotoxicity: No data available for the products. The products are stable, are not expected to cause harm to animals, plants or fish, and have no other known adverse environmental effects.

12.2 Environmental Fate: No data available for the products.

## 13. Disposal Considerations:

13.1 US EPA Waste Number & Descriptions:

13.1.1 General Product Information: The products, as supplied, are not expected to be a characteristic hazardous waste under RCRA if discarded.

13.1.2 EPA Waste Numbers: No EPA Waste Numbers are applicable for this product's components.

13.2 Disposal Instructions: Product is not considered a hazardous waste. Dispose of waste material according to Federal, State, Provincial, and Local environmental regulations.

## 14. Transport Information:

14.1 General: No special precautions.

14.2 US DOT Information: This product is not classified as a hazardous material for transport.

## 15. Regulatory Information:

15.1 U.S. Regulations:

15.1.1 Toxic Substances Control Act (TSCA): All components in this product are listed, as required, on the US EPA TSCA inventory, or are not required to be listed

15.1.2 CERCLA: Includes mineral fiber emissions from facilities manufacturing or processing glass rock or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less; Statutory RQ = 1 pound (.454 kg); no final RQ is being assigned to the generic or broad class (related to Fine mineral fibers).

15.1.3 Clean Air Act: Mineral wool fiber appears on the Clean Air Act-1990 Hazardous Air Pollutants List.

15.2 State and Local Regulations: State, Provincial, and Local regulations not identified in this Material Safety Data Sheet may apply.

15.3 WHMIS: The products have been classified in accordance with the hazard criteria of the Controlled Product Regulations and this Material Safety Data Sheet contains all the information required by the Controlled Product Regulations

| | | |
|---|---|---|
| 15.3.1: | WHMIS IDL: | No components are listed on the IDL |
| 15.3.2: | WHMIS Classification: | No components are classified as controlled products. |

## 16. Further Information:

16.1 Potential Health Effects:

IARC Monograph Man-made Vitreous Fibres, press release October 2001

Safety in the Use of Mineral and Synthetic Fibers, Occupational Safety and Health Series. International Labor Office (ILO).

Information about "Health and Safety Research on Rock- and Slag-wool" can be obtained from the North American Insulation Manufacturers Association (NAIMA), 44 Canal Center Plaza, Suite 310, Alexandria, VA 22314, USA). Home-page: http://www.naima.org

16.2 Key/Legend:

ACGIH = American Conference of Governmental Industrial Hygienists; CAA = Clean Air Act; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; DOT = Department of Transportation; EPA = Environmental Protection Agency; HMIS = Hazardous Material Identification System; HSPP = Health and Safety Partnership Program; IARC = International Agency for Research on Cancer; MSDS = Material Safety Data Sheet; NAIMA = North American Insulation Manufacturers Association; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; RCRA = Resource Conservation and Recovery Act; RQ = Reportable Quantity; SVF = synthetic vitreous fibers; TSCA = Toxic Substances Control Act; TWA = time-weighted average; WHMIS = Workplace Hazardous Materials Information System.

16.3 References: Complete citations, or copies, of all references cited in this Material Safety Data Sheet can be obtained from Roxul Inc. (see Section 1).

16.4 Accuracy: The information contained herein is based upon data considered to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data, the results to be obtained from the use thereof, or that any such use will not infringe upon any patent. This information is furnished as a guide only and upon the condition that the person receiving it shall make tests to determine the accuracy and suitability for his or her own purpose.

October 9, 2014

To Whom It May Concern:

Re: Hilti CF-I XTW Extreme Weather Insulating Foam Sealant – LEEDs Info

The Hilti CF-I XTW Extreme Weather Insulating Foam Sealant is manufactured in Poland.

The CF-I XTW can is steel and is recyclable. There is no post-consumer or post-industrial recycled content in CF-I XTW and it cannot be recycled. The CF-I XTW does not contain any Rapidly Renewable Materials. The VOC content for CF-I XTW is 114 grams/liter. This foam contains no formaldehyde.

Due to the flammable propellant gas in CF-I XTW it may be regulated as a hazardous waste by the Canadian EPA Standards. The regulations for disposal can vary from province to province and even city to city. For this reason, you should consult your local and provincial regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Mgr. Safety, Environmental, & Facilities
Hilti Inc.
918 872 3704
jerry.metcalf@hilti.com

Rev. Date: 10/06/14

**Hilti, Inc.**
5400 South 122nd East Avenue
Tulsa, OK 74146

1-800-879-8000
www.hilti.com

LEGEND
Technical Services, Inc.
www.legend-group.com
88 Empire Drive • St. Paul, Minnesota • 55103
(651) 642-1150 • fax (651) 642-1239

# VOC Content Test Certificate

July 22, 2014

Supplier: Hilti Entwicklungsgesellschaft mbH
BU Chemicals
Hiltistrasse 6
86916 Kaufering
GERMANY

Sample Description: Hilti Extreme Weather CFI-XTW

Date Tested: July 15, 2014

Test Method: SCAQMD method 304-91 "Determination of Volatile Organic Compounds (VOC) in Various Materials" as referenced by South Coast Air Quality Management District (SCAQMD) Rule 1168. The values also comply with the requirements of EPA test method #24.

Test Data:

| Specification | Product |
|---|---|
| **LEED 2009 (LEED 3.0)**<br>**LEED 2.2**<br>IEQ-4.1: Low-Emitting Materials – Adhesives and Sealants | **Extreme Weather CFI-XTW** |
| **Green Building Council of Australia**<br>Green Star Office Design 3.0, IEQ-13<br>Green Star Office Design 2.0, IEQ-13<br>Green Star Office Interiors 1.1, IEQ-11 | |
| **Architectural Sealant;**<br>**VOC Limit: 250 g/L** | **Product contains: 114 g/L of VOC** |

Tom Barrett
*Vice President/Strategic Analytical Services*

Scott Creekmur
*Chemist*

LEGEND
Technical Services, Inc.
www.legend-group.com
88 Empire Drive • St. Paul, Minnesota • 55103
(651) 642-1150 • fax (651) 642-1239

July 22, 2014

Mr. Jerry Metcalf
HILTI, Inc.
5400 South 122nd East Avenue
Tulsa, OK 74146

Subject: VOC/EPA Method 24 Testing of Hilti Extreme Weather CFI-XTW
LEGEND No: 1402865

## 1.0 INTRODUCTION

LEGEND TECHNICAL SERVICES, INC. (LEGEND) received one sample from a representative of Hilti Corporation on July 1, 2014. LEGEND's scope of work was limited to the analysis of the volatile organic compounds (VOC) per EPA Method 24.

## 2.0 SAMPLE IDENTIFICATION

| Laboratory Identification | Client Identification |
|---|---|
| 1402865-01 | Extreme Weather CFI-XTW |

## 3.0 METHODOLOGY

The VOC content was determined per EPA Method 24. The sample was initially pre-cured at room temperature for 24 hours. This sample was then weighed and heated at 110°C for one hour to determine the percent solids.

## 4.0 RESULTS

The results are summarized below.

| Test Parameter | Extreme Weather CFI-XTW (1402865-01) |
|---|---|
| VOC %<br>(less exempt compounds) | 8.8 |
| VOC gram/Liter<br>(corrected for density) | 114 |

## 5.0 REMARKS

The unconsumed sample will be retained by our laboratory for 30 days from the date of this report and then discarded unless further instructions are received from the client.

Submitted by:
LEGEND TECHNICAL SERVICES, INC.

Tom Barrett
Vice President
Strategic Analytical Services

*

## 1 Identification

· **Product identifier**

· **Trade name:** CF 710, CF-F 750, CF-F 750 GV, CF-FW 500, CF-I 50 ECO, CF-I ECO+, CF-I ECO GV, CF-I 750, CF-I 750/G, CFISO 750/P, CF-I XTW

· **Relevant identified uses of the substance or mixture and uses advised against**

· **Sector of Use** Building and construction work

· **Application of the substance / the mixture**
Assembly foam
Construction chemicals

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**
Hilti (Canada) Corp.
2360 Meadowpine Boulevard
Mississauga, Ontario L5N 6S2
Phone: (800) 363-4458
Fax: (800) 363-4459

· **Information department:**
chemicals.hse@hilti.com
see section 16

· **Emergency telephone number:**
Chem-Trec
Tel.: 1 800 424 9300
Tox Info Suisse - 24 h Service
Tel.: 0041 / 44 251 51 51 (international)
.

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## 2 Hazard(s) identification

· **Classification of the substance or mixture**

| | | |
|---|---|---|
| Acute Tox. 4 | H332 | Harmful if inhaled. |
| Skin Irrit. 2 | H315 | Causes skin irritation. |
| Eye Irrit. 2A | H319 | Causes serious eye irritation. |
| Resp. Sens. 1 | H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Skin Sens. 1 | H317 | May cause an allergic skin reaction. |
| Carc. 2 | H351 | Suspected of causing cancer. |
| Lact. | H362 | May cause harm to breast-fed children. |
| STOT SE 3 | H335 | May cause respiratory irritation. |
| STOT RE 2 | H373 | May cause damage to organs through prolonged or repeated exposure. |

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**
Xn; Harmful
R20-40-48/20: Harmful by inhalation. Limited evidence of a carcinogenic effect. Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Xn; Sensitising
R42/43: May cause sensitization by inhalation and skin contact.

Xi; Irritant
R36/37/38: Irritating to eyes, respiratory system and skin.

F+; Extremely flammable
R12: Extremely flammable.

· **Information concerning particular hazards for human and environment:**
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Warning! Pressurized container.

· **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**

GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
4,4'-diphenylmethanediisocyanate, isomeres and homologues

· **Hazard statements**
H332 Harmful if inhaled.
H315 Causes skin irritation.

(Contd. on page 2)

(Contd. of page 1)

H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.
H362 May cause harm to breast-fed children.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

| | |
|---|---|
| P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking. |
| P211 | Do not spray on an open flame or other ignition source. |
| P251 | Pressurized container: Do not pierce or burn, even after use. |
| P260 | Do not breathe spray. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P302+P352 | If on skin: Wash with plenty of water. |
| P304+P340 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| P305+P351+P338 | If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P333+P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P410+P412 | Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F. |

· **Hazard description:**
· **WHMIS classification**


A - Compressed gas


B5 - Flammable aerosol


D2A - Very toxic material causing other toxic effects

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*

## 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture consisting of the following components.

| · **Dangerous components:** | | | |
|---|---|---|---|
| 9016-87-9 | 4,4'-diphenylmethanediisocyanate, isomeres and homologues | Xn R20-40-48/20; Xn R42/43; Xi R36/37/38 | 10-25% |
| 13674-84-5 | Tris(1-chloro-2-propyl)phosphate | Xn R22<br>R52/53 | 10-20% |
| 75-28-5 | isobutane | F+ R12 | 2.5-10% |
| 106-97-8 | butane, pure | F+ R12 | 2.5-10% |
| 115-10-6 | dimethyl ether | F+ R12 | 2.5-10% |
| 74-98-6 | propane liquefied | F+ R12 | 2.5-10% |

· **SVHC** None
· **Additional information** For the wording of the listed risk phrases refer to section 16.

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## 4 First-aid measures

· **Description of first aid measures**
· **General information**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation** Supply fresh air; consult doctor in case of complaints.
· **After skin contact** Treat affected skin with cotton wool or cellulose. Then wash and rinse thoroughly with water and a mild cleaning agent.
· **After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.
· **Information for doctor**
· **Most important symptoms and effects, both acute and delayed** Allergic reactions

(Contd. on page 3)

(Contd. of page 2)

· **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

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## 5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **For safety reasons unsuitable extinguishing agents** Water with full jet.
· **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
Can form explosive gas-air mixtures.
· **Advice for firefighters**
· **Protective equipment:** Wear self-contained respiratory protective device.
· **Additional information** Cool endangered receptacles with water spray.

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
Ensure adequate ventilation
Keep away from ignition sources
· **Environmental precautions:**
Do not allow to enter sewers/ surface or ground water.
Inform respective authorities in case of seepage into water course or sewage system.
· **Methods and material for containment and cleaning up:**
Allow to solidify. Pick up mechanically.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
· **Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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## 7 Handling and storage

· **Handling**
· **Precautions for safe handling**
Keep receptacles tightly sealed.
Store in cool, dry place in tightly closed receptacles.
Keep away from heat and direct sunlight.
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
· **Information about protection against explosions and fires:**
Don't spray on a naked flames or any incandecent material
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Contents under pressure. Do not store in direct sunlight. Do not store above 100°F. Do not open or burn even after use.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:**
Observe official regulations on storing packagings with pressurized containers.
Store in a cool location.
· **Information about storage in one common storage facility:** Store away from foodstuffs.
· **Further information about storage conditions:**
Protect from heat and direct sunlight.
Store receptacle in a well ventilated area.
Store in cool, dry conditions in well sealed receptacles.
Store in a cool place. Heat will increase pressure and may lead to the receptacle bursting.

· **Storage class** 2 B
· **Specific end use(s)** No further relevant information available.

* 

## 8 Exposure controls/personal protection

· **Control parameters**

| · **Components with limit values that require monitoring at the workplace:** | |
|---|---|
| **75-28-5 isobutane** | |
| EV | Long-term value: 800 ppm |
| **106-97-8 butane, pure** | |
| EL | Short-term value: 750 ppm<br>Long-term value: 600 ppm |
| EV | Long-term value: 800 ppm |

(Contd. on page 4)

(Contd. of page 3)

| 115-10-6 dimethyl ether | |
|---|---|
| EL | Long-term value: 1000 ppm |
| **74-98-6 propane liquefied** | |
| EL | Long-term value: 1000 ppm |
| EV | Long-term value: 1.000 ppm |

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
Do not eat, drink, smoke or sniff while working.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Immediately remove all soiled and contaminated clothing
Do not inhale gases / fumes / aerosols.
· **Breathing equipment:**
Not necessary if room is well-ventilated.
Use suitable respiratory protective device in case of insufficient ventilation.
· **Recommended filter device for short term use:**
Filter AX
EN 371
· **Protection of hands:**

Protective gloves.

EN 374
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves** Nitrile rubber, NBR
· **Penetration time of glove material** Value for the permeation: Level ≤ 60
· **Eye protection:**

Tightly sealed goggles.

EN 166 + EN 170
· **Body protection:**

Protective work clothing.

*

## 9 Physical and chemical properties

| | |
|---|---|
| · **Information on basic physical and chemical properties** | |
| · **General Information** | |
| · **Appearance:** | |
| **Form:** | Aerosol |
| **Color:** | Different according to coloring |
| · **Odor:** | Characteristic |
| · **Odour threshold:** | Not determined. |
| · **pH-value:** | Not determined. |
| · **Change in condition** | |
| **Melting point/Melting range:** | Not determined. |
| **Boiling point/Boiling range:** | < 35 °C (< 95 °F) |
| · **Flash point:** | < 0 °C (< 32 °F) (DIN 53213) |
| · **Flammability (solid, gaseous)** | Flammable. |
| · **Ignition temperature:** | Not determined |
| · **Decomposition temperature:** | Not determined. |
| · **Auto igniting:** | Product is not selfigniting. |
| · **Danger of explosion:** | Not determined. |
| · **Explosion limits:** | |
| **Lower:** | 1.5 Vol % |
| **Upper:** | 11 Vol % |

(Contd. on page 5)

(Contd. of page 4)

| | |
|---|---|
| · **Vapor pressure:** | Not determined. |
| · **Density at 20 °C (68 °F):** | < 1.3 g/cm³ (< 10.849 lbs/gal) (PMDI) |
| · **Relative density** | Not determined. |
| · **Vapour density** | Not determined. |
| · **Evaporation rate** | Not applicable. |
| · **Solubility in / Miscibility with Water:** | Not miscible or difficult to mix |
| · **Partition coefficient (n-octanol/water):** | Not determined. |
| · **Viscosity:** | |
| **dynamic:** | Not determined. |
| **kinematic:** | Not determined. |
| · **Other information** | No further relevant information available. |

## 10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions**
Reacts with alcohols, amines, aqueous acids and alkalis
Danger of bursting
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known

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## 11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

| · **LD/LC50 values that are relevant for classification:** | | |
|---|---|---|
| **9016-87-9 4,4'-diphenylmethanediisocyanate, isomeres and homologues** | | |
| Oral | LD50 | >5000 mg/kg (rat) |
| Inhalative | LC50/4h | 0.49 mg/l (rat) |
| **13674-84-5 Tris(1-chloro-2-propyl)phosphate** | | |
| Oral | LD50 | 1150 - 1750 mg/kg (rat) |
| Dermal | LD50 | >2000 mg/kg (rat) |
| Inhalative | LC50/4h | >5 mg/l (rat) |

· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:**
Sensitization possible through inhalation.
Sensitization possible through skin contact.
· **Additional toxicological information:**

· **Carcinogenic categories**

| · **IARC (International Agency for Research on Cancer)** | | |
|---|---|---|
| 9016-87-9 | 4,4'-diphenylmethanediisocyanate, isomeres and homologues | 3 |

| · **NTP (National Toxicology Program)** |
|---|
| None of the ingredients is listed |

| · **OSHA-Ca (Occupational Safety & Health Administration)** |
|---|
| None of the ingredients is listed. |

* 
## 12 Ecological information

· **Toxicity**

| · **Aquatic toxicity:** | |
|---|---|
| **85535-85-9 alkanes, C14-17, chloro; chlorinated paraffins, C14-17** | |
| EC50/48h | >1000 mg/l (magna daphnia) |
| EC50/72h | >1000 mg/l (Algae) |
| **9016-87-9 4,4'-Diphenylmethandiisocyanat,Isomere und Homologe** | |
| LC50/96h | >1000 mg/l (fish) |
| **13674-84-5 Tris(1-chloro-2-propyl)phosphate** | |
| EC50/48h | 65 - 335 mg/l (magna daphnia) |
| EC50/72h | 45 mg/l (Algae) |
| LC50/96h | 56.2 mg/l (fish) |

(Contd. on page 6)

(Contd. of page 5)

· **Persistence and degradability** Based on previous experience, this product is inert and non-degradable.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** Does not accumulate in organisms
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:** Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

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## 13 Disposal considerations

· **Waste treatment methods**
· **Recommendation**
After curing, the product can be disposed of with household waste.
Full or only partially emptied cartridges must be disposed of as special waste in accordance with official regulations.

| · **European waste catalogue:** | |
|---|---|
| 08 04 09* | waste adhesives and sealants containing organic solvents or other dangerous substances |
| 20 01 27* | paint, inks, adhesives and resins containing dangerous substances |

· **Uncleaned packagings:**
· **Recommendation:**
Disposal must be made according to official regulations.
Dispose of packaging according to regulations on the disposal of packagings.

* 

## 14 Transport information

| | |
|---|---|
| · **UN-Number** | |
| · **DOT, TDG, IMDG, IATA** | UN1950 |
| · **UN proper shipping name** | |
| · **DOT** | Aerosols, flammable |
| · **TDG** | 1950 Aerosols |
| · **IMDG** | AEROSOLS |
| · **IATA** | AEROSOLS, flammable |
| · **Transport hazard class(es)** | |
| · **DOT** | |

| | |
|---|---|
| · **Class** | 2.1 |
| · **Label** | 2.1 |
| · **TDG (Transport dangerous goods):** | |

| | |
|---|---|
| · **Class** | 2 5F Gases |
| · **Label** | 2.1 |
| · **IMDG, IATA** | |

| | |
|---|---|
| · **Class** | 2.1 |
| · **Label** | 2.1 |
| · **Packing group** | |
| · **DOT, TDG, IMDG, IATA** | Void |
| · **Environmental hazards:** | |
| · **Marine pollutant:** | No |
| · **Special marking (TDG):** | None |
| · **Special marking (IATA):** | None |
| · **Special precautions for user** | Warning: Gases |
| · **Danger code (Kemler):** | Void |
| · **EMS Number:** | F-D,S-U |

(Contd. on page 7)

| | |
|---|---|
| · **Segregation groups** | None |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | |
| · **IATA** | |
| · **Remarks:** | Packing Instruction No. 203 |
| · **UN "Model Regulation":** | UN1950, Aerosols, 2.1 |

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## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

| · **Section 313 (Specific toxic chemical listings):** | |
|---|---|
| 9016-87-9 | 4,4'-diphenylmethanediisocyanate, isomeres and homologues |

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65:**

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

· **Cancerogenity categories**

| · **EPA (Environmental Protection Agency)** | | |
|---|---|---|
| 9016-87-9 | 4,4'-diphenylmethanediisocyanate, isomeres and homologues | CBD |

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

| · **MAK (German Maximum Workplace Concentration)** | | |
|---|---|---|
| 9016-87-9 | 4,4'-diphenylmethanediisocyanate, isomeres and homologues | 4 |

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Chemical safety assessment:** not required.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:**
Hilti Corporation
Business Unit Chemicals
Quality/Safety/Environment
FL-9494 Schaan / Liechtenstein

chemicals.hse@hilti.com
Tel.: +423 234 3004
FAX.: +423 234 3462
· **Date of preparation / last revision** 05/19/2015 / 3
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 2: Carcinogenicity, Hazard Category 2
Lact.: Reproductive toxicity, Additional category, Effects on or via lactation
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
· *** Data compared to the previous version altered.**

April 14, 2014

Re: **One Piece Molded Polyurethane Foam Vent Box Enclosure**

To Whom It May Concern,

This letter is in regards to a one piece molded polyurethane foam vent box boot fabricated by JB & FT Construction Ltd. (JB & FT). Based upon our review of the prototype, and the material testing data provided, **exp** is of the view that this product is suitable for its intended purpose. Traditionally vent boxes fabricated from sheet steel are insulated with polyurethane spray foam applied from the interior, around the perimeter of the vent box. The application of the polyurethane spray foam is labour intensive, and dependent on workmanship in order to ensure thermal continuity. The objective of the prefabricated molded JB & FT polyurethane foam box boot would eliminate the requirement for in-situ application of polyurethane spray foam.

**Exp** has had a number of discussions with JB & FT regarding the design and installation of the insulating vent box boot, and despite the fact that this is a new product; it represents a more efficient method of applying current practice.

**Exp** is of the view that provision of the molded polyurethane vent box enclosure will save labour time, and increase overall performance and consistency of the exterior wall vent box assembly.

Should you have any questions, or require additional information, do not hesitate to contact the undersigned.

Sincerely,

**exp** Services Inc.

Chris Finlay, B. Tech. (Arch. Sc.)
Senior Project Manager, Façade Engineering Group
Building Engineering Team (BET)

Greg Hildebrand, M.Sc. (Eng), C.E.T.
Head, Façade Engineering Group
Building Engineering Team (BET)

DRAFT

1595 Clark Blvd, Brampton, ON L6T 4V1, Canada
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**Technical Data Sheet**

**February 2, 2016**

# Elastopor® P 17226R Resin / Elastopor® P 1001U Isocyanate

## Polyurethane Rigid Foam System

### Description

Elastopor® P 17226R Resin / Elastopor® P 1001U Isocyanate is a two-component, zero ozone depleting, rigid polyurethane foam system. It is designed for insulation of discontinuous metal-faced sandwich panels.

### Typical Liquid Component Properties

| | Resin | Isocyanate |
|---|---|---|
| Viscosity, mPa·s* @ 25°C (77°F) | 500 ± 150 | 200 ± 30 |
| Specific Gravity at 25°C | 1.26 | 1.22 |
| Liquid Apperance | Amber | Brown |

* SI units for viscosity are equivalent to cps

### Hand Mix Reactivity

| | | Resin | Isocyanate |
|---|---|---|---|
| Component Temperatures | °C | 23 | 23 |
| | °F | 73 | 73 |
| Mix Ratio by Weight | | 100 | 100 |
| Cream Time | sec | 12 ± 3 | |
| Gel Time | sec | 87 ± 6 | |
| Rise time (95%) | sec | 106 ± 12 | |
| Cup Density | pcf | 1.64 ± 0.06 | |
| | $kg/m^3$ | 26.2 ± 1.0 | |

### Process Recommendations

This system processes well on high pressure equipment using a straight mixing head or an L-head.

| | | Resin | Isocyanate |
|---|---|---|---|
| Component Temperatures | °C | 18 - 24 | 18 - 24 |
| | °F | 65 - 75 | 65 - 75 |
| Component Pressures | psi | 1700 - 2200 | 1700 - 2200 |
| Press Temperature | °C | 41 - 46 | |
| | °F | 105 - 115 | |

These data are based on tests and information which we believe to be reliable. Whether or not these data are used is within the sole discretion and judgment of the customer. Having no control over the conditions of use, we accept no liability whatsoever, including but not limited to patent infringements, incidents relating to the use of the products and any damage or injury resulting therefore.

Technical Services Department
10 Constellation Court
Toronto, ON, CANADA
M9W 1K1
1-800-387-3425
Fax:(416) 674-2181
www.basf.ca

**Technical Data Sheet**

**February 2, 2016**

# Elastopor® P 17226R Resin / Elastopor® P 1001U Isocyanate

## Polyurethane Rigid Foam System

### Typical Physical Properties

Physical properties were measured on specimens taken from a commercial panel.

| | | | |
|---|---|---|---|
| **Skin to Skin Density** | | | |
| | pcf | 2.25 | 4.20 |
| | $kg/m^3$ | 36.0 | 67.2 |
| **Core Density** | | | |
| | pcf | 2.00 | |
| | $kg/m^3$ | 32.0 | |
| **Perpendicular Compressive Stength at 10%** | | | |
| ASTM D 1621 | kPa | 110 | |
| | psi | 16.0 | |
| **Parallel Compressive Stength at 10%** | | | |
| ASTM D 1621 | kPa | 214 | |
| | psi | 31.0 | |
| **Closed Cell Content** | | | |
| ASTM D 6226 | % | 92 | |
| **Water Absorption by Volume** | | | |
| ASTM D 2842 | % | 1.6 | |
| **Initial Thermal Conductivity** | | | |
| ASTM C 518 | W/m·k | 0.0216 | 0.0230 * |
| | Btu·in/Hr·$Ft^2$·°F | 0.150 | 0.160 |
| **Initial Thermal Resistance** | | | |
| ASTM C 518 | m·k/W | 46.3 | 43.5 |
| | Hr·$ft^2$·°F/Btu·in | 6.67 | 6.27 |

**Surface Burning Characteristics (6" Core Panels)**

| | UL 723 ASTM E84 | ULC S102-07 |
|---|---|---|
| Flame Spread | 20 | 415 |
| Smoke Density | 450 | 390 |

**Dimensional Stability**

| ASTM D 2126 | % Volume Change | | |
|---|---|---|---|
| | -30°C | 70°C | 70°C, 97%RH |
| 28 days | 0.3 (7 days) | 0.0 | 0.4 |

*: This Initial Thermal Conductivity was measured on a hand mixed plaque (12*12*0.5 inch), molded at 4.20 pcf density with a metal mould at a temperature of 115°F.

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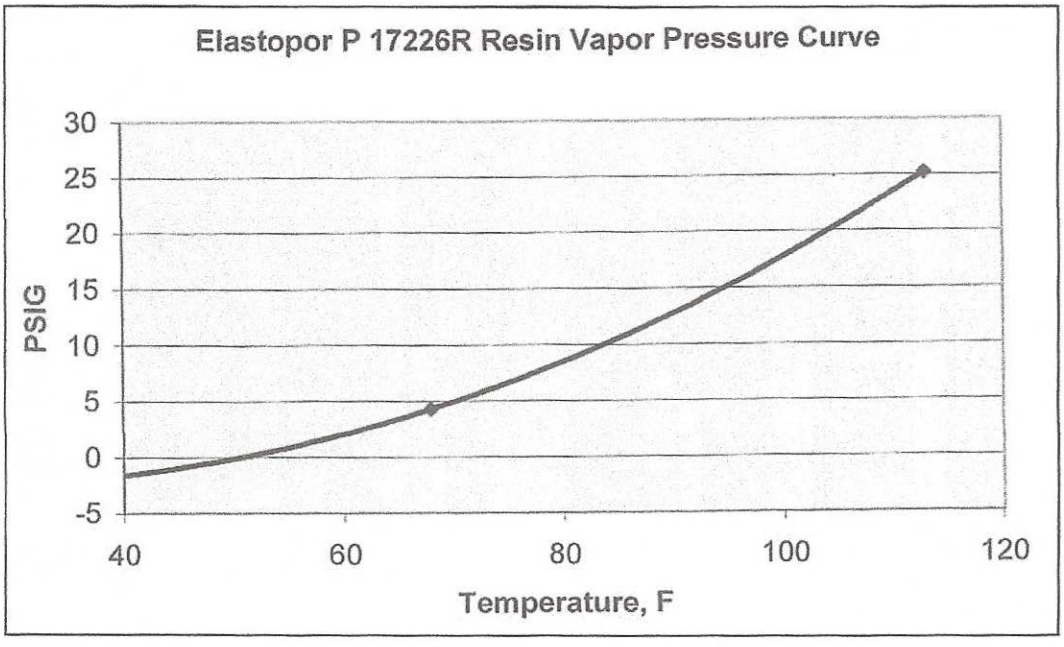
# Elastopor® P 17226R Resin / Elastopor® P 1001U Isocyanate

## Polyurethane Rigid Foam System

### Renewable and Recyclable Content

| | | | |
|---|---|---|---|
| **Renewable Content** | | | |
| ASTM D6852-02 | % | 5.0 | Resin |
| | % | 2.5 | Foam |
| **Recyclable Content** | | | |
| | % | 14.6 | Resin |
| | % | 7.3 | Foam |

### Elastopor® P 17226R Resin Vapor Pressure Versus Temperature

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# Elastopor® P 17226R Resin / Elastopor® P 1001U Isocyanate

## Polyurethane Rigid Foam System

### Storage Recommendations

| | Resin | Isocyanate |
|---|---|---|
| Shelf Life | 6 months | 1 year |
| Temperature | 10 - 23 °C | 10 - 25 °C |
| | 50 - 73 °F | 50 - 77 °F |

### Handling Recommendations

**Isocyanate**

- Avoid all contact with skin and eyes
- Do not inhale vapors
- In case of minor spills, absorb using sawdust, sand, or any other absorbing material
- For severe spills, contact BASF Canada or any agency specializing in chemical damage control CANUTEC at 613-996-6666
- For more information, please consult the MSDS

**Warning**

The isocyanate component of this system contains polymeric isocyanate. Both the liquid and vapors can be hazardous. Proper precautionary measures should be taken in the handling and use of these materials.

**Resin**

- Avoid all contact with skin
- Contains a low boiling blowing agent
- Before opening, unscrew closures slowly to relieve gas pressure in container

Polyurethanes should always be processed where there is adequate ventilation.
Safety glasses and protective gloves are strongly recommended.

**Warning!** These products can be used to prepare a variety of polyurethane products. Polyurethanes are organic materials and must be considered combustible.

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BASF
The Chemical Company

# Technical Product Data

Urethane Specialties

## ELASTOPOR® P 17226R RESIN/ELASTOPOR® P 1001U ISOCYANATE RIGID URETHANE FOAM SYSTEM

### DESCRIPTION

ELASTOPOR® P 17226R Resin/ELASTOPOR® 1001U Isocyanate is a two-component polymeric MDI based system utilizing water and HFC245fa as blowing agents. This system is designed for insulation of discontinuous metal-faced sandwich panels.

### ELASTOPOR® P 17226R RESIN COMPONENT

| | |
|---|---|
| Appearance | Amber liquid |
| Odor | Slight Amine |
| Density, @73°F | 10.6 lbs./gal. |
| Specific Gravity, @73°F | 1.26 |
| Resin Viscosity, @73°F | 500 cps |
| Flash Point, ASTM 3278-89 | >200°F |

### ELASTOPOR® 1001U ISOCYANATE COMPONENT

| | |
|---|---|
| Appearance | Dark brown liquid |
| Odor | Slight aromatic |
| Density, @77°F | 10.2 lbs./gal. |
| Viscosity, @77°F | 200 cps |
| Flash Point | >400°F |
| Vapor Pressure, at 20°C | 0.00016 mm Hg |

### APPLICATION

Mix Ratio, Parts by weight — 100 Resin/ 100 Isocyanate

**Machine Mix Reactivity:**

| | |
|---|---|
| Component Temps, Resin/Isocyanate | 68°F / 80°F |
| Component Pressures, Resin/Isocyanate | 2000psi/2000psi |
| Cream Time | 6 seconds |
| Gel Time | 71 seconds |
| Tack Free Time | 90 seconds |
| Core Density of Bag Shot | 1.50 pcf |

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**BASF Corporation**
1419 Biddle Avenue
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(734) 324-6100
(734) 324-6482 (Fax)

Revision Date:01/14/2010

BASF
The Chemical Company

# Technical Product Data

Urethane Specialties

## ELASTOPOR® P 17226R RESIN/ELASTOPOR® P 1001U ISOCYANATE RIGID URETHANE FOAM SYSTEM

**TYPICAL PHYSICAL PROPERTIES**

| | |
|---|---|
| Molded Panel, pcf | 2.25 |
| Core Density, pcf | 2.00 |
| Skin Temperature, (F) | 105-115 |
| Perpendicular Compressive Strength @10% deflection, psi | 16 |
| Perpendicular Compressive Modulus, psi | 433 |
| Parallel Compressive Strength @10% deflection, psi | 31 |
| Parallel Compressive Modulus, psi | 721 |
| Substrate Adhesion, psi | 18 |
| k factor, BTU-IN/HR-FT2-°F Initial | |
| Mean Temperature 75°F | 0.149 |
| Mean Temperature 55°F | 0.141 |
| Mean Temperature 20°F | 0.125 |
| Porosity (%Closed Cells) | 92 |
| Friability (% Weight Loss) | 1.8 |
| Water Absorption (%) | 1.6 |
| Water Vapor Transmittance (perm-in) | 2.27 |
| Butler Chimney (% Weight Retained) | 92 |
| NBS Smoke Density | 220 |
| U.L. Subject 723 (File #R5692 - 6" Core Panels)/ASTM E-84 | |
| Flame Spread* | 20 |
| E-84 Smoke | 450 |
| Minimum Self-Ignition Temperature | 430°C (806°F) |
| Minimum Flash-Ignition Temperature | 445°C (833°F) |
| FM Flammability Apparatus | |
| $FSP_c$ ($s^{-1/2}$) | 0.36 |
| Dimensional Stability, % Volume Change at 28 days | |
| 100°F/100% RH | 0.1 |
| 158°F/100% RH | 0.4 |
| 158°F | 0.0 |
| 200°F | 0.1 |
| -20°F @ 7 Days | 0.3 |

*This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

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# Technical Product Data

Urethane Specialties

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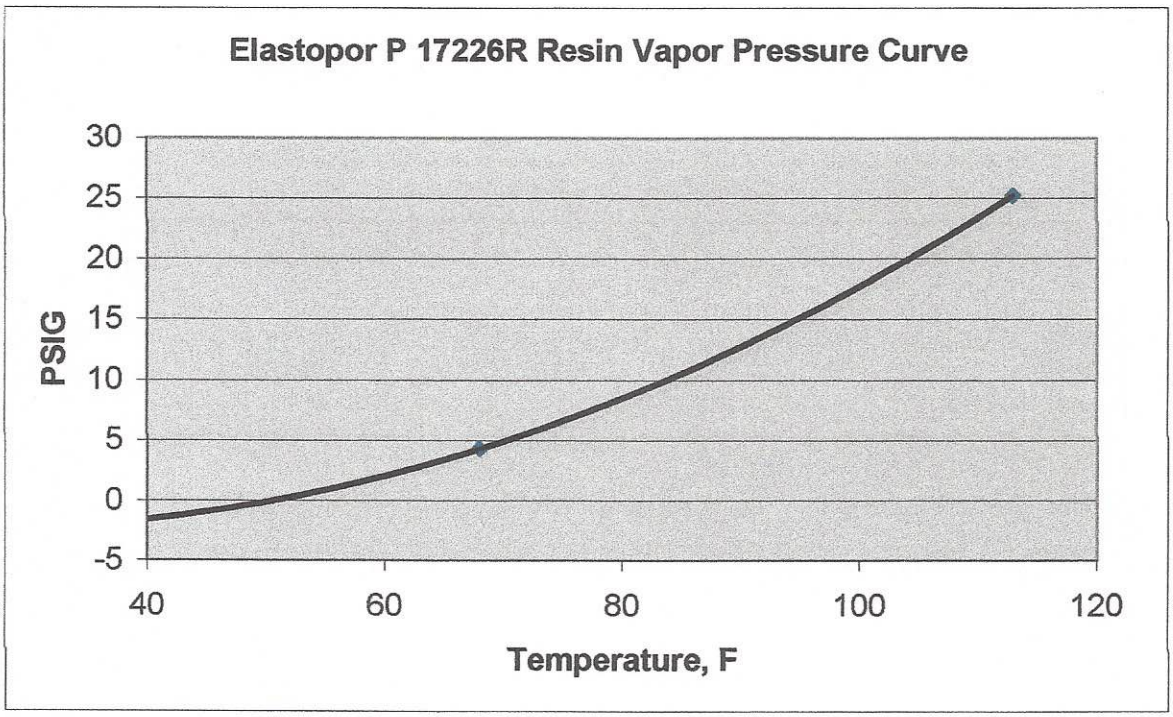


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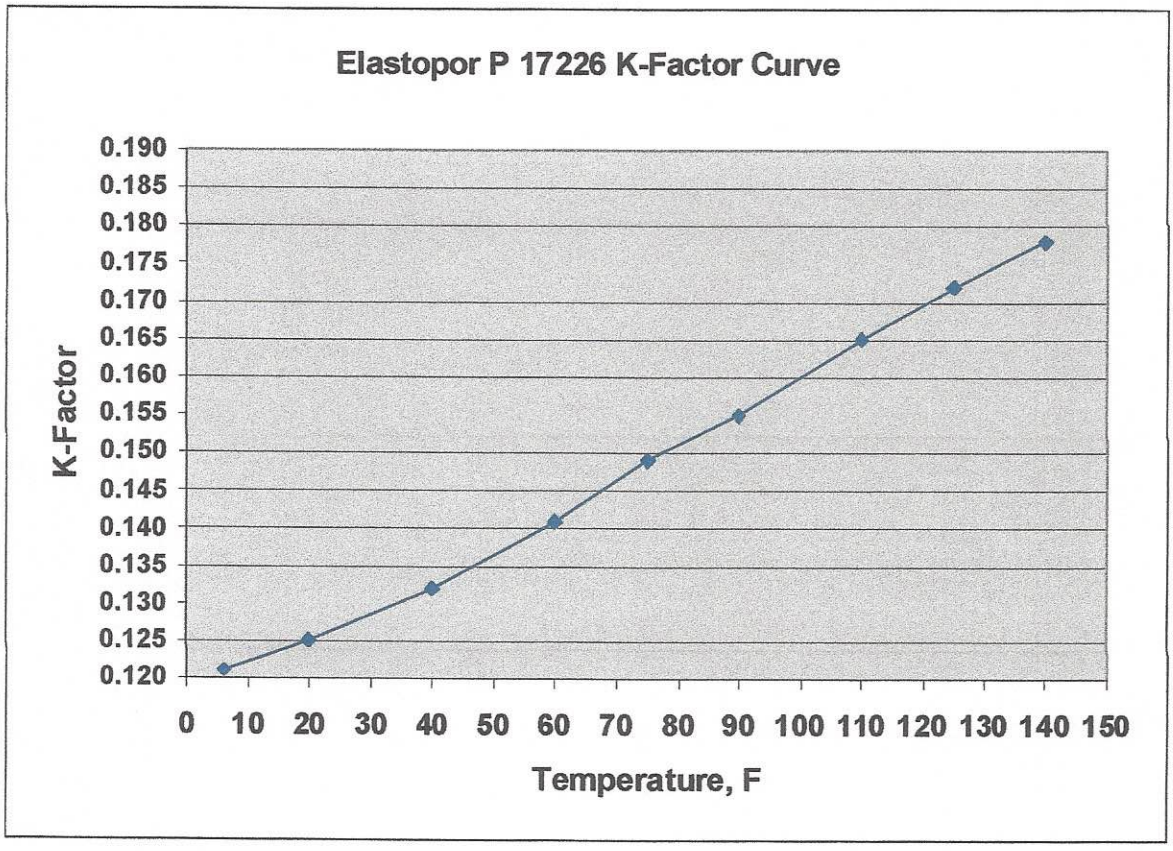


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# Technical Product Data

Urethane Specialties

## ELASTOPOR® P 17226R RESIN/ELASTOPOR® P 1001U ISOCYANATE RIGID URETHANE FOAM SYSTEM

### Recommended Processing Parameters

Substrate Temperature: 105 - 115°F

Panel Density: 2.15 – 2.30 lb/ft$^3$

Chemical Pressures:
Resin: 1500-1900 psi
Isocyanate: 1500-1900 psi
Note: Chemical pressures should be balanced within 100 psi for both components

Chemical Temperatures:
Resin: 65-70 °F
Isocyanate: 70-80°F

Chemical Ratio:
Resin: 98-102
Isocyanate: 98-102

### Expected Foam Reactivity and Density

Gel time: 65-75 seconds

Tack free time: ~90 seconds

Core density: 1.45-1.55 pcf

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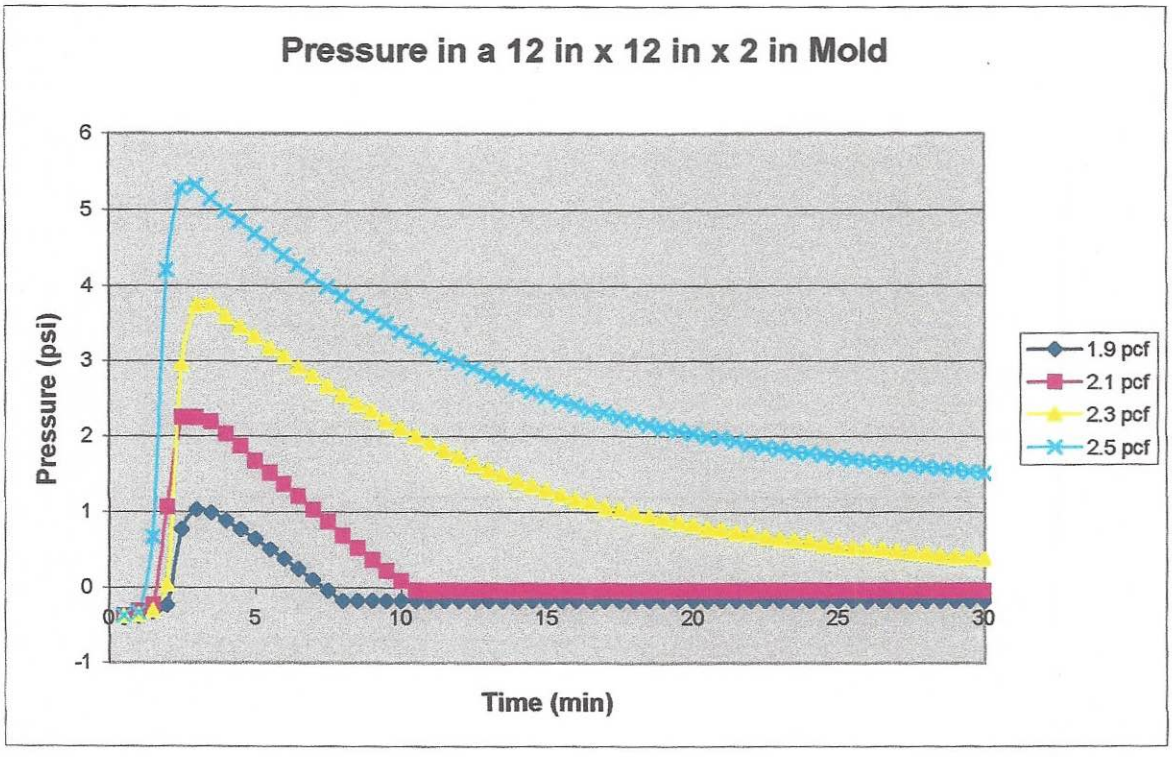


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# Safety Data Sheet
# URETHANE FOAM SAMPLE



## 1. Identification

### Product identifier used on the label

**URETHANE FOAM SAMPLE**

### Recommended use of the chemical and restriction on use

Recommended use*: polyurethane component; industrial chemicals
Suitable for use in industrial sector: Polymers industry; chemical industry

*** The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.**

### Details of the supplier of the safety data sheet

Company:
BASF Canada Inc.
100 Milverton Drive
Mississauga, ON L5R 4H1, CANADA

Telephone: +1 289 360-1300

### Emergency telephone number

CANUTEC (reverse charges): (613) 996-6666
BASF HOTLINE: (800) 454-COPE (2673)

### Other means of identification

Synonyms: Polyurethane Elastomer

## 2. Hazards Identification

**According to Hazardous Products Regulations (HPR) (SOR/2015-17)**

### Classification of the product

No need for classification according to GHS criteria for this product.

### Label elements

The product does not require a hazard warning label in accordance with GHS criteria.

### Hazards not otherwise classified

No specific dangers known, if the regulations/notes for storage and handling are considered.

Labeling of special preparations (GHS):
This product is not combustible in the form in which it is shipped by the manufacturer, but may form a combustible dust through downstream activities (e.g. grinding, pulverizing) that reduce its particle size.

**According to Controlled Products Regulations (CPR) (SOR/88-66)**

### Emergency overview

CAUTION:
Ingestion may cause gastrointestinal disturbances.

## 3. Composition / Information on Ingredients

**According to Hazardous Products Regulations (HPR) (SOR/2015-17)**

This product does not contain any components classified as hazardous under the referenced regulation.

**According to Controlled Products Regulations (CPR) (SOR/88-66)**

Does not contain any hazardous ingredients.

## 4. First-Aid Measures

### Description of first aid measures

**If inhaled:**
After inhalation of decomposition products: Remove the affected individual into fresh air and keep the person calm. Seek medical attention if necessary.

After inhalation of decomposition products, remove the affected person to a source of fresh air and keep calm. Provide medical aid.

**If on skin:**
Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

**If in eyes:**
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek medical attention.

**If swallowed:**
Rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Seek medical attention if necessary.

### Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Hazards: No hazards anticipated.

**Indication of any immediate medical attention and special treatment needed**

Note to physician
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

## 5. Fire-Fighting Measures

**Extinguishing media**

Suitable extinguishing media:
water spray, dry powder, carbon dioxide, foam

**Special hazards arising from the substance or mixture**
Hazards during fire-fighting:
If product is heated above decomposition temperature, toxic vapours will be released.

**Advice for fire-fighters**
Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

**Further information:**
Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.
Dusty conditions may ignite explosively in the presence of an ignition source causing flash fire.

## 6. Accidental release measures

Further accidental release measures:
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Avoid the formation and build-up of dust - danger of dust explosion. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition.

**Personal precautions, protective equipment and emergency procedures**
No special precautions necessary.

**Environmental precautions**
Do not empty into drains. Do not discharge into the subsoil/soil.

**Methods and material for containment and cleaning up**
Place into suitable container for disposal. Nonsparking tools should be used. See MSDS section 13 - Disposal consideration.

## 7. Handling and Storage

**Precautions for safe handling**
Ensure thorough ventilation of stores and work areas. Protect against moisture.

Protection against fire and explosion:

Avoid dust formation. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids (2013 Edition) for safe handling.

Dust explosion class: Dust explosion class 1 (Kst-value >0 up to 200 bar m s-1).

**Conditions for safe storage, including any incompatibilities**
Segregate from foods and animal feeds. Segregate from acids. Segregate from oxidants.

Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4301 (V2)

Further information on storage conditions: Avoid deposition of dust. No special precautions necessary.

## 8. Exposure Controls/Personal Protection

No occupational exposure limits known.

**Advice on system design:**
Provide local exhaust ventilation to control dust. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.

**Personal protective equipment**

**Respiratory protection:**
Wear a NIOSH-certified (or equivalent) particulate respirator.

**Hand protection:**
working gloves

**Eye protection:**
Safety glasses

**Body protection:**
Standard work clothes and shoes.

**General safety and hygiene measures:**
Handle in accordance with good industrial hygiene and safety practice. Wash soiled clothing immediately.

## 9. Physical and Chemical Properties

| | |
|---|---|
| Form: | solid |
| Odour: | characteristic |
| Odour threshold: | not applicable |

| | |
|---|---|
| Colour: | yellowish to brown |
| pH value: | No applicable information available. |
| Melting temperature: | not applicable |
| Boiling point: | No applicable information available. |
| Sublimation point: | No applicable information available. |
| Flash point: | > 110 °C |
| Flammability: | not flammable |
| Lower explosion limit: | For solids not relevant for classification and labelling. |
| Upper explosion limit: | For solids not relevant for classification and labelling. |
| Autoignition: | > 250 °C |
| Vapour pressure: | No applicable information available. |
| Density: | not applicable |
| Relative density: | No applicable information available. |
| Bulk density: | approx. 500 kg/m3 ( 20 °C) |
| Vapour density: | No applicable information available. |
| Partitioning coefficient n-octanol/water (log Pow): | No applicable information available. |
| Self-ignition temperature: | not self-igniting |
| Thermal decomposition: | No decomposition if stored and handled as prescribed/indicated. |
| Viscosity, dynamic: | No applicable information available. |
| Viscosity, kinematic: | No applicable information available. |
| Solubility in water: | not soluble |
| Solubility (quantitative): | No applicable information available. |
| Solubility (qualitative): | No applicable information available. |
| Evaporation rate: | No applicable information available. |
| Other Information: | If necessary, information on other physical and chemical parameters is indicated in this section. |

## 10. Stability and Reactivity

### Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:
No corrosive effect on metal.

Oxidizing properties:
not fire-propagating

Dust explosion class:
Dust explosion class 1 (Kst-value >0 up to 200 bar m s-1) (St 1)

### Chemical stability
The product is stable if stored and handled as prescribed/indicated.

### Possibility of hazardous reactions
No hazardous reactions if stored and handled as prescribed/indicated.

### Conditions to avoid
> 300 degrees Fahrenheit
Avoid extreme heat. Avoid all sources of ignition: heat, sparks, open flame.
Avoid all sources of ignition: heat, sparks, open flame.

### Incompatible materials
No applicable information available.

### Hazardous decomposition products

Decomposition products:
Thermal decomposition products: carbon monoxide, carbon dioxide, hydrogen cyanide, ether, esters, ketones

Thermal decomposition:
No decomposition if stored and handled as prescribed/indicated.

## 11. Toxicological information

### Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

### Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Virtually nontoxic after a single skin contact. Virtually nontoxic by inhalation. Virtually nontoxic after a single ingestion.

Oral
No applicable information available.

Inhalation
No applicable information available.

Dermal
No applicable information available.

Assessment other acute effects
Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Origin of data: expert judgement

Irritation / corrosion
Assessment of irritating effects: Not irritating to the eyes. Not irritating to the skin.

Sensitization
Assessment of sensitization: The chemical structure does not suggest a sensitizing effect. No applicable information available.

Aspiration Hazard
No aspiration hazard expected.

### Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: No known chronic effects.

Genetic toxicity
Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect. No applicable information available.

Carcinogenicity
Assessment of carcinogenicity: The chemical structure does not suggest a specific alert for such an effect. No applicable information available.

Reproductive toxicity
Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect. No applicable information available.

Teratogenicity
Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect. No applicable information available.

Other Information
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

### Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Medical conditions aggravated by overexposure
Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product.

## 12. Ecological Information

### Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The product has not been tested. The statement has been derived from the properties of the individual components.

### Persistence and degradability

Assessment biodegradation and elimination (H2O)
Poorly biodegradable.

Elimination information

Poorly biodegradable.

### Bioaccumulative potential

Assessment bioaccumulation potential
Does not significantly accumulate in organisms.

### Mobility in soil

Assessment transport between environmental compartments
Adsorption to solid soil phase is not expected.

### Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

Other ecotoxicological advice:
The product has not been tested. Do not discharge product into the environment without control.

## 13. Disposal considerations

**Waste disposal of substance:**
Dispose of in a licensed facility.

**Container disposal:**
Incinerate or dispose of in a licensed facility.

## 14. Transport Information

**Land transport**
TDG

Not classified as a dangerous good under transport regulations

**Sea transport**
IMDG

Not classified as a dangerous good under transport regulations

**Air transport**
IATA/ICAO

Not classified as a dangerous good under transport regulations

## 15. Regulatory Information

**Federal Regulations**

**Registration status:**

| | | |
|---|---|---|
| Chemical | DSL, CA | released / exempt |

Article

**According to Controlled Products Regulations (CPR) (SOR/88-66)**

WHMIS does not apply to this product.

**THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CPR AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.**

## 16. Other Information

**SDS Prepared by:**
BASF NA Product Regulations
SDS Prepared on: 2015/10/27

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

END OF DATA SHEET