

Safety Data Sheet



Section 1: Identification

Product identifier

- Product Name** • **Reno Cast 95 LCT**
Product Code • 163200

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 |
| Aluminum oxide | CAS:1344-28-1 | 81.26% TO 94% | Inhalation-Rat LC50 • 0.2 mg/L 5 Hour(s) 28 Week(s) | OSHA HCS 2012: Not Classified | NDA |
| Amorphous silica fume | CAS:69012-64-2 | 2.4% TO 7% | NDA | OSHA HCS 2012: STOT RE 1 (Lungs) | NDA |
| Cement, alumina, chemicals | CAS:65997-16-2 | 2% TO 5% | NDA | OSHA HCS 2012: Not Classified | NDA |
| Aluminum(III) silicate (2:1) | CAS:1302-76-7 | 0.85% TO 1.9% | NDA | OSHA HCS 2012: STOT RE 2 (Lungs) | NDA |
| Amorphous/fused silica | CAS:60676-86-0 | < 0.36% | NDA | OSHA HCS 2012: Not Classified | NDA |
| Quartz | CAS:14808-60-7 | 0.05% TO 0.216% | NDA | OSHA HCS 2012: Carc. 1A; STOT RE 1 (Lungs) | NDA |

| | | | | | |
|--------------------------------------|----------------|---------------|--|--|-----|
| Iron oxide | CAS:1309-37-1 | < 0.18% | NDA | OSHA HCS 2012: Not Classified | NDA |
| DISPERSING AGENT 1 | Proprietary | < 0.1395% | Ingestion/Oral-Rat LD50 • 3120 mg/kg Skin-Rabbit LD50 • >4640 mg/kg | OSHA HCS 2012: Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Resp. Irrit. | NDA |
| Titanium dioxide | CAS:13463-67-7 | 0.01% TO 0.1% | NDA | OSHA HCS 2012: Carc. 2 | NDA |
| Sodium hydroxide | CAS:1310-73-2 | < 0.045% | NDA | OSHA HCS 2012: Exposure limits | NDA |
| Magnesium oxide | CAS:1309-48-4 | < 0.045% | NDA | OSHA HCS 2012: Exposure limits | NDA |
| Calcium oxide | CAS:1305-78-8 | < 0.045% | NDA | OSHA HCS 2012: Exposure limits | NDA |
| Diphosphoric acid, sodium salt (1:4) | CAS:7722-88-5 | < 0.0075% | Ingestion/Oral-Rat LD50 • 4 g/kg | OSHA HCS 2012: Exposure limits | NDA |
| Cristobalite | CAS:14464-46-1 | < 0.002% | NDA | OSHA HCS 2012: Exposure limits | NDA |
| Formaldehyde | CAS:50-00-0 | <= 0.00002% | Ingestion/Oral-Rat LD50 • 100 mg/kg Inhalation-Rat LC50 • 203 mg/m ³ 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 material 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**
- Keep container closed. Store in a covered location. Store in a cool, dry place. 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 |
| | | | 0.05 mg/m3 TWA | | | |

| | | | | | | |
|--|----------|--|---|---|---|---------------------------------------|
| Cristobalite (14464-46-1) | TWAs | 0.025 mg/m3 TWA (respirable fraction) | (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) |
| Diphosphoric acid, sodium salt (1:4) (7722-88-5) | TWAs | Not established | 5 mg/m3 TWA | 5 mg/m3 TWAEV | Not established | 5 mg/m3 TWA |
| Titanium dioxide (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 |
| Sodium hydroxide (1310-73-2) | Ceilings | 2 mg/m3 Ceiling | 2 mg/m3 Ceiling | 2 mg/m3 Ceiling | 2 mg/m3 Ceiling | 2 mg/m3 Ceiling |
| Calcium oxide (1305-78-8) | TWAs | 2 mg/m3 TWA | 2 mg/m3 TWA | 2 mg/m3 TWAEV | 2 mg/m3 TWA LMPE- PPT | 2 mg/m3 TWA |
| Magnesium oxide (1309-48-4) | TWAs | 10 mg/m3 TWA (inhalable fraction) | 10 mg/m3 TWA (inhalable) | 10 mg/m3 TWAEV (fume, as Mg) | 10 mg/m3 TWA LMPE -PPT (fume, as Mg) | Not established |
| Quartz (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) |
| | STELs | Not established | Not established | Not established | 10 mg/m3 STEL [LMPE-CT] (as Fe) | Not established |
| Iron oxide (1309-37-1) | TWAs | 5 mg/m3 TWA (respirable fraction) | 5 mg/m3 TWA (respirable) | 5 mg/m3 TWAEV (dust and fume, as Fe); 10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, regulated under Rouge, total dust) | 5 mg/m3 TWA LMPE- PPT | 5 mg/m3 TWA (dust and fume, as Fe) |
| | TWAs | Not established | 0.1 mg/m3 TWA (respirable) | 0.1 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, respirable dust) | 0.1 mg/m3 TWA LMPE-PPT; 10 mg/m3 TWA LMPE-PPT (inhalable particulate); 3 mg/m3 TWA LMPE-PPT (respirable particulate) | Not established |
| Amorphous/fused silica (60676-86-0) | TWAs | Not established | 0.1 mg/m3 TWA (respirable) | 0.1 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, respirable dust) | 0.1 mg/m3 TWA LMPE-PPT; 10 mg/m3 TWA LMPE-PPT (inhalable particulate); 3 mg/m3 TWA LMPE-PPT (respirable particulate) | Not established |
| | | 10 mg/m3 TWA | | 10 mg/m3 TWAEV (including dust, inert) | | |

| | | | | | | |
|------------------------------------|------|---|--|--|--|-----------------|
| Cement, alumina, chemicals | TWAs | (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended) <i>as Particulates not otherwise classified (PNOC)</i> | 10 mg/m3 TWA (inhalable); 3 mg/m3 TWA (respirable) <i>as Particulates not otherwise classified (PNOC)</i> | or nuisance particulates; containing no Asbestos and <1% Crystalline silica, total dust) <i>as Particulates not otherwise classified (PNOC)</i> | Not established | Not established |
| Amorphous silica fume (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 |
| Aluminum oxide (1344-28-1) | TWAs | 1 mg/m3 TWA (respirable fraction) <i>as Aluminum insoluble compounds</i> | 1 mg/m3 TWA (respirable) <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 |

Exposure Limits/Guidelines (Con't.)

| | Result | OSHA |
|-------------------------------|--------|--|
| Titanium dioxide (13463-67-7) | TWAs | 15 mg/m3 TWA (total dust) |
| Sodium hydroxide (1310-73-2) | TWAs | 2 mg/m3 TWA |
| Calcium oxide (1305-78-8) | TWAs | 5 mg/m3 TWA |
| Magnesium oxide (1309-48-4) | TWAs | 15 mg/m3 TWA (fume, total particulate) |
| Iron oxide (1309-37-1) | TWAs | 10 mg/m3 TWA (fume); 15 mg/m3 TWA (total dust, listed under Rouge); 5 mg/m3 TWA (respirable fraction, listed under Rouge) |
| Cement, alumina, chemicals | TWAs | 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction) <i>as Particulates not otherwise classified (PNOC)</i> |
| Aluminum oxide (1344-28-1) | TWAs | 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction) |

Exposure Control Notations

Mexico

- Aluminum oxide (1344-28-1): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Iron oxide (1309-37-1): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)

Canada Ontario

- Quartz (14808-60-7): **Designated Substances:** (0.10 mg/m3 TWA (respirable fraction, listed under Silica, crystalline))
- Cristobalite (14464-46-1): **Designated Substances:** (0.05 mg/m3 TWA (respirable fraction, listed under Silica, crystalline))

Canada Quebec

- Quartz (14808-60-7): **Carcinogens:** (C2 carcinogen - effect suspected in humans)

ACGIH

- Aluminum oxide as Aluminum insoluble compounds: **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Quartz (14808-60-7): **Carcinogens:** (A2 - Suspected Human Carcinogen)
- Iron oxide (1309-37-1): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

- Magnesium oxide (1309-48-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Cristobalite (14464-46-1): **Carcinogens:** (A2 - Suspected Human Carcinogen)

Exposure Limits Supplemental

OSHA

- Amorphous/fused silica (60676-86-0): **Mineral Dusts:** ((80)/(% SiO₂) mg/m³ TWA; 20 mppcf TWA)
- 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)
- 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)

ACGIH

- Aluminum oxide as Aluminum insoluble compounds: **TLV Basis - Critical Effects:** (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)
- Quartz (14808-60-7): **TLV Basis - Critical Effects:** (lung cancer; pulmonary fibrosis)
- Iron oxide (1309-37-1): **TLV Basis - Critical Effects:** (pneumoconiosis)
- Sodium hydroxide (1310-73-2): **TLV Basis - Critical Effects:** (eye, skin and upper respiratory tract irritation)
- Calcium oxide (1305-78-8): **TLV Basis - Critical Effects:** (upper respiratory tract irritation)
- Titanium dioxide (13463-67-7): **TLV Basis - Critical Effects:** (lower respiratory tract irritation) | **Notice of Intended Changes (TLVs):** (1 mg/m³ TWA (respirable fraction); A3 - confirmed animal carcinogen with unknown relevance to humans; TLV basis: lower respiratory tract irritation, pneumoconiosis)
- Cristobalite (14464-46-1): **TLV Basis - Critical Effects:** (lung cancer; pulmonary fibrosis)

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

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

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

TWAEV = Time-Weighted Average Exposure Value

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 μ | 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 | = 2.53 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 | | |
|----------------------------------|-------------|--|
| Titanium dioxide (0.01% TO 0.1%) | 13463-67-7 | Irritation: Skin-Human • 300 µg 3 Day(s)-Intermittent • Mild irritation; Tumorigen / Carcinogen: Inhalation-Rat TClO • 250 mg/m ³ 6 Hour(s) 2 Year(s)-Intermittent; <i>Tumorigenic:Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration:Tumors</i> |
| DISPERSING AGENT 1 (< 0.1395%) | Proprietary | Acute Toxicity: Ingestion/Oral-Rat LD50 • 3120 mg/kg; Behavioral:Somnolence (general depressed activity); Behavioral:Coma; Irritation: 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 |

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 |
| Cristobalite | 14464-46-1 | Not Listed | Group 1-Carcinogenic | Not Listed |
| 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 |

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 |
| Calcium oxide | 1305-78-8 | 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 |
| Sodium hydroxide | 1310-73-2 | Yes | Yes | Yes |
| Sodium trimetaphosphate | 7785-84-4 | Yes | No | Yes |
| Titanium dioxide | 13463-67-7 | Yes | Yes | Yes |
| DISPERSING AGENT 1 | <i>Proprietary</i> | Yes | No | Yes |

| Inventory | | | |
|--------------------------------------|--------------------|------------|------|
| Component | CAS | Canada DSL | TSCA |
| Aluminum oxide | 1344-28-1 | Yes | Yes |
| Calcium oxide | 1305-78-8 | 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 |
| Sodium hydroxide | 1310-73-2 | Yes | Yes |
| Sodium trimetaphosphate | 7785-84-4 | Yes | Yes |
| Titanium dioxide | 13463-67-7 | Yes | Yes |
| DISPERSING AGENT 1 | <i>Proprietary</i> | Yes | Yes |

Canada

| Labor | | | |
|--|--------------------|---|--|
| Canada - WHMIS - Classifications of Substances | | | |
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed | |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed | |
| • Formaldehyde | 50-00-0 | A, B1, D1A, D2A, D2B; B3, D1A, D2A, D2B, E (regulated under Formol) | |
| • Calcium oxide | 1305-78-8 | E | |
| • Sodium hydroxide | 1310-73-2 | E (including 0.04% in aqueous solution, 0.08%, 0.4% in aqueous solution, 2%, 2.5%, 4% in aqueous solution, 5%, 10%, 16%, 20%, 40%, 50% in | |

| | | |
|--|--------------------|--|
| • Titanium dioxide | 13463-67-7 | aqueous solution, 8.7N) D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Titanium dioxide, 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 |
| • Cristobalite | 14464-46-1 | 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 | 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 | | |
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | 0.1 % |
| • Calcium oxide | 1305-78-8 | 1 % |
| • Sodium hydroxide | 1310-73-2 | 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 % |
| • Quartz | 14808-60-7 | 1 % |

Environment

Canada - CEPA - Priority Substances List

| | | |
|--|--------------------|--|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | Priority Substance List 2 (substance considered toxic) |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

Canada - CEPA - Schedule I - List of Toxic Substances

| | | |
|--|--------------------|------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

United States

Labor

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

| | | |
|--|--------------------|------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | 1000 lb TQ |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

U.S. - OSHA - Specifically Regulated Chemicals

| | | |
|--|--------------------|---|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <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) |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

Environment

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

| | | |
|--|--------------------|------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

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

| | | |
|--|--------------------|-----------------------------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | 100 lb final RQ; 45.4 kg final RQ |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | 1000 lb final RQ; 454 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 |
| • Quartz | 14808-60-7 | Not Listed |

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

| | | |
|--|--------------------|-----------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | 100 lb EPCRA RQ |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

| | | |
|--|--------------------|------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | 500 lb TPQ |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

| | | |
|--|--------------------|--|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | 0.1 % de minimis concentration |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII

| | | |
|---------------------------|--------------------|------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |

| | | |
|--|------------|---|
| • Formaldehyde | 50-00-0 | Included in waste streams: K009, K010, K038, K040, K156, K157 |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

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

| | | |
|--|--------------------|-------------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | waste number U122 |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

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

| | | |
|--|--------------------|-------------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | waste number U122 |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

United States - California

Environment

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

| | | |
|--|--------------------|--|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | carcinogen, initial date 1/1/88 (gas) |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • 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)

| | | |
|--|--------------------|----------------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | 40 µg/day NSRL (gas) |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

United States - Pennsylvania**Labor****U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

| | | |
|--|--------------------|------------|
| • Sodium trimetaphosphate | 7785-84-4 | |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | |
| • Formaldehyde | 50-00-0 | |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | |
| • 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 |
| • Quartz | 14808-60-7 | Not Listed |

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

| | | |
|--|--------------------|------------|
| • Sodium trimetaphosphate | 7785-84-4 | Not Listed |
| • DISPERSING AGENT 1 | <i>Proprietary</i> | Not Listed |
| • Formaldehyde | 50-00-0 | |
| • Calcium oxide | 1305-78-8 | Not Listed |
| • Sodium hydroxide | 1310-73-2 | Not Listed |
| • 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 |
| • 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

| | |
|--|--|
| Revision Date | • 30/April/2018 |
| Last Revision Date | • 06/April/2015 |
| Preparation Date | • 01/June/2009 |
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Key to abbreviations

NDA = No data available