

Safety Data Sheet



Section 1: Identification

Product identifier

- Product Name** • **Reno Pipe Shield CR**
Product Code • 186400

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	77.085% TO 87%	Inhalation-Rat LC50 • 0.2 mg/L 5 Hour(s) 28 Week(s)	OSHA HCS 2012: Not Classified	NDA
Chromium(III) oxide	CAS:1308-38-9	7% TO 8%	NDA	OSHA HCS 2012: STOT RE 2 (Lungs, Liver, Kidney, Inhl)	NDA
Aluminum(III) silicate (2:1)	CAS:1302-76-7	2.55% TO 4.75%	NDA	OSHA HCS 2012: STOT RE 2 (Lungs)	NDA
Amorphous silica fume	CAS:69012-64-2	0.8% TO 4%	NDA	OSHA HCS 2012: STOT RE 1 (Lungs)	NDA
Aluminum Silicate	Proprietary	0.87% TO 1.74%	NDA	OSHA HCS 2012: STOT RE 2 (Lungs)	NDA
Bentonite	CAS:1302-78-9	< 1%	NDA	OSHA HCS 2012: Not Classified	NDA

Silicic acid, potassium salt	CAS:1312-76-1	< 0.99%	NDA	OSHA HCS 2012: Not Classified	NDA
Various Metal Oxides	NDA	0% TO 0.8%	NDA	OSHA HCS 2012: Not Classified	NDA
Quartz	CAS:14808-60-7	0.15% TO 0.567%	NDA	OSHA HCS 2012: Carc. 1A; STOT RE 1 (Lungs)	NDA
Amorphous/fused silica	CAS:60676-86-0	< 0.56%	NDA	OSHA HCS 2012: Not Classified	NDA
Iron oxide	CAS:1309-37-1	< 0.28%	NDA	OSHA HCS 2012: Not Classified	NDA
Silica, amorphous	CAS:7631-86-9	< 0.26%	NDA	OSHA HCS 2012: Not Classified	NDA
Titanium dioxide	CAS:13463-67-7	0.03% TO 0.25%	NDA	OSHA HCS 2012: Carc. 2	NDA
Magnesium oxide	CAS:1309-48-4	< 0.1484%	NDA	OSHA HCS 2012: Not Classified	NDA
Sodium hydroxide	CAS:1310-73-2	< 0.07%	NDA	OSHA HCS 2012: Exposure limits	NDA
Calcium oxide	CAS:1305-78-8	< 0.07%	NDA	OSHA HCS 2012: Exposure limits	NDA
Cristobalite	CAS:14464-46-1	< 0.018%	NDA	OSHA HCS 2012: Exposure limits	NDA
Silica, crystalline - tridymite	CAS:15468-32-3	< 0.01%	NDA	OSHA HCS 2012: Exposure limits	NDA
Chromium, ion (Cr 6+)	CAS:18540-29-9	< 0.004%	NDA	OSHA HCS 2012: Exposure limits	NDA
Lead	CAS:7439-92-1	< 0.000008%	NDA	OSHA HCS 2012: Exposure limits	NDA
Cadmium	CAS:7440-43-9	< 0.000008%	Ingestion/Oral-Rat LD50 • 2330 mg/kg Inhalation-Rat LC50 • 25 mg/m ³ 30 Minute(s)	OSHA HCS 2012: Exposure limits	NDA
Arsenic	CAS:7440-38-2	< 0.000008%	Ingestion/Oral-Rat LD50 • 763 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 • 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
Cadmium (7440-43-9)	TWAs	0.01 mg/m ³ TWA; 0.002 mg/m ³ TWA (respirable fraction)	Not established	0.01 mg/m ³ TWA; 0.002 mg/m ³ TWA (respirable)	0.025 mg/m ³ TWAEV	0.01 mg/m ³ TWA LMPE-PPT (total dust); 0.002 mg/m ³ TWA LMPE-PPT (respirable dust)
	Designated Substances	Not established	Present	Not established	Not established	Not established
Lead (7439-92-1)	TWAs	0.05 mg/m ³ TWA	Not established	0.05 mg/m ³ TWA (designated substances regulation); 0.05 mg/m ³ TWA (applies to workplaces to which the designated substances regulation does not apply)	0.05 mg/m ³ TWAEV	0.15 mg/m ³ TWA LMPE-PPT (dust and fume, as Pb)
Arsenic (7440-38-2)	TWAs	0.01 mg/m ³ TWA	Not established	0.01 mg/m ³ TWA (designated substance regulation); 0.01 mg/m ³ TWA (applies to workplaces to which the designated substances regulation does not apply)	0.1 mg/m ³ TWAEV	0.01 mg/m ³ TWA LMPE-PPT
	Designated Substances	Not established	Present	Not established	Not established	Not established
	STELs	Not established	Not established	0.05 mg/m ³ STEL (designated substances regulation)	Not established	Not established
Silica, crystalline - tridymite (15468-32-3)	TWAs	Not established	Not established	Not established	0.05 mg/m ³ TWAEV (respirable dust)	0.05 mg/m ³ TWA LMPE-PPT (respirable fraction)
Cristobalite (14464-46-1)	TWAs	0.025 mg/m ³ TWA (respirable fraction)	Not established	0.05 mg/m ³ TWA (designated substances regulation, respirable, listed under Silica, crystalline)	0.05 mg/m ³ TWAEV (respirable dust)	0.05 mg/m ³ TWA LMPE-PPT (respirable fraction)
	STELs	Not established	Not established	Not established	Not established	20 mg/m ³ STEL [LMPE-CT] (as Ti)

Titanium dioxide (13463-67-7)	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)
Sodium hydroxide (1310-73-2)	Ceilings	2 mg/m3 Ceiling	Not established	2 mg/m3 Ceiling	2 mg/m3 Ceiling	2 mg/m3 Ceiling
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
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)
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)
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
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)
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)
Chromium(III) oxide	TWAs	0.5 mg/m3 TWA (as Cr) <i>as Chromium (III) inorganic compounds</i>	Not established	0.5 mg/m3 TWA (as Cr, listed under Chromium and inorganic compounds) <i>as Chromium(III) compounds</i>	0.5 mg/m3 TWAEV (as Cr) <i>as Chromium(III) compounds</i>	0.5 mg/m3 TWA LMPE-PPT <i>as Chromium (III) inorganic 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	
Cadmium (7440-43-9)	Ceilings		Not established		0.3 mg/m3 Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, fume); 0.6 mg/m3 Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, dust)	
	TWAs		Not established		0.1 mg/m3 TWA (fume, applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect); 0.2 mg/m3 TWA (dust, applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect); 5 µg/m3 TWA	
Lead (7439-92-1)	TWAs		0.050 mg/m3 TWA		50 µg/m3 TWA	
Arsenic (7440-38-2)	Ceilings		0.002 mg/m3 Ceiling (15 min)		Not established	
Chromium, ion (Cr 6+)	TWAs		0.0002 mg/m3 TWA (as Cr) <i>as Chromium (VI) compounds</i>		5 µg/m3 TWA	
Silica, crystalline - tridymite (15468-32-3)	TWAs		0.05 mg/m3 TWA (respirable dust)		Not established	
Cristobalite (14464-46-1)	TWAs		0.05 mg/m3 TWA (respirable dust)		Not established	
Titanium dioxide (13463-67-7)	TWAs		Not established		15 mg/m3 TWA (total dust)	
Sodium hydroxide (1310-73-2)	TWAs		Not established		2 mg/m3 TWA	
	Ceilings		2 mg/m3 Ceiling		Not established	
Calcium oxide (1305-78-8)	TWAs		2 mg/m3 TWA		5 mg/m3 TWA	
Magnesium oxide (1309-48-4)	TWAs		Not established		15 mg/m3 TWA (fume, total particulate)	
Quartz (14808-60-7)	TWAs		0.05 mg/m3 TWA (respirable dust)		Not established	
Silica, amorphous (7631-86-9)	TWAs		6 mg/m3 TWA		Not established	
Iron oxide (1309-37-1)	TWAs		5 mg/m3 TWA (dust and fume, as Fe)		10 mg/m3 TWA (fume); 15 mg/m3 TWA (total dust, listed under Rouge); 5 mg/m3 TWA (respirable fraction, listed under Rouge)	
Chromium(III) oxide	TWAs		0.5 mg/m3 TWA (as Cr) <i>as Chromium(III) compounds</i>		0.5 mg/m3 TWA (as Cr) <i>as Chromium(III) compounds</i>	

Aluminum oxide (1344-28-1)	TWAs	Not established	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
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Exposure Control Notations

Mexico

- 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)
- Iron oxide (1309-37-1): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Chromium(III) oxide as Chromium (III) inorganic compounds: **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Chromium, ion (Cr 6+) as Chromium (VI) compounds: **Carcinogens:** (A1 - Confirmed human carcinogen)
- Lead (7439-92-1): **Carcinogens:** (A3 - Confirmed animal carcinogen)
- Cadmium (7440-43-9): **Carcinogens:** (A2 - Suspected human carcinogen)
- Arsenic (7440-38-2): **Carcinogens:** (A1 - Confirmed 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))
- Lead (7439-92-1): **Designated Substances:** (0.05 mg/m3 TWA)
- Arsenic (7440-38-2): **Designated Substances:** (0.01 mg/m3 TWA; 0.05 mg/m3 STEL)

Canada Quebec

- Quartz (14808-60-7): **Carcinogens:** (C2 carcinogen - effect suspected in humans)
- Lead (7439-92-1): **Carcinogens:** (C3 carcinogen - effect detected in animals)
- Cadmium (7440-43-9): **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)
- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Cristobalite (14464-46-1): **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)
- Chromium(III) oxide as Chromium (III) inorganic compounds: **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Lead (7439-92-1): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)
- Cadmium (7440-43-9): **Carcinogens:** (A2 - Suspected Human Carcinogen)
- Arsenic (7440-38-2): **Carcinogens:** (A1 - Confirmed Human Carcinogen)

Exposure Limits Supplemental

OSHA

- 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)
- 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)
- Silica, crystalline - tridymite (15468-32-3): **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)
- 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)
- 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)

- Chromium(III) oxide as Chromium (III) inorganic compounds: **TLV Basis - Critical Effects:** (skin and upper respiratory tract irritation)
- Lead (7439-92-1): **BEIs:** (30 µg/100 ml Medium: blood Time: not critical Parameter: Lead (Note: Women of child bearing potential, whose blood Pb exceeds 10 µg/dL, are at risk of delivering a child with a blood Pb over the current Centers for Disease Control guideline of 10 µg/dL. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficits. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead.)) | **TLV Basis - Critical Effects:** (CNS and PNS impairment; hematologic effects)
- Cadmium (7440-43-9): **BEIs:** (5 µg/g creatinine Medium: urine Time: not critical Parameter: Cadmium (background); 5 µg/L Medium: blood Time: not critical Parameter: Cadmium (background)) | **TLV Basis - Critical Effects:** (kidney damage)
- Arsenic (7440-38-2): **BEIs:** (35 µg As/L Medium: urine Time: end of workweek Parameter: Inorganic arsenic plus methylated metabolites (background)) | **TLV Basis - Critical Effects:** (lung cancer)

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 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 (0.03% TO 0.25%)	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>
Cristobalite (< 0.018%)	14464-46-1	Acute Toxicity: 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> Multi-dose Toxicity: Inhalation-Mouse TClO • 43 mg/m ³ 5 Hour(s) 9 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration: Pleural effusion; Lungs, Thorax, or Respiration: Other changes</i>
Magnesium oxide (< 0.1484%)	1309-48-4	Multi-dose Toxicity: Inhalation-Rat TClO • 1000 mg/m ³ 4 Hour(s) 50 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration: Other changes; Blood: Other hemolysis with or without anemia</i>
Chromium(III) oxide (7% TO 8%)	1308-38-9	Multi-dose Toxicity: Inhalation-Rat TClO • 150 mg/m ³ 45 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration: Emphysema; Liver: Fatty liver degeneration; Kidney, Ureter, and Bladder: Changes in tubules (including acute renal failure, acute tubular necrosis)</i>

Silica, amorphous (< 0.26%)	7631-86 -9	Irritation: Eye-Rabbit • 25 mg 24 Hour(s) • Mild irritation
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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
Arsenic	7440-38-2	Not Listed	Group 1-Carcinogenic	Known Human Carcinogen
Cadmium	7440-43-9	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Known Human Carcinogen
Lead	7439-92-1	Not Listed	Group 2A-Probable Carcinogen	Reasonably Anticipated to be Human Carcinogen

Chromium, ion (Cr 6+)	18540-29-9	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Not Listed
Silica, crystalline - tridymite	15468-32-3	Not Listed	Group 1-Carcinogenic	Not Listed
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

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
Arsenic	7440-38-2	Yes	Yes	Yes
Bentonite	1302-78-9	No	No	No
Cadmium	7440-43-9	Yes	Yes	Yes
Calcium oxide	1305-78-8	Yes	Yes	Yes
Chromium(III) oxide	1308-38-9	Yes	Yes	No
Chromium, ion (Cr 6+)	18540-29-9	No	No	Yes
Cristobalite	14464-46-1	Yes	Yes	Yes
Lead	7439-92-1	Yes	Yes	Yes
Quartz	14808-60-7	Yes	Yes	Yes
Silica, crystalline - tridymite	15468-32-3	Yes	Yes	Yes
Sodium hydroxide	1310-73-2	Yes	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes	Yes

Inventory			
Component	CAS	Canada DSL	TSCA
Aluminum oxide	1344-28-1	Yes	Yes
Arsenic	7440-38-2	Yes	Yes
Bentonite	1302-78-9	Yes	Yes
Cadmium	7440-43-9	Yes	Yes
Calcium oxide	1305-78-8	Yes	Yes
Chromium(III) oxide	1308-38-9	Yes	Yes
Chromium, ion (Cr 6+)	18540-29-9	No	No
Cristobalite	14464-46-1	Yes	Yes
Lead	7439-92-1	Yes	Yes
Quartz	14808-60-7	Yes	Yes
Silica, crystalline - tridymite	15468-32-3	No	No
Sodium hydroxide	1310-73-2	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	D2A
• Cadmium	7440-43-9	D1A, D2A

• Calcium oxide	1305-78-8	E
• Lead	7439-92-1	D2A 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)
• Sodium hydroxide	1310-73-2	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.)
• Titanium dioxide	13463-67-7	D1A, D2A Uncontrolled product according to WHMIS classification criteria
• Arsenic	7440-38-2	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.)
• 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.)
• Chromium(III) oxide	1308-38-9	Uncontrolled product according to WHMIS classification criteria
• 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.)
• Bentonite	1302-78-9	D2A
Canada - WHMIS - Ingredient Disclosure List		
• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	1 %
• Cadmium	7440-43-9	0.1 %
• Calcium oxide	1305-78-8	1 %
• Lead	7439-92-1	0.1 %
• Sodium hydroxide	1310-73-2	1 %
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	0.1 %
• Aluminum oxide	1344-28-1	1 %
• Cristobalite	14464-46-1	1 %
• Chromium(III) oxide	1308-38-9	1 %
• Quartz	14808-60-7	1 %
• Bentonite	1302-78-9	Not Listed

Environment

Canada - CEPA - Schedule I - List of Toxic Substances

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

United States

Labor

U.S. - OSHA - Specifically Regulated Chemicals

• Chromium, ion (Cr 6+)	18540-29-9	5 µg/m3 TWA (See 29 CFR 1910.1026); 2.5 µg/m3 Action Level
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	5 µg/m3 TWA (See 29 CFR 1910.1027); 2.5 µg/m3 Action Level
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	30 µg/m3 Action Level (See 29 CFR 1910.1025); 50 µg/m3 TWA (See 29 CFR 1910.1025)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

Environment

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	10 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); 4.54 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)
• Calcium oxide	1305-78-8	Not Listed

• Lead	7439-92-1	10 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); 4.54 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
• Arsenic	7440-38-2	1 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); 0.454 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)
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	0.1 % de minimis concentration
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	0.1 % Supplier notification limit; 0.1 % de minimis concentration (when contained in stainless steel, brass, or bronze)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	0.1 % de minimis concentration
• Aluminum oxide	1344-28-1	1.0 % de minimis concentration (fibrous forms)
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	Not Listed
• Calcium oxide	1305-78-8	Not Listed

• Lead	7439-92-1	100 lb RT (this lower threshold does not apply to lead when it is contained in stainless steel, brass or bronze alloy)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

U.S. - EPA - Designated Generic Categories - Lead and Lead Compounds

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Chromium, ion (Cr 6+)	18540-29-9	Included in waste streams: F006, F019, K002, K003, K004, K005, K006, K007, K008, K048, K049, K050, K051, K061, K062, K069, K086, K100
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	Included in waste streams: F006, F039, K061, K069, K100
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	Included in waste streams: F035, F037, F038, F039, K002, K003, K005, K046, K048, K049, K051, K052, K061, K062, K069, K086, K100, K176
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Included in waste streams: F032, F034, F035, F039, K031, K060, K084, K101, K102, K161, K171, K172, K176
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	(total)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	(total)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	(total)
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	1.0 mg/L regulatory level
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	5.0 mg/L regulatory level
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	5.0 mg/L regulatory level
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	hazardous constituent - no waste number
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	hazardous constituent - no waste number
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	hazardous constituent - no waste number
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	(total)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	(total)

• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	(total)
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards		
• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	0.69 mg/L (wastewater); 0.11 mg/L TCLP (nonwastewater)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	0.69 mg/L (wastewater); 0.75 mg/L TCLP (nonwastewater)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	1.4 mg/L (wastewater); 5.0 mg/L TCLP (nonwastewater)
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring		
• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	(total)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	(total)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	(total)
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Waste Minimization Priority Chemicals		
• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed

• Bentonite	1302-78-9	Not Listed
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United States - California

Environment

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	carcinogen, initial date 10/1/87
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	carcinogen, initial date 10/1/92
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	carcinogen, initial date 9/2/11 (airborne, unbound particles of respirable size)
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	carcinogen, initial date 10/1/88 (airborne particles of respirable size)
• Bentonite	1302-78-9	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	developmental toxicity, initial date 5/1/97
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	developmental toxicity, initial date 2/27/87
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Chromium, ion (Cr 6+)	18540-29-9	8.2 µg/day MADL (oral)
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	4.1 µg/day MADL (oral)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	0.5 µg/day MADL
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	0.05 µg/day NSRL (inhalation)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	15 µg/day NSRL (oral)
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	0.06 µg/day NSRL (inhalation); 10 µg/day NSRL (except inhalation)
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	female reproductive toxicity, initial date 2/27/87
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	male reproductive toxicity, initial date 5/1/97
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	male reproductive toxicity, initial date 2/27/87
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

United States - Pennsylvania

Labor

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

• Chromium, ion (Cr 6+)	18540-29-9
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• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	(dust, fume, powder)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	
• Sodium hydroxide	1310-73-2	
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	(inorganic)
• Aluminum oxide	1344-28-1	
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Chromium, ion (Cr 6+)	18540-29-9	Not Listed
• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Cadmium	7440-43-9	(powder)
• Calcium oxide	1305-78-8	Not Listed
• Lead	7439-92-1	Not Listed
• Sodium hydroxide	1310-73-2	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Arsenic	7440-38-2	
• Aluminum oxide	1344-28-1	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Chromium(III) oxide	1308-38-9	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

Other Information

- **WARNING:** This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16 - Other Information

Revision Date	• 01/May/2018
Last Revision Date	• 14/July/2015
Preparation Date	• 14/July/2015
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Key to abbreviations

NDA = No data available