

## Safety Data Sheet



### Section 1: Identification

#### Product identifier

- Product Name** • Reno CleanCast 1010  
**Product Code** • 168300

#### 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
Mullite	<i>Proprietary</i>	38.7% TO 42.3%	NDA	<b>OSHA HCS 2012:</b> Not Classified	NDA
Aluminum oxide	<b>CAS:</b> 1344-28-1	16.82% TO 27.003%	Inhalation-Rat LC50 • 0.2 mg/L 5 Hour(s) 28 Week(s)	<b>OSHA HCS 2012:</b> Not Classified	NDA
Zirconium(IV) silicate (1:1)	<b>CAS:</b> 14940-68-2	8.82% TO 11%	NDA	<b>OSHA HCS 2012:</b> Not Classified	Contains trace amounts of naturally occurring radioactive materials Uranium, Thorium, Radium and Hafnium.
Silicon carbide	<b>CAS:</b> 409-21-2	6.24% TO 9.9%	NDA	<b>OSHA HCS 2012:</b> STOT RE 2	NDA

Amorphous silica fume	CAS:69012-64-2	3% TO 7%	NDA	OSHA HCS 2012: STOT RE 1 (Lungs)	NDA
Cement, alumina, chemicals	CAS:65997-16-2	3% TO 5%	NDA	OSHA HCS 2012: Not Classified	NDA
Quartz	CAS:14808-60-7	0.009% TO 2.7354%	NDA	OSHA HCS 2012: Carc. 1A; STOT RE 1 (Lungs)	NDA
Silicon	CAS:7440-21-3	< 1.4925%	Ingestion/Oral-Rat LD50 • 3160 mg/kg	OSHA HCS 2012: Eye Irrit. 2	NDA
Aluminum(III) silicate (2:1)	CAS:1302-76-7	< 1.425%	NDA	OSHA HCS 2012: STOT RE 2 (Lungs)	NDA
Titanium dioxide	CAS:13463-67-7	0% TO 1.1215%	NDA	OSHA HCS 2012: Carc. 2	NDA
Iron oxide	CAS:1309-37-1	< 0.9915%	NDA	OSHA HCS 2012: Not Classified	NDA
Amorphous/fused silica	CAS:60676-86-0	< 0.35%	NDA	OSHA HCS 2012: Not Classified	NDA
Zirconium oxide	CAS:1314-23-4	< 0.191%	NDA	OSHA HCS 2012: Not Classified	NDA
Silica, amorphous	CAS:7631-86-9	0% TO 0.17%	NDA	OSHA HCS 2012: Not Classified	NDA
Triphosphoric acid, sodium salt (1:5)	CAS:7758-29-4	< 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
Calcium oxide	CAS:1305-78-8	< 0.085%	NDA	OSHA HCS 2012: Exposure limits	NDA
Nickel	CAS:7440-02-0	< 0.07%	NDA	OSHA HCS 2012: Exposure limits	NDA
Magnesium oxide	CAS:1309-48-4	< 0.07%	NDA	OSHA HCS 2012: Exposure limits	NDA
Chromium	CAS:7440-47-3	< 0.07%	NDA	OSHA HCS 2012: Exposure limits	NDA
Sodium hydroxide	CAS:1310-73-2	< 0.0405%	NDA	OSHA HCS 2012: Exposure limits	NDA
Cobalt	CAS:7440-48-4	< 0.035%	Ingestion/Oral-Rat LD50 • 6171 mg/kg	OSHA HCS 2012: Exposure limits	NDA
Dispersing Agent	Proprietary	< 0.0075%	Ingestion/Oral-Rat LD50 • 4 g/kg	OSHA HCS 2012: Exposure limits	NDA
Cristobalite	CAS:14464-46-1	< 0.0015%	NDA	OSHA HCS 2012: Exposure limits	NDA
Formaldehyde	CAS:50-00-0	<= 0.000015%	Ingestion/Oral-Rat LD50 • 100 mg/kg Inhalation-Rat LC50 • 203 mg/m <sup>3</sup> 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 Manitoba	Canada Ontario	Canada Quebec	Mexico
Titanium dioxide (13463-67-7)	STELs	Not established	Not established	Not established	Not established	20 mg/m3 STEL [LMPE-CT] (as Ti)
	TWAs	10 mg/m3 TWA	Not established	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)
Formaldehyde (50-00-0)	Ceilings	0.3 ppm Ceiling	Not established	1.5 ppm Ceiling	2 ppm Ceiling; 3 mg/m3 Ceiling	2 ppm Ceiling; 3 mg/m3 Ceiling
	Designated Substances	Not established	Present	Not established	Not established	Not established
	STELs	Not established	Not established	1.0 ppm STEL	Not established	Not established
Cristobalite (14464-46-1)	TWAs	0.025 mg/m3 TWA (respirable fraction)	Not established	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)
Dispersing Agent (Proprietary)	TWAs	Not established	Not established	5 mg/m3 TWA	5 mg/m3 TWAEV	Not established
Quartz (14808-60-7)	TWAs	0.025 mg/m3 TWA (respirable fraction)	Not established	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)
Cobalt (7440-48-4)	TWAs	0.02 mg/m3 TWA	Not established	0.02 mg/m3 TWA	0.02 mg/m3 TWAEV	0.1 mg/m3 TWA LMPE-PPT (dust and fume, as Co)
Sodium hydroxide (1310-73-2)	Ceilings	2 mg/m3 Ceiling	Not established	2 mg/m3 Ceiling	2 mg/m3 Ceiling	2 mg/m3 Ceiling

Chromium (7440-47-3)	TWAs	0.5 mg/m3 TWA	Not established	0.5 mg/m3 TWA	0.5 mg/m3 TWAEV	0.5 mg/m3 TWA LMPE-PPT
	Designated Substances	Not established	Present	Not established	Not established	Not established
Magnesium oxide (1309-48-4)	TWAs	10 mg/m3 TWA (inhalable fraction)	Not established	10 mg/m3 TWA (inhalable)	10 mg/m3 TWAEV (fume, as Mg)	10 mg/m3 TWA LMPE-PPT (fume, as Mg)
Nickel	TWAs	1.5 mg/m3 TWA (inhalable fraction)	Not established	1 mg/m3 TWA (inhalable)	1 mg/m3 TWAEV	1 mg/m3 TWA LMPE-PPT
	Designated Substances	Not established	Present	Not established	Not established	Not established
Calcium oxide (1305-78-8)	TWAs	2 mg/m3 TWA	Not established	2 mg/m3 TWA	2 mg/m3 TWAEV	2 mg/m3 TWA LMPE-PPT
Zirconium oxide	STELs	10 mg/m3 STEL (as Zr) <i>as Zirconium compounds</i>	Not established	10 mg/m3 STEL (as Zr) <i>as Zirconium compounds</i>	10 mg/m3 STEV (as Zr) <i>as Zirconium compounds</i>	10 mg/m3 STEL [LMPE-CT] (as Zr) <i>as Zirconium compounds</i>
	TWAs	5 mg/m3 TWA (as Zr) <i>as Zirconium compounds</i>	Not established	5 mg/m3 TWA (as Zr) <i>as Zirconium compounds</i>	5 mg/m3 TWAEV (as Zr) <i>as Zirconium compounds</i>	5 mg/m3 TWA LMPE-PPT (as Zr) <i>as Zirconium compounds</i>
Amorphous/fused silica (60676-86-0)	TWAs	Not established	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)
Iron oxide (1309-37-1)	STELs	Not established	Not established	Not established	Not established	10 mg/m3 STEL [LMPE-CT] (as Fe)
	TWAs	5 mg/m3 TWA (respirable fraction)	Not established	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
Silicon (7440-21-3)	STELs	Not established	Not established	Not established	Not established	20 mg/m3 STEL [LMPE-CT]
	TWAs	Not established	Not established	10 mg/m3 TWA (total dust)	10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, total dust)	10 mg/m3 TWA LMPE-PPT (inhalable fraction)
Amorphous silica fume (69012-64-2)	TWAs	Not established	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)
Cement, alumina, chemicals	TWAs	10 mg/m3 TWA (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended)  <i>as Particulates not otherwise classified (PNOC)</i>	Not established	10 mg/m3 TWA (inhalable); 3 mg/m3 TWA (respirable)  <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)  <i>as Particulates not otherwise classified (PNOC)</i>	Not established
Silicon carbide (409-21-2)	STELs	Not established	Not established	Not established	Not established	20 mg/m3 STEL [LMPE-CT]
	TWAs	10 mg/m3 TWA (nonfibrous, inhalable fraction, particulate matter containing no asbestos and <1% crystalline silica); 3 mg/m3 TWA (nonfibrous, respirable fraction, particulate matter containing no asbestos and <1% crystalline silica); 0.1 fiber/cm3 TWA (as determined by the membrane filter method at 400-450X magnification (4-mm objective), using phase-contrast illumination., respirable fibers, including whiskers, length >5 µm, aspect ratio >=3:1)	Not established	10 mg/m3 TWA (non-fibrous, containing no Asbestos and <1% Crystalline silica, inhalable); 3 mg/m3 TWA (non-fibrous, containing no Asbestos and <1% Crystalline silica, respirable); 0.1 fibre/cm3 TWA (fibrous, including whiskers, fibres >5 µm in length and an aspect ratio >=3:1 as determined by the membrane filter method at 400-450 times magnification (4-mm objective), using phase-contrast illumination, respirable)	10 mg/m3 TWAEV (non fibrous, containing no Asbestos and <1% Crystalline silica, total dust)	10 mg/m3 TWA LMPE-PPT
Zirconium(IV) silicate (1:1)	STELs	10 mg/m3 STEL (as Zr)  <i>as Zirconium compounds</i>	Not established	10 mg/m3 STEL (as Zr)  <i>as Zirconium compounds</i>	10 mg/m3 STEV (as Zr)  <i>as Zirconium compounds</i>	10 mg/m3 STEL [LMPE-CT] (as Zr)  <i>as Zirconium compounds</i>
	TWAs	5 mg/m3 TWA (as Zr)  <i>as Zirconium compounds</i>	Not established	5 mg/m3 TWA (as Zr)  <i>as Zirconium compounds</i>	5 mg/m3 TWAEV (as Zr)  <i>as Zirconium compounds</i>	5 mg/m3 TWA LMPE-PPT (as Zr)  <i>as Zirconium compounds</i>
Aluminum oxide (1344-28-1)	TWAs	1 mg/m3 TWA (respirable fraction)  <i>as Aluminum insoluble compounds</i>	Not established	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

Exposure Limits/Guidelines (Con't.)			
	Result	NIOSH	OSHA
Titanium dioxide (13463-67-7)	TWAs	Not established	15 mg/m <sup>3</sup> TWA (total dust)
Silica, amorphous (7631-86-9)	TWAs	6 mg/m <sup>3</sup> TWA	Not established
Formaldehyde (50-00-0)	STELs	Not established	2 ppm STEL (see 29 CFR 1910.1048)
	TWAs	0.016 ppm TWA	0.75 ppm TWA
	Ceilings	0.1 ppm Ceiling (15 min)	Not established
Cristobalite (14464-46-1)	TWAs	0.05 mg/m <sup>3</sup> TWA (respirable dust)	Not established
Dispersing Agent (Proprietary)	TWAs	5 mg/m <sup>3</sup> TWA	Not established
Quartz (14808-60-7)	TWAs	0.05 mg/m <sup>3</sup> TWA (respirable dust)	Not established
Cobalt (7440-48-4)	TWAs	0.05 mg/m <sup>3</sup> TWA (dust and fume)	0.1 mg/m <sup>3</sup> TWA (dust and fume)
Sodium hydroxide (1310-73-2)	TWAs	Not established	2 mg/m <sup>3</sup> TWA
	Ceilings	2 mg/m <sup>3</sup> Ceiling	Not established
Chromium (7440-47-3)	TWAs	0.5 mg/m <sup>3</sup> TWA	1 mg/m <sup>3</sup> TWA
Magnesium oxide (1309-48-4)	TWAs	Not established	15 mg/m <sup>3</sup> TWA (fume, total particulate)
Nickel (7440-02-0)	TWAs	0.015 mg/m <sup>3</sup> TWA	1 mg/m <sup>3</sup> TWA
Calcium oxide (1305-78-8)	TWAs	2 mg/m <sup>3</sup> TWA	5 mg/m <sup>3</sup> TWA
Zirconium oxide	TWAs	5 mg/m <sup>3</sup> TWA (except Zirconium tetrachloride, as Zr)  <i>as Zirconium compounds</i>	5 mg/m <sup>3</sup> TWA (as Zr)  <i>as Zirconium compounds</i>
	STELs	10 mg/m <sup>3</sup> STEL (except Zirconium tetrachloride, as Zr)  <i>as Zirconium compounds</i>	Not established
Iron oxide (1309-37-1)	TWAs	5 mg/m <sup>3</sup> TWA (dust and fume, as Fe)	10 mg/m <sup>3</sup> TWA (fume); 15 mg/m <sup>3</sup> TWA (total dust, listed under Rouge); 5 mg/m <sup>3</sup> TWA (respirable fraction, listed under Rouge)
Silicon (7440-21-3)	TWAs	10 mg/m <sup>3</sup> TWA (total dust); 5 mg/m <sup>3</sup> TWA (respirable dust)	15 mg/m <sup>3</sup> TWA (total dust); 5 mg/m <sup>3</sup> TWA (respirable fraction)
Cement, alumina, chemicals	TWAs	Not established	15 mg/m <sup>3</sup> TWA (total dust); 5 mg/m <sup>3</sup> TWA (respirable fraction)  <i>as Particulates not otherwise classified (PNOC)</i>
Silicon carbide (409-21-2)	TWAs	10 mg/m <sup>3</sup> TWA (total dust); 5 mg/m <sup>3</sup> TWA (respirable dust)	15 mg/m <sup>3</sup> TWA (total dust); 5 mg/m <sup>3</sup> TWA (respirable fraction)
	TWAs	5 mg/m <sup>3</sup> TWA (except Zirconium tetrachloride, as Zr)	5 mg/m <sup>3</sup> TWA (as Zr)



Zirconium(IV) silicate (1:1)		<i>as Zirconium compounds</i>	<i>as Zirconium compounds</i>
	STELs	10 mg/m3 STEL (except Zirconium tetrachloride, as Zr)  <i>as Zirconium compounds</i>	Not established
Aluminum oxide (1344-28-1)	TWAs	Not established	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

**Exposure Control Notations**

**Mexico**

- Iron oxide (1309-37-1): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Zirconium oxide as Zirconium compounds: **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Aluminum oxide (1344-28-1): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Zirconium(IV) silicate (1:1) as Zirconium compounds: **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Silicon carbide (409-21-2): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Formaldehyde (50-00-0): **Carcinogens:** (A2 - Suspected human carcinogen)
- Chromium (7440-47-3): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Cobalt (7440-48-4): **Carcinogens:** (A3 - Confirmed animal carcinogen (dust and fume))

**Canada Ontario**

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

**Canada Quebec**

- Quartz (14808-60-7): **Carcinogens:** (C2 carcinogen - effect suspected in humans)
- Formaldehyde (50-00-0): **Carcinogens:** (C2 carcinogen - effect suspected in humans)
- Cobalt (7440-48-4): **Carcinogens:** (C3 carcinogen - effect detected in animals)

**ACGIH**

- 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)
- Zirconium oxide as Zirconium compounds: **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Aluminum oxide as Aluminum insoluble compounds: **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)
- Quartz (14808-60-7): **Carcinogens:** (A2 - Suspected Human Carcinogen)
- Zirconium(IV) silicate (1:1) as Zirconium compounds: **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Silicon carbide (409-21-2): **Carcinogens:** (A2 - Suspected Human Carcinogen (fibrous, including whiskers))
- Formaldehyde (50-00-0): **Carcinogens:** (A2 - Suspected Human Carcinogen) | **Sensitizers:** (sensitizer)
- Nickel (7440-02-0): **Carcinogens:** (A5 - Not Suspected as a Human Carcinogen)
- Chromium (7440-47-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Cobalt (7440-48-4): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

**Exposure Limits Supplemental**

**OSHA**

- 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)
- Amorphous/fused silica (60676-86-0): **Mineral Dusts:** ((80)/( % SiO2) mg/m3 TWA; 20 mppcf TWA)
- Silica, amorphous (7631-86-9): **Mineral Dusts:** (20 mppcf TWA; (80)/( % SiO2) mg/m3 TWA)

**ACGIH**

- Calcium oxide (1305-78-8): **TLV Basis - Critical Effects:** (upper respiratory tract irritation)
- Iron oxide (1309-37-1): **TLV Basis - Critical Effects:** (pneumoconiosis)
- Magnesium oxide (1309-48-4): **TLV Basis - Critical Effects:** (metal fume fever; upper respiratory tract irritation)
- Sodium hydroxide (1310-73-2): **TLV Basis - Critical Effects:** (eye, skin and upper respiratory tract irritation)

- Aluminum oxide as Aluminum insoluble compounds: **TLV Basis - Critical Effects:** (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)
- Titanium dioxide (13463-67-7): **TLV Basis - Critical Effects:** (lower respiratory tract irritation) | **Notice of Intended Changes (TLVs):** (Withdrawn from notice of intended changes)
- Cristobalite (14464-46-1): **TLV Basis - Critical Effects:** (lung cancer; pulmonary fibrosis)
- Quartz (14808-60-7): **TLV Basis - Critical Effects:** (lung cancer; pulmonary fibrosis)
- Silicon carbide (409-21-2): **TLV Basis - Critical Effects:** (upper respiratory tract irritation (nonfibrous); cancer (fibrous, including whiskers); mesothelioma (fibrous, including whiskers))
- Formaldehyde (50-00-0): **TLV Basis - Critical Effects:** (eye and upper respiratory tract irritation) | **Notice of Intended Changes (TLVs):** (Proposed update of SEN notation to DSEN and RSEN to indicate both dermal and respiratory sensitizer)
- Nickel (7440-02-0): **TLV Basis - Critical Effects:** (dermatitis; pneumoconiosis)
- Chromium (7440-47-3): **TLV Basis - Critical Effects:** (skin and upper respiratory tract irritation)
- Cobalt (7440-48-4): **BEIs:** (15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background); 1 µg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)) | **TLV Basis - Critical Effects:** (asthma; myocardial effects; pulmonary function) | **Notice of Intended Changes (BEIs):** (15 ug/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonspecific))

## 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

STEV = Short Term Exposure Value

NIOSH = National Institute of Occupational Safety and Health

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

OSHA = Occupational Safety and Health Administration

TWAEV = Time-Weighted Average Exposure Value

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

## Section 9 - Physical and Chemical Properties

### Information on Physical and Chemical Properties

<b>Material Description</b>			
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
<b>General Properties</b>			
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		
<b>Volatility</b>			
Vapor Pressure	No data available	Vapor Density	No data available
Evaporation Rate	No data available	VOC (Wt.)	0 %
VOC (Vol.)	0 %		
<b>Flammability</b>			
Flash Point	No data available	UEL	No data available
LEL	No data available	Autoignition	No data available
Flammability (solid, gas)	No data available		
<b>Environmental</b>			
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

<b>Components</b>		
Titanium dioxide (0% TO 1.1215%)	13463-67-7	<b>Irritation:</b> Skin-Human • 300 µg 3 Day(s)-Intermittent • Mild irritation; <b>Tumorigen / Carcinogen:</b> Inhalation-Rat TCLo • 250 mg/m <sup>3</sup> 6 Hour(s) 2 Year(s)-Intermittent; <i>Tumorigenic: Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: Tumors</i>
Silicon carbide (6.24% TO 9.9%)	409-21-2	<b>Tumorigen / Carcinogen:</b> Implant-Rat TDLo • 200 mg/kg; <i>Tumorigenic: Neoplastic by RTECS criteria; Tumorigenic: Tumors at site of application</i>

Silicon (< 1.4925%)	7440-21-3	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 3160 mg/kg
Silica, amorphous (0% TO 0.17%)	7631-86-9	<b>Irritation:</b> Eye-Rabbit • 25 mg 24 Hour(s) • Mild irritation
Triphosphoric acid, sodium salt (1:5) (< 0.1395%)	7758-29-4	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 3120 mg/kg; <b>Behavioral:Somnolence (general depressed activity); Behavioral:Coma;</b> <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

**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
Titanium dioxide	13463-67-7	Not Listed	Group 2B-Possible Carcinogen	Not Listed

Formaldehyde	50-00-0	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Known Human Carcinogen
Cristobalite	14464-46-1	Not Listed	Group 1-Carcinogenic	Not Listed
Quartz	14808-60-7	Not Listed	Group 1-Carcinogenic	Known Human Carcinogen
Cobalt	7440-48-4	Not Listed	Group 2B-Possible Carcinogen	Not Listed
Nickel	7440-02-0	Not Listed	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen
Silicon carbide	409-21-2	Not Listed	Group 2A-Probable Carcinogen	Not Listed

**Key to abbreviations**

LD = Lethal Dose  
 TC = Toxic Concentration  
 TD = Toxic Dose

**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** • No data available

to Annex II of MARPOL 73/78  
and the IBC Code

**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
Chromium	7440-47-3	Yes	Yes	Yes
Cobalt	7440-48-4	Yes	Yes	Yes
Cristobalite	14464-46-1	Yes	Yes	Yes
Dispersing Agent	<i>Proprietary</i>	Yes	Yes	Yes
Formaldehyde	50-00-0	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes
Quartz	14808-60-7	Yes	Yes	Yes
Silicon	7440-21-3	Yes	Yes	Yes
Sodium hydroxide	1310-73-2	Yes	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes	Yes
Triphosphoric acid, sodium salt (1:5)	7758-29-4	Yes	No	Yes
Zirconium(IV) silicate (1:1)	14940-68-2	No	No	No

Inventory				
Component	CAS	Canada DSL	Canada NDSL	TSCA
Aluminum oxide	1344-28-1	Yes	No	Yes
Calcium oxide	1305-78-8	Yes	No	Yes
Chromium	7440-47-3	Yes	No	Yes
Cobalt	7440-48-4	Yes	No	Yes
Cristobalite	14464-46-1	Yes	No	Yes
Dispersing Agent	<i>Proprietary</i>	Yes	No	Yes
Formaldehyde	50-00-0	Yes	No	Yes
Nickel	7440-02-0	Yes	No	Yes
Quartz	14808-60-7	Yes	No	Yes
Silicon	7440-21-3	Yes	No	Yes
Sodium hydroxide	1310-73-2	Yes	No	Yes
Titanium dioxide	13463-67-7	Yes	No	Yes
Triphosphoric acid, sodium salt (1:5)	7758-29-4	Yes	No	Yes
Zirconium(IV) silicate (1:1)	14940-68-2	Yes	No	Yes

## Canada

### Labor

#### Canada - WHMIS - Classifications of Substances

• Zirconium(IV) silicate (1:1)	14940-68-2	Uncontrolled product according to WHMIS classification criteria
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	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
• Chromium	7440-47-3	Uncontrolled product according to WHMIS classification criteria
• 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 aqueous solution, 8.7N)
• Titanium dioxide	13463-67-7	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.)
• Cobalt	7440-48-4	D2A, D2B
• Dispersing Agent	<i>Proprietary</i>	D2B
• Aluminum oxide	1344-28-1	Uncontrolled product according to WHMIS classification criteria
• Nickel	7440-02-0	D2A, D2B; B6, D2A (Raney)
• Silicon	7440-21-3	B4
• 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

• Zirconium(IV) silicate (1:1)	14940-68-2	1 %
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	0.1 %
• Calcium oxide	1305-78-8	1 %
• Chromium	7440-47-3	0.1 %

• Sodium hydroxide	1310-73-2	1 %
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	0.1 %
• Dispersing Agent	<i>Proprietary</i>	1 %
• Aluminum oxide	1344-28-1	1 %
• Nickel	7440-02-0	0.1 %
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	1 %
• Quartz	14808-60-7	1 %

**Environment**

**Canada - CEPA - Priority Substances List**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	Priority Substance List 2 (substance considered toxic)
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	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
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	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**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	1000 lb TQ
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed



• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed
<b>U.S. - OSHA - Specifically Regulated Chemicals</b>		
• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	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
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	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**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	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
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	100 lb final RQ; 45.4 kg final RQ
• Calcium oxide	1305-78-8	Not Listed 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the

• Chromium	7440-47-3	diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Sodium hydroxide	1310-73-2	1000 lb final RQ; 454 kg final RQ
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
		100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Nickel	7440-02-0	
• Silicon	7440-21-3	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**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	100 lb EPCRA RQ
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

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

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	500 lb TPQ
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed

• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

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

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	0.1 % de minimis concentration
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	1.0 % de minimis concentration
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	0.1 % de minimis concentration
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	1.0 % de minimis concentration (fibrous forms)
• Nickel	7440-02-0	0.1 % de minimis concentration
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

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

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	Included in waste streams: K009, K010, K038, K040, K156, K157
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Included in waste streams: F032, F034, F035, F037, F038, F039
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Included in waste streams: F006, F039
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

**U.S. - RCRA (Resource Conservation & Recovery Act) - Constituents for Detection Monitoring**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	(total)

• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	(total)
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

**U.S. - RCRA (Resource Conservation & Recovery Act) - D Series Wastes - Max Conc of Contaminants for the Tox Characteristic**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	5.0 mg/L regulatory level
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	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**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	waste number U122
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	hazardous constituent - no waste number
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	hazardous constituent - no waste number
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

**U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	(total)
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	(total)
• Silicon	7440-21-3	Not Listed

• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

**U.S. - RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	2.77 mg/L (total, wastewater); 0.60 mg/L TCLP (total, nonwastewater)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	3.98 mg/L (wastewater); 11.0 mg/L TCLP (nonwastewater)
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Quartz	14808-60-7	Not Listed

**U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	(total)
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	(total)
• Silicon	7440-21-3	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**

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	waste number U122
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	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

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	carcinogen, initial date 1/1/88 (gas)
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	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)
• Cobalt	7440-48-4	carcinogen, initial date 7/1/92 (powder)
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	carcinogen, initial date 10/1/89 (metallic)
• Silicon	7440-21-3	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)

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	40 µg/day NSRL (gas)
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Silicon	7440-21-3	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

• Zirconium(IV) silicate (1:1)	14940-68-2	Not Listed
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	
• Formaldehyde	50-00-0	
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	
• Sodium hydroxide	1310-73-2	
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	

• Nickel	7440-02-0	
• Silicon	7440-21-3	Not Listed
• Cristobalite	14464-46-1	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
• Triphosphoric acid, sodium salt (1:5)	7758-29-4	Not Listed
• Formaldehyde	50-00-0	
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Dispersing Agent	<i>Proprietary</i>	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	
• Silicon	7440-21-3	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**

<b>Revision Date</b>	• 30/April/2018
<b>Last Revision Date</b>	• 07/June/2015
<b>Preparation Date</b>	• 21/March/2001
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**Key to abbreviations**

NDA = No data available