

## Safety Data Sheet



### Section 1: Identification

#### Product identifier

- Product Name** • Reno Pump 50 Z LC  
**Product Code** • 143075

#### Relevant identified uses of the substance or mixture and uses advised against

- Recommended use** • Refractory applications

#### Details of the supplier of the safety data sheet

- Manufacturer** • Reno Refractories, Inc.  
P O Box 201  
Morris, AL 35116  
United States  
www.renorefractories.com  
sales@renorefractories.com
- Telephone (General)** • 205-647-0240

#### Emergency telephone number

- Manufacturer** • 1-800-262-8200 - CHEMTREC

### Section 2: Hazard Identification

#### United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

#### Classification of the substance or mixture

- OSHA HCS 2012** • Carcinogenicity 1A  
Specific Target Organ Toxicity Repeated Exposure 1

#### Label elements

OSHA HCS 2012

**DANGER**



- Hazard statements** • May cause cancer.  
Causes damage to organs through prolonged or repeated exposure.

#### Precautionary statements

- Prevention** • Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe dust.

Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Wear protective gloves, clothing, and eye/face protection, .

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

**Storage/Disposal** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## Other hazards

### OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

## Canada

According to: WHMIS

## Classification of the substance or mixture

### WHMIS

- Other Toxic Effects - D2A  
Other Toxic Effects - D2B

## Label elements

### WHMIS



### WHMIS

- Other Toxic Effects - D2A  
Other Toxic Effects - D2B

## Other hazards

### WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

## Section 3 - Composition/Information on Ingredients

## Substances

- Material does not meet the criteria of a substance.

## Mixtures

| Composition                     |                    |                    |           |   |          |
|---------------------------------|--------------------|--------------------|-----------|---|----------|
| Chemical Name                   | Identifiers        | %                  | LD50/LC50 | Classifications According to Regulation/Directive | Comments |
| Alumina Silicate                | <i>Proprietary</i> | 37.7% TO<br>40.3%  | NDA       | OSHA HCS 2012: STOT RE 2<br>(Lungs)               | NDA      |
| Aluminum(III) silicate<br>(2:1) | CAS:1302-<br>76-7  | 16.15% TO<br>20.9% | NDA       | OSHA HCS 2012: STOT RE 2<br>(Lungs)               | NDA      |
| Cristobalite                    | CAS:14464-<br>46-1 | 8.7% TO<br>15.523% | NDA       | OSHA HCS 2012: Carc. 1A                           | NDA      |
| Silica, amorphous               | CAS:7631-<br>86-9  | 5.8% TO<br>12.4%   | NDA       | OSHA HCS 2012: Not Classified                     | NDA      |
| Cement, alumina,<br>chemicals   | CAS:65997-<br>16-2 | 6% TO 9%           | NDA       | OSHA HCS 2012: Not Classified                     | NDA      |
| Amorphous silica fume           | CAS:69012-<br>64-2 | 3.6% TO<br>8.5%    | NDA       | OSHA HCS 2012: STOT RE 1<br>(Lungs)               | NDA      |

|                                      |                |                  |  |  |     |
|--------------------------------------|----------------|------------------|--|--|-----|
| Zirconium(IV) silicate (1:1)         | CAS:14940-68-2 | 1.96% TO 6%      | NDA  | OSHA HCS 2012:<br>WHMIS:   | NDA |
| Aluminum oxide                       | CAS:1344-28-1  | 0.985% TO 4%     | Inhalation-Rat LC50 • 0.2 mg/L 5 Hour(s) 28 Week(s)  | OSHA HCS 2012: Not Classified  | NDA |
| Quartz                               | CAS:14808-60-7 | 0.95% TO 2.309%  | NDA  | OSHA HCS 2012: Carc. 1A; STOT RE 1 (Lungs);                          | NDA |
| Titanium dioxide                     | CAS:13463-67-7 | 0.19% TO 1.15%   | NDA  | OSHA HCS 2012: Carc. 2   | NDA |
| Dispersing Agent                     | Proprietary    | < 0.2325%        | Ingestion/Oral-Rat LD50 • 3120 mg/kg<br>Skin-Rabbit LD50 • >4640 mg/kg   | OSHA HCS 2012: Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Resp. Irrit. | NDA |
| Dispersing Agent                     | Proprietary    | < 0.044%         | NDA  | OSHA HCS 2012: Exposure limits                                       | NDA |
| Rutile (TiO <sub>2</sub> )           | CAS:1317-80-2  | 0.002% TO 0.018% | NDA  | OSHA HCS 2012:<br>WHMIS:   | NDA |
| Diphosphoric acid, sodium salt (1:4) | CAS:7722-88-5  | < 0.0125%        | Ingestion/Oral-Rat LD50 • 4 g/kg   | OSHA HCS 2012: Exposure limits                                       | NDA |
| Sodium trimetaphosphate              | CAS:7785-84-4  | < 0.005%         | Ingestion/Oral-Mouse LD50 • 10300 mg/kg  | OSHA HCS 2012: Exposure limits                                       | NDA |
| Formaldehyde                         | CAS:50-00-0    | < 0.000025%      | Ingestion/Oral-Rat LD50 • 100 mg/kg<br>Inhalation-Rat LC50 • 250 ppm 2 Hour(s)<br>Skin-Rabbit LD50 • 270 mg/kg | OSHA HCS 2012: Exposure limits                                       | NDA |

## Section 4: First-Aid Measures

### Description of first aid measures

#### Inhalation

- Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Get medical attention immediately.

#### Skin

- In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If skin irritation occurs: Get medical advice/attention.

#### Eye

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

#### Ingestion

- Rinse mouth. Do not give anything by mouth to an unconscious person. Get medical attention immediately.

### Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

### Indication of any immediate medical attention and special treatment needed

#### Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

## Section 5: Fire-Fighting Measures

### Extinguishing media

**Suitable Extinguishing Media** • Material is non-combustible. In case of fire use media as appropriate for surrounding fire.

**Unsuitable Extinguishing Media** • None known.

### Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards**
- None known.
- Hazardous Combustion Products**
- None known.

**Advice for firefighters**

- Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.

**Section 6 - Accidental Release Measures**

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

- Personal Precautions**
- Isolate hazard area and deny entry to unauthorized and/or unprotected personnel. Do not walk through spilled material. Ensure adequate ventilation to remove vapors, fumes, dust etc. Wear appropriate personal protective equipment, avoid direct contact.
- Emergency Procedures**
- Ventilate closed spaces before entering. Isolate hazard area and deny entry to unauthorized and/or unprotected personnel.

**Environmental precautions**

- No specific actions or treatments recommended related to exposure to this material.

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

- Containment/Clean-up Measures**
- Avoid generating dust.  
 FOR SMALL SPILLS: Clean with a vacuum with a filtration system sufficient to remove and prevent recirculation of crystalline silica (a vacuum equipped with a high-efficiency particulate air (HEPA) filter is recommended).  
 FOR LARGE SPILLS: Use a fine spray or mist to control dust creation and carefully scoop or shovel into clean dry container for later reuse or disposal.  
 If, an appropriate vacuum is unavailable, only wet-clean-up methods should be used (i.e. misting). Moisture should be added as necessary to reduce exposure to airborne respirable silica dust.

**Section 7 - Handling and Storage**

**Precautions for safe handling**

- Handling**
- Use good safety and industrial hygiene practices. Use only in well ventilated areas. Wear appropriate personal protective equipment, avoid direct contact. Wear long sleeves and/or protective coveralls. Do not breathe dust. Avoid contact with skin, eyes, and clothing. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Contaminated clothing must be vacuumed before removal. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Wash thoroughly after handling.

**Conditions for safe storage, including any incompatibilities**

- Storage**
- Store in a covered location. Keep container closed. Keep from freezing. Storage and work area should be periodically cleaned to minimize dust accumulation.

**Section 8 - Exposure Controls/Personal Protection**

**Control parameters**

| Exposure Limits/Guidelines |       |                |               |        |       |  |
|----------------------------|-------|----------------|---------------|--------|-------|--|
| Result                     | ACGIH | Canada Ontario | Canada Quebec | Mexico | NIOSH |  |
|                            |       |                |               |        |       |  |

|   |          |  |  |  |  |                                  |  |
|---|----------|--|--|--|--|----------------------------------|--|
| Formaldehyde<br>(50-00-0)                           | Ceilings | 0.3 ppm Ceiling  | 1.5 ppm Ceiling  | 2 ppm Ceiling; 3 mg/m3 Ceiling   | 2 ppm Ceiling; 3 mg/m3 Ceiling   | 0.1 ppm Ceiling (15 min)         |  |
|   | STELs    | Not established  | 1.0 ppm STEL   | Not established  | Not established  | Not established                  |  |
|   | TWAs     | Not established  | Not established  | Not established  | Not established  | 0.016 ppm TWA                    |  |
| Diphosphoric acid, sodium salt (1:4)<br>(7722-88-5) | TWAs     | Not established  | 5 mg/m3 TWA  | 5 mg/m3 TWAEV  | Not established  | 5 mg/m3 TWA                      |  |
| Titanium dioxide<br>(13463-67-7)                    | STELs    | Not established  | Not established  | Not established  | 20 mg/m3 STEL [LMPE-CT] (as Ti)  | Not established                  |  |
|   | TWAs     | 10 mg/m3 TWA   | 10 mg/m3 TWA   | 10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, total dust)   | 10 mg/m3 TWA LMPE-PPT (as Ti)  | Not established                  |  |
| Quartz<br>(14808-60-7)                              | TWAs     | 0.025 mg/m3 TWA (respirable fraction)  | 0.10 mg/m3 TWA (designated substances regulation, respirable, listed under Silica, crystalline)              | 0.1 mg/m3 TWAEV (respirable dust)  | 0.1 mg/m3 TWA LMPE-PPT (respirable fraction)   | 0.05 mg/m3 TWA (respirable dust) |  |
| Aluminum oxide<br>(1344-28-1)                       | TWAs     | 1 mg/m3 TWA (respirable fraction)<br><i>as Aluminum insoluble compounds</i>  | 1 mg/m3 TWA (respirable)<br><i>as Aluminum insoluble compounds</i>   | 10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, total dust, as Al)  | 10 mg/m3 TWA LMPE-PPT  | Not established                  |  |
| Amorphous silica fume<br>(69012-64-2)               | TWAs     | Not established  | 2 mg/m3 TWA (respirable, listed under Silica fume)   | 2 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, respirable dust)   | 2 mg/m3 TWA LMPE-PPT; 10 mg/m3 TWA LMPE-PPT (inhalable particulate); 3 mg/m3 TWA LMPE-PPT (respirable particulate) | Not established                  |  |
| Silica, amorphous<br>(7631-86-9)                    | TWAs     | Not established  | Not established  | Not established  | Not established  | 6 mg/m3 TWA                      |  |
| Cement, alumina, chemicals                          | TWAs     | 10 mg/m3 TWA (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended)<br><i>as Particulates not otherwise classified (PNOC)</i> | 10 mg/m3 TWA (inhalable); 3 mg/m3 TWA (respirable)<br><i>as Particulates not otherwise classified (PNOC)</i> | 10 mg/m3 TWAEV (including dust, inert or nuisance particulates; containing no Asbestos and <1% Crystalline silica, total dust)<br><i>as Particulates not otherwise classified (PNOC)</i> | Not established  | Not established                  |  |
| Cristobalite<br>(14464-46-1)                        | TWAs     | 0.025 mg/m3 TWA (respirable fraction)  | 0.05 mg/m3 TWA (designated substances regulation, respirable, listed under Silica, crystalline)              | 0.05 mg/m3 TWAEV (respirable dust)   | 0.05 mg/m3 TWA LMPE-PPT (respirable fraction)  | 0.05 mg/m3 TWA (respirable dust) |  |
| <b>Exposure Limits/Guidelines (Con't.)</b>          |          |  |  |  |  |                                  |  |
|   |          |  |  | <b>Result</b>  | <b>OSHA</b>  |                                  |  |

|                                  |       |  |
|----------------------------------|-------|--|
| Formaldehyde<br>(50-00-0)        | STELs | 2 ppm STEL (see 29 CFR 1910.1048)  |
|                                  | TWAs  | 0.75 ppm TWA   |
| Titanium dioxide<br>(13463-67-7) | TWAs  | 15 mg/m3 TWA (total dust)  |
| Aluminum oxide<br>(1344-28-1)    | TWAs  | 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)   |
| Cement, alumina, chemicals       | TWAs  | 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)<br><i>as Particulates not otherwise classified (PNOC)</i> |

**Exposure Limits Supplemental**

**OSHA**

- Silica, amorphous (7631-86-9): **Mineral Dusts:** (20 mppcf TWA; (80)/(% SiO2) mg/m3 TWA)
- Cristobalite (14464-46-1): **Mineral Dusts:** ((1/2)(30)/(%SiO2 + 2) mg/m3 TWA, total dust; (1/2)(250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (1/2)(10)/(%SiO2 + 2) mg/m3 TWA, respirable fraction)
- Quartz (14808-60-7): **Mineral Dusts:** ((30)/(%SiO2 + 2) mg/m3 TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m3 TWA, respirable fraction)

**Exposure controls**

**Engineering Measures/Controls**

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. 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 not leakage from the equipment). Collection systems must be designed and maintained to prevent the accumulation and recirculation of respirable silica into the workplace.

**Personal Protective Equipment**

**Respiratory**

- For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

**Eye/Face**

- Wear protective eyewear (goggles, face shield, or safety glasses).

**Hands**

- Wear appropriate gloves.

**Skin/Body**

- Wear long sleeves and/or protective coveralls.

**General Industrial Hygiene Considerations**

- Do not breathe dust. Avoid contact with skin, eyes or clothing. Do not remove dusts from clothing by blowing or shaking. Do not eat, drink or smoke during work. Wash thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice.

**Environmental Exposure Controls**

- Follow best practice for site management and disposal of waste. Dispose of in an approved landfill.

**Key to abbreviations**

ACGIH = American Conference of Governmental Industrial Hygiene

STEL = Short Term Exposure Limits are based on 15-minute exposures

NIOSH = National Institute of Occupational Safety and Health

TWAEV = Time-Weighted Average Exposure Value

OSHA = Occupational Safety and Health Administration

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

**Section 9 - Physical and Chemical Properties**

## Information on Physical and Chemical Properties

| Material Description                |                    |                              |   |
|-------------------------------------|--------------------|------------------------------|---|
| Physical Form                       | Solid              | Appearance/Description       | Gray granular dry powder with an earthy odor. |
| Color                               | Gray               | Odor                         | Earthy  |
| Particulate Size                    | 600 $\mu$          | Odor Threshold               | No data available                             |
| General Properties                  |                    |                              |   |
| Boiling Point                       | No data available  | Melting Point/Freezing Point | No data available                             |
| Decomposition Temperature           | No data available  | pH                           | No data available                             |
| Specific Gravity/Relative Density   | 2.2 to 2.9 Water=1 | Water Solubility             | Negligible < 0.1 %                            |
| Viscosity                           | No data available  |                              |   |
| Volatility                          |                    |                              |   |
| Vapor Pressure                      | No data available  | Vapor Density                | No data available                             |
| Evaporation Rate                    | No data available  | VOC (Wt.)                    | 0 %   |
| VOC (Vol.)                          | 0 %                |                              |   |
| Flammability                        |                    |                              |   |
| Flash Point                         | No data available  | UEL                          | No data available                             |
| LEL                                 | No data available  | Autoignition                 | No data available                             |
| Flammability (solid, gas)           | No data available  |                              |   |
| Environmental                       |                    |                              |   |
| Octanol/Water Partition coefficient | No data available  |                              |   |

## Section 10: Stability and Reactivity

### Reactivity

- No dangerous reaction known under conditions of normal use.

### Chemical stability

- Stable under normal temperatures and pressures.

### Possibility of hazardous reactions

- Hazardous polymerization will not occur.

### Conditions to avoid

- No data available

### Incompatible materials

- No data available

### Hazardous decomposition products

- No data available

## Section 11 - Toxicological Information

### Information on toxicological effects

| Components                        |            |   |
|-----------------------------------|------------|---|
| Silica, amorphous (5.8% TO 12.4%) | 7631-86-9  | <b>Irritation:</b> Eye-Rabbit • 25 mg 24 Hour(s) • Mild irritation  |
| Cristobalite (8.7% TO 15.523%)    | 14464-46-1 | <b>Acute Toxicity:</b> Inhalation-Human TCLo • 16 mppcf 8 Hour(s) 17.9 Year(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration:Cough; Lungs, Thorax, or Respiration:Dyspnea;</i><br><b>Multi-dose Toxicity:</b> Inhalation-Mouse TCLo • 43 mg/m <sup>3</sup> 5 Hour(s) 9 Day(s)-Intermittent; <i>Lungs, Thorax, or</i> |

|                                      |                    |  |
|--------------------------------------|--------------------|--|
|                                      |                    | <i>Respiration:</i> <b>Pleural effusion</b> ; <i>Lungs, Thorax, or Respiration:</i> <b>Other changes</b>   |
| Titanium dioxide<br>(0.19% TO 1.15%) | 13463-67-7         | <b>Irritation:</b> Skin-Human • 300 µg 3 Day(s)-Intermittent • Mild irritation;<br><b>Tumorigen / Carcinogen:</b> Inhalation-Rat TClO • 250 mg/m <sup>3</sup> 6 Hour(s) 2 Year(s)-Intermittent;<br><i>Tumorigenic:</i> <b>Carcinogenic by RTECS criteria</b> ; <i>Lungs, Thorax, or Respiration:</i> <b>Tumors</b> |
| Dispersing Agent (< 0.2325%)         | <i>Proprietary</i> | <b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 3120 mg/kg; <i>Behavioral:</i> <b>Somnolence (general depressed activity)</b> ; <i>Behavioral:</i> <b>Coma</b> ;<br><b>Irritation:</b> Skin-Rabbit • 500 mg 24 Hour(s) • Moderate irritation  |

| GHS Properties                | Classification   |
|-------------------------------|--|
| Acute toxicity                | OSHA HCS 2012 • No data available                                  |
| Skin corrosion/Irritation     | OSHA HCS 2012 • No data available                                  |
| Serious eye damage/Irritation | OSHA HCS 2012 • No data available                                  |
| Skin sensitization            | OSHA HCS 2012 • No data available                                  |
| Respiratory sensitization     | OSHA HCS 2012 • No data available                                  |
| Aspiration Hazard             | OSHA HCS 2012 • No data available                                  |
| Carcinogenicity               | OSHA HCS 2012 • Carcinogenicity 1A                                 |
| Germ Cell Mutagenicity        | OSHA HCS 2012 • No data available                                  |
| Toxicity for Reproduction     | OSHA HCS 2012 • No data available                                  |
| STOT-SE                       | OSHA HCS 2012 • No data available                                  |
| STOT-RE                       | OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 1 |

- Target Organs**
  - [[206]]
- Route(s) of entry/exposure**
  - Inhalation, Skin, Eye, Ingestion
- Medical Conditions Aggravated by Exposure**
  - Any pre-existing conditions of the lungs. Disorders of the lungs.
- Potential Health Effects**
- Inhalation**
  - Acute (Immediate)**
    - Nuisance dust may affect the lungs but reactions are typically reversible.
  - Chronic (Delayed)**
    - Chronic overexposure to dust containing respirable sized crystalline silica can cause delayed lung injury (silicosis). Inhalation of dust containing crystalline silica pulmonary diseases such as asthma and lung disorder associated with smoking.
- Skin**
  - Acute (Immediate)**
    - Exposure to dust may cause mechanical irritation.
  - Chronic (Delayed)**
    - No data available.
- Eye**
  - Acute (Immediate)**
    - Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.
  - Chronic (Delayed)**
    - No data available.
- Ingestion**
  - Acute (Immediate)**
    - Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.
  - Chronic (Delayed)**
    - No data available.
- Carcinogenic Effects**
  - May cause cancer. IARC studies have shown sufficient evidence from animal studies to categorize crystalline silica as a group 1 carcinogen.

| Carcinogenic Effects |     |      |      |     |
|----------------------|-----|------|------|-----|
|                      | CAS | OSHA | IARC | NTP |
|                      |     |      |      |     |



|                  |            |                                   |                              |                        |
|------------------|------------|-----------------------------------|------------------------------|------------------------|
| Formaldehyde     | 50-00-0    | Specifically Regulated Carcinogen | Group 1-Carcinogenic         | Known Human Carcinogen |
| Titanium dioxide | 13463-67-7 | Not Listed                        | Group 2B-Possible Carcinogen | Not Listed             |
| Quartz           | 14808-60-7 | Not Listed                        | Group 1-Carcinogenic         | Known Human Carcinogen |
| Cristobalite     | 14464-46-1 | Not Listed                        | Group 1-Carcinogenic         | Not Listed             |

**Key to abbreviations**

LD = Lethal Dose

TC = Toxic Concentration

## Section 12 - Ecological Information

**Toxicity**

- Material data lacking.

**Persistence and degradability**

- Material data lacking.

**Bioaccumulative potential**

- Material data lacking.

**Mobility in Soil**

- Material data lacking.

**Other adverse effects**

- No studies have been found.

## Section 13 - Disposal Considerations

**Waste treatment methods****Product waste**

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Packaging waste**

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## Section 14 - Transport Information

|           | UN number | UN proper shipping name | Transport hazard class (es) | Packing group | Environmental hazards |
|-----------|-----------|-------------------------|-----------------------------|---------------|-----------------------|
| DOT       | NDA       | Not Regulated           | NDA                         | NDA           | NDA                   |
| TDG       | NDA       | Not Regulated           | NDA                         | NDA           | NDA                   |
| IATA/ICAO | NDA       | Not Regulated           | NDA                         | NDA           | NDA                   |

**Special precautions for user** • None specified.**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** • No data available

## Section 15 - Regulatory Information

## Safety, health and environmental regulations/legislation specific for the substance or mixture

### SARA Hazard Classifications • Chronic

| State Right To Know                  |                    |     |     |     |
|--------------------------------------|--------------------|-----|-----|-----|
| Component                            | CAS                | MA  | NJ  | PA  |
| Aluminum oxide                       | 1344-28-1          | Yes | Yes | Yes |
| Cristobalite                         | 14464-46-1         | Yes | Yes | Yes |
| Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Yes | Yes | Yes |
| Formaldehyde                         | 50-00-0            | Yes | Yes | Yes |
| Quartz                               | 14808-60-7         | Yes | Yes | Yes |
| Rutile (TiO <sub>2</sub> )           | 1317-80-2          | No  | No  | Yes |
| Silica, amorphous                    | 7631-86-9          | Yes | Yes | Yes |
| Titanium dioxide                     | 13463-67-7         | Yes | Yes | Yes |
| Dispersing Agent                     | <i>Proprietary</i> | Yes | No  | Yes |
| Zirconium(IV) silicate (1:1)         | 14940-68-2         | No  | No  | No  |

| Inventory                            |                    |            |      |
|--------------------------------------|--------------------|------------|------|
| Component                            | CAS                | Canada DSL | TSCA |
| Aluminum oxide                       | 1344-28-1          | Yes        | Yes  |
| Cristobalite                         | 14464-46-1         | Yes        | Yes  |
| Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Yes        | Yes  |
| Formaldehyde                         | 50-00-0            | Yes        | Yes  |
| Quartz                               | 14808-60-7         | Yes        | Yes  |
| Rutile (TiO <sub>2</sub> )           | 1317-80-2          | Yes        | Yes  |
| Silica, amorphous                    | 7631-86-9          | Yes        | Yes  |
| Titanium dioxide                     | 13463-67-7         | Yes        | Yes  |
| Dispersing Agent                     | <i>Proprietary</i> | Yes        | Yes  |
| Zirconium(IV) silicate (1:1)         | 14940-68-2         | Yes        | Yes  |

## Canada

### Labor

#### Canada - WHMIS - Classifications of Substances

|                                |                    |   |
|--------------------------------|--------------------|---|
| • Zirconium(IV) silicate (1:1) | 14940-68-2         | Uncontrolled product according to WHMIS classification criteria   |
| • Rutile (TiO <sub>2</sub> )   | 1317-80-2          | Not Listed  |
| • Dispersing Agent             | <i>Proprietary</i> | Not Listed  |
| • Formaldehyde                 | 50-00-0            | A, B1, D1A, D2A, D2B; B3, D1A, D2A, D2B, E (regulated under Formol)<br>D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Titanium dioxide, |
| • Titanium dioxide             | 13463-67-7         |   |

|  |            |  |
|--|------------|--|
|  |            | mixture containing on Health Canada's WHMIS Division website.)   |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5  | D2B  |
| • Aluminum oxide                       | 1344-28-1  | Uncontrolled product according to WHMIS classification criteria D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Silica, crystalline, encapsulated on Health Canada's WHMIS Division website.) |
| • Cristobalite                         | 14464-46-1 | Uncontrolled product according to WHMIS classification criteria D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Silica, crystalline, encapsulated on Health Canada's WHMIS Division website.) |
| • Silica, amorphous                    | 7631-86-9  | Uncontrolled product according to WHMIS classification criteria D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Silica, crystalline, encapsulated on Health Canada's WHMIS Division website.) |
| • Quartz                               | 14808-60-7 | Uncontrolled product according to WHMIS classification criteria D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Silica, crystalline, encapsulated on Health Canada's WHMIS Division website.) |

**Canada - WHMIS - Ingredient Disclosure List**

|  |                    |            |
|--|--------------------|------------|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | 1 %        |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed |
| • Formaldehyde                         | 50-00-0            | 0.1 %      |
| • Titanium dioxide                     | 13463-67-7         | Not Listed |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | 1 %        |
| • Aluminum oxide                       | 1344-28-1          | 1 %        |
| • Cristobalite                         | 14464-46-1         | 1 %        |
| • Silica, amorphous                    | 7631-86-9          | 1 %        |
| • Quartz                               | 14808-60-7         | 1 %        |

**Environment**

**Canada - CEPA - Priority Substances List**

|  |                    |  |
|--|--------------------|--|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed   |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed   |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed   |
| • Formaldehyde                         | 50-00-0            | Priority Substance List 2 (substance considered toxic) |
| • Titanium dioxide                     | 13463-67-7         | Not Listed   |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed   |
| • Aluminum oxide                       | 1344-28-1          | Not Listed   |
| • Cristobalite                         | 14464-46-1         | Not Listed   |
| • Silica, amorphous                    | 7631-86-9          | Not Listed   |
| • Quartz                               | 14808-60-7         | Not Listed   |

**Canada - CEPA - Schedule I - List of Toxic Substances**

|                                |                    |            |
|--------------------------------|--------------------|------------|
| • Zirconium(IV) silicate (1:1) | 14940-68-2         | Not Listed |
| • Rutile (TiO2)                | 1317-80-2          | Not Listed |
| • Dispersing Agent             | <i>Proprietary</i> | Not Listed |

|  |            |            |
|--|------------|------------|
| • Formaldehyde                         | 50-00-0    |            |
| • Titanium dioxide                     | 13463-67-7 | Not Listed |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5  | Not Listed |
| • Aluminum oxide                       | 1344-28-1  | Not Listed |
| • Cristobalite                         | 14464-46-1 | Not Listed |
| • Silica, amorphous                    | 7631-86-9  | Not Listed |
| • Quartz                               | 14808-60-7 | Not Listed |

**United States**

**Labor**

**U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

|  |                    |            |
|--|--------------------|------------|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed |
| • Formaldehyde                         | 50-00-0            | 1000 lb TQ |
| • Titanium dioxide                     | 13463-67-7         | Not Listed |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed |
| • Aluminum oxide                       | 1344-28-1          | Not Listed |
| • Cristobalite                         | 14464-46-1         | Not Listed |
| • Silica, amorphous                    | 7631-86-9          | Not Listed |
| • Quartz                               | 14808-60-7         | Not Listed |

**U.S. - OSHA - Specifically Regulated Chemicals**

|  |                    |   |
|--|--------------------|---|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed  |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed  |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed  |
| • Formaldehyde                         | 50-00-0            | 2 ppm STEL (See 29 CFR 1910.1048, 15 min); 0.5 ppm Action Level (See 29 CFR 1910.1048); 0.75 ppm TWA (See 29 CFR 1910.1048) |
| • Titanium dioxide                     | 13463-67-7         | Not Listed  |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed  |
| • Aluminum oxide                       | 1344-28-1          | Not Listed  |
| • Cristobalite                         | 14464-46-1         | Not Listed  |
| • Silica, amorphous                    | 7631-86-9          | Not Listed  |
| • Quartz                               | 14808-60-7         | Not Listed  |

**Environment**

**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

|  |                    |            |
|--|--------------------|------------|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed |
| • Formaldehyde                         | 50-00-0            |            |
| • Titanium dioxide                     | 13463-67-7         | Not Listed |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed |
| • Aluminum oxide                       | 1344-28-1          | Not Listed |
| • Cristobalite                         | 14464-46-1         | Not Listed |
| • Silica, amorphous                    | 7631-86-9          | Not Listed |
| • Quartz                               | 14808-60-7         | Not Listed |

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**

|                                |            |            |
|--------------------------------|------------|------------|
| • Zirconium(IV) silicate (1:1) | 14940-68-2 | Not Listed |
| • Rutile (TiO2)                | 1317-80-2  | Not Listed |

|  |                    |   |
|--|--------------------|---|
| • Dispersing Agent   | <i>Proprietary</i> | Not Listed  |
| • Formaldehyde   | 50-00-0            | 100 lb final RQ; 45.4 kg final RQ                             |
| • Titanium dioxide   | 13463-67-7         | Not Listed  |
| • Diphosphoric acid, sodium salt (1:4)   | 7722-88-5          | Not Listed  |
| • Aluminum oxide   | 1344-28-1          | Not Listed  |
| • Cristobalite   | 14464-46-1         | Not Listed  |
| • Silica, amorphous  | 7631-86-9          | Not Listed  |
| • Quartz   | 14808-60-7         | Not Listed  |
| <b>U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs</b>                 |                    |   |
| • Zirconium(IV) silicate (1:1)   | 14940-68-2         | Not Listed  |
| • Rutile (TiO <sub>2</sub> )   | 1317-80-2          | Not Listed  |
| • Dispersing Agent   | <i>Proprietary</i> | Not Listed  |
| • Formaldehyde   | 50-00-0            | 100 lb EPCRA RQ   |
| • Titanium dioxide   | 13463-67-7         | Not Listed  |
| • Diphosphoric acid, sodium salt (1:4)   | 7722-88-5          | Not Listed  |
| • Aluminum oxide   | 1344-28-1          | Not Listed  |
| • Cristobalite   | 14464-46-1         | Not Listed  |
| • Silica, amorphous  | 7631-86-9          | Not Listed  |
| • Quartz   | 14808-60-7         | Not Listed  |
| <b>U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs</b>                      |                    |   |
| • Zirconium(IV) silicate (1:1)   | 14940-68-2         | Not Listed  |
| • Rutile (TiO <sub>2</sub> )   | 1317-80-2          | Not Listed  |
| • Dispersing Agent   | <i>Proprietary</i> | Not Listed  |
| • Formaldehyde   | 50-00-0            | 500 lb TPQ  |
| • Titanium dioxide   | 13463-67-7         | Not Listed  |
| • Diphosphoric acid, sodium salt (1:4)   | 7722-88-5          | Not Listed  |
| • Aluminum oxide   | 1344-28-1          | Not Listed  |
| • Cristobalite   | 14464-46-1         | Not Listed  |
| • Silica, amorphous  | 7631-86-9          | Not Listed  |
| • Quartz   | 14808-60-7         | Not Listed  |
| <b>U.S. - CERCLA/SARA - Section 313 - Emission Reporting</b>                                     |                    |   |
| • Zirconium(IV) silicate (1:1)   | 14940-68-2         | Not Listed  |
| • Rutile (TiO <sub>2</sub> )   | 1317-80-2          | Not Listed  |
| • Dispersing Agent   | <i>Proprietary</i> | Not Listed  |
| • Formaldehyde   | 50-00-0            | 0.1 % de minimis concentration                                |
| • Titanium dioxide   | 13463-67-7         | Not Listed  |
| • Diphosphoric acid, sodium salt (1:4)   | 7722-88-5          | Not Listed  |
| • Aluminum oxide   | 1344-28-1          | 1.0 % de minimis concentration (fibrous forms)                |
| • Cristobalite   | 14464-46-1         | Not Listed  |
| • Silica, amorphous  | 7631-86-9          | Not Listed  |
| • Quartz   | 14808-60-7         | Not Listed  |
| <b>U.S. - RCRA (Resource Conservation &amp; Recovery Act) - Basis for Listing - Appendix VII</b> |                    |   |
| • Zirconium(IV) silicate (1:1)   | 14940-68-2         | Not Listed  |
| • Rutile (TiO <sub>2</sub> )   | 1317-80-2          | Not Listed  |
| • Dispersing Agent   | <i>Proprietary</i> | Not Listed  |
| • Formaldehyde   | 50-00-0            | Included in waste streams: K009, K010, K038, K040, K156, K157 |

|  |            |            |
|--|------------|------------|
| • Titanium dioxide                     | 13463-67-7 | Not Listed |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5  | Not Listed |
| • Aluminum oxide                       | 1344-28-1  | Not Listed |
| • Cristobalite                         | 14464-46-1 | Not Listed |
| • Silica, amorphous                    | 7631-86-9  | Not Listed |
| • Quartz                               | 14808-60-7 | Not Listed |

**U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261**

|  |                    |                   |
|--|--------------------|-------------------|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed        |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed        |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed        |
| • Formaldehyde                         | 50-00-0            | waste number U122 |
| • Titanium dioxide                     | 13463-67-7         | Not Listed        |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed        |
| • Aluminum oxide                       | 1344-28-1          | Not Listed        |
| • Cristobalite                         | 14464-46-1         | Not Listed        |
| • Silica, amorphous                    | 7631-86-9          | Not Listed        |
| • Quartz                               | 14808-60-7         | Not Listed        |

**U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics**

|  |                    |                   |
|--|--------------------|-------------------|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed        |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed        |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed        |
| • Formaldehyde                         | 50-00-0            | waste number U122 |
| • Titanium dioxide                     | 13463-67-7         | Not Listed        |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed        |
| • Aluminum oxide                       | 1344-28-1          | Not Listed        |
| • Cristobalite                         | 14464-46-1         | Not Listed        |
| • Silica, amorphous                    | 7631-86-9          | Not Listed        |
| • Quartz                               | 14808-60-7         | Not Listed        |

**United States - California**

**Environment**

**U.S. - California - Proposition 65 - Carcinogens List**

|  |                    |  |
|--|--------------------|--|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed   |
| • Rutile (TiO2)                        | 1317-80-2          | Not Listed   |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed   |
| • Formaldehyde                         | 50-00-0            | carcinogen, initial date 1/1/88 (gas)  |
| • Titanium dioxide                     | 13463-67-7         | carcinogen, initial date 9/2/11 (airborne, unbound particles of respirable size) |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed   |
| • Aluminum oxide                       | 1344-28-1          | Not Listed   |
| • Cristobalite                         | 14464-46-1         | Not Listed   |
| • Silica, amorphous                    | 7631-86-9          | Not Listed   |
| • Quartz                               | 14808-60-7         | carcinogen, initial date 10/1/88 (airborne particles of respirable size)         |

**U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)**

|                                |                    |            |
|--------------------------------|--------------------|------------|
| • Zirconium(IV) silicate (1:1) | 14940-68-2         | Not Listed |
| • Rutile (TiO2)                | 1317-80-2          | Not Listed |
| • Dispersing Agent             | <i>Proprietary</i> | Not Listed |

|  |            |                      |
|--|------------|----------------------|
| • Formaldehyde                         | 50-00-0    | 40 µg/day NSRL (gas) |
| • Titanium dioxide                     | 13463-67-7 | Not Listed           |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5  | Not Listed           |
| • Aluminum oxide                       | 1344-28-1  | Not Listed           |
| • Cristobalite                         | 14464-46-1 | Not Listed           |
| • Silica, amorphous                    | 7631-86-9  | Not Listed           |
| • Quartz                               | 14808-60-7 | Not Listed           |

## United States - Pennsylvania

### Labor

#### U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

|  |                    |            |
|--|--------------------|------------|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed |
| • Rutile (TiO <sub>2</sub> )           | 1317-80-2          | Not Listed |
| • Dispersing Agent                     | <i>Proprietary</i> |            |
| • Formaldehyde                         | 50-00-0            |            |
| • Titanium dioxide                     | 13463-67-7         | Not Listed |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed |
| • Aluminum oxide                       | 1344-28-1          |            |
| • Cristobalite                         | 14464-46-1         | Not Listed |
| • Silica, amorphous                    | 7631-86-9          | Not Listed |
| • Quartz                               | 14808-60-7         | Not Listed |

#### U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

|  |                    |            |
|--|--------------------|------------|
| • Zirconium(IV) silicate (1:1)         | 14940-68-2         | Not Listed |
| • Rutile (TiO <sub>2</sub> )           | 1317-80-2          | Not Listed |
| • Dispersing Agent                     | <i>Proprietary</i> | Not Listed |
| • Formaldehyde                         | 50-00-0            |            |
| • Titanium dioxide                     | 13463-67-7         | Not Listed |
| • Diphosphoric acid, sodium salt (1:4) | 7722-88-5          | Not Listed |
| • Aluminum oxide                       | 1344-28-1          | Not Listed |
| • Cristobalite                         | 14464-46-1         | Not Listed |
| • Silica, amorphous                    | 7631-86-9          | Not Listed |
| • Quartz                               | 14808-60-7         | Not Listed |

## Other Information

- WARNING: This product contains a chemical known to the State of California to cause cancer.

## Section 16 - Other Information

|  |  |
|--|--|
| <b>Revision Date</b>                     | • 27/April/2018  |
| <b>Last Revision Date</b>                | • 29/December/2015   |
| <b>Preparation Date</b>                  | • 05/November/2015   |
| <b>Disclaimer/Statement of Liability</b> | • 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 given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release. Reno Refractories MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the product is fit for a particular purpose and suitable for user's method of use or application. The information relates |

only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Key to abbreviations**

NDA = No data available