Silica Sand
Safety Data Sheet

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name : Silica Sand

Chemical Name : Quartz, Crystalline Silica

Other means of identification : Ground Silica, Frac Sand, Filtration Sand, Bunker Sand ,Turf Sand, Foundry Sand, 100 Mesh Frac Sand, 12/20 Sand, 16/30 Sand, 20/40 Sand, 30/70 Sand, 40/70 Sand, 30/50 Sand, Golf Course Sand, 75/25 Sand (75% Greens Plus 25% Texas Best, 80/20 Sand (TB 20% & Greens Plus 80%Mix), 90/10 Mix, C-144 White (Mason Sand), C-144 Yesso (Mason Sand), Caylor White (Golf Course Sand), Green Colored Sand, F50 Sand, Greens Mix Greens (mix for golf course), Greens Plus (Golf Course Sand), Klassic White (Mason Sand), Ottowa White 20/40 frac, Ottawa White 40/70 frac, P50 Sand Kosse, Pnna Pore Mix (Mix with Caylor White & Perma Pore), Stone White (Mason Sand), Superior Universal Sand, Texas Best White (Bunker Sand) (Collectively referred to herein as "Crystalline Silica Sand")

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Manufacturing

1.3. Details of the supplier of the safety data sheet

Superior Silica Sands LLC
6000 Western Place, Suite 465
Ft. Worth, TX 76107
T 817-841-8087

1.4. Emergency telephone number

Emergency number : Chemtrec 1 800 424 9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Acute Tox. 4 (Oral)	H302
Carc. 1A	H350
STOT RE 2	H373

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

GHS07 GHS08

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302 - Harmful if swallowed
H350 - May cause cancer
H373 - May cause damage to organs through prolonged or repeated exposure :

Precautionary statements (GHS-US) P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust/fume/gas/mist/vapours/spray
P264 - Wash thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P280 - Wear protective gloves/protective clothing/eye protection/face protection P301+P312 - IF SWALLOWED: call a POISON CENTER or doctor/physician if you feel unwell P308+P313 - IF exposed or concerned: Get medical advice/attention
P314 - Get medical advice and attention if you feel unwell
P330 - If swallowed, rinse mouth
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional Information : Superior Silica Sands Sand is a white or tan sand with no odor. It is not flammable, combustible, or explosive. It can cause irritation to the eyes. A single exposure will not result in serious adverse health effects. Crystalline silica is not known to be an environmental hazard.

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

Full text of H-phrases: see section 16

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Quartz	(CAS No) 14808-60-7	90 - 99.9	Acute Tox. 4 (Oral), H302 Carc. 1A, H350 STOT RE2, H373

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove source of contamination or move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration. If high airborne concentrations are present, take proper precautions to ensure your own safety before attempting rescue. :

First-aid measures after skin contact : Wash with soap and water. Seek medical attention if irritation persists.

First-aid measures after eye contact : Quickly and gently blot or brush away sand. Do not rub eyes. Do not attempt to manually remove material stuck to the eye(s). Immediately flush eyes with lukewarm, gently flowing water for at least 15 minutes or until the sand is removed, while holding the eyelid(s) open. Occasionally lift eyelids to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eyes. Seek medical attention immediately.

First-aid measures after ingestion : Never give anything by mouth if the victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. If irritation or discomfort occurs, obtain medical advice immediately.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : a. Silicosis: Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs. Silicosis may be progressive; it may lead to disability and death.

b. Lung Cancer: Crystalline silica (quartz) inhaled from occupational sources is classified as carcinogenic to humans.

c. Tuberculosis: Silicosis increases the risk of tuberculosis.

d. Autoimmune and Chronic Kidney Diseases: Some studies show excess numbers of cases of scleroderma, connective tissue disorders, lupus, rheumatoid arthritis, chronic kidney diseases and end-stage kidney disease in workers exposed to respirable crystalline silica.

e. Non-Malignant Respiratory Diseases (other than silicosis): Some studies show an increased incidence in chronic bronchitis and emphysema in workers exposed to respirable crystalline silica.

Symptoms/injuries after skin contact : Contact may cause dryness or moderate skin irritation.

Symptoms/injuries after eye contact : May cause moderate to severe irritation of the eyes, including discomfort, pain, redness and swelling. :

Symptoms/injuries after ingestion May be harmful if swallowed.

Acute Effects : One form of silicosis, Acute Silicosis, can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as 6 months. The symptoms of acute silicosis include (but are not limited to) progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal.

Chronic Effects : The adverse health effects – lung disease, silicosis, cancer, autoimmune disease, tuberculosis, and nephrotoxicity – are chronic effects.

Signs and Symptoms of Exposure	: There are generally no signs or symptoms of exposure to crystalline silica (quartz). Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. The symptoms of acute silicosis are the same as those associated with chronic silicosis; additionally, weight loss and fever may also occur. The symptoms of scleroderma include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems.
Medical Conditions Aggravated by Exposure	: The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	: None.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: None known.
Explosion hazard	: None known.
Reactivity	: None.

5.3. Advice for firefighters

Protection during firefighting	: Firefighters should wear full protective gear.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Avoid generating dust. Wear personal protection as described in Section 8 of this document.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

None.

6.3. Methods and material for containment and cleaning up

For containment	: Stop the flow of material, if this is without risk.
Methods for cleaning up	: Use dustless methods (vacuum equipped with HEPA filters) and place in closable container for disposal or flush with water. Do not dry sweep.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Do not use product for abrasive and/or sand blasting. Avoid generating dust. Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud.

Use adequate exhaust ventilation and dust collection. Maintain and test ventilation and dust collection equipment. Use all available work practices to control dust exposures, such as water sprays. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Keep airborne dust concentrations below permissible exposure limits.

Where necessary to reduce exposures below the PEL or other applicable limit (if lower than the PEL), wear a respirator approved for silica containing dust when using, handling, storing or disposing of this product or bag. See Section 8, for further information on respirators. Do not alter

the respirator. Do not wear a tight-fitting respirator with facial hair such as a beard or mustache that prevents a good face to face piece seal between the respirator and face. Maintain, clean, and fit test respirators in accordance with applicable standards. Wash or vacuum clothing that has become dusty.

Participate in training, exposure monitoring, and health surveillance programs to monitor any potential

adverse health effects that may be caused by breathing respirable crystalline silica.

The OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker or community "right-to-know" laws and regulations should be strictly followed.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Use dust collection to trap dust produced during loading and unloading.

7.3. Specific end use(s)

Manufacturing.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits (respirable fraction) in air for Crystalline Silica (quartz):

Quartz (14808-60-7)

USA ACGIH (8-Hour Time Weighted Average)	ACGIH TWA (mg/m³)	0.025 mg/m³
USA MSHA/OSHA (8-Hour Time Weighted Average)	PEL	10 mg/m3 / % SiO2+2
NIOSH (10-Hour Time Weighted Average, 4--hour work week)	TWA	0.05 mg/m3

Note: The OSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz); the ACGIH TLV for crystalline silica as cristobalite is equal to the TLV for crystalline silica as quartz. In 2005, ACGIH withdrew the TLV for crystalline silica as tridymite. Refer to Section 10 for thermal stability information for crystalline silica (quartz).

8.2. Exposure controls

Appropriate engineering controls : Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits.

Other control measures: Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) dust suppression (wetting), ventilation, process enclosure, and enclosed employee work stations.

Hand protection : Use impervious gloves such as neoprene, nitrile, or rubber for hand protection. :

Eye protection Chemical goggles or safety glasses.

Skin and body protection : Wear suitable working clothes.

Respiratory protection : This product is not to be used for abrasive blasting. Consult with OSHA regulations and NIOSH recommendations to determine the appropriate respiratory protection during use of this product. Use only NIOSH-approved respiratory protection equipment. Avoid breathing dust produced during the use and handling of this product. If the workplace airborne crystalline silica concentration is unknown for a given task, conduct air monitoring to determine the appropriate level of respiratory protection. Consult with a certified industrial hygienist, your insurance risk manager, or the OSHA Consultative Services group for detailed information. Ensure appropriate respirators are worn during and following the task, including clean up or whenever airborne dust is present, to ensure worker exposures remain below occupational health limits. Provisions should be made for a respiratory protection training program (see 29 CFR 1910.134 - Respiratory Protection for minimum program requirements). See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection," 29 CFR 1910.134 and 1926.103, and 42 CFR 84.

Respirator Recommendations: For respirable quartz levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved 100 series particulate filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8 hour-TWA of 0.5 mg/m3, a NIOSH-approved air purifying, full-face respirator with a 100 series particulate filter must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include Badger Mining Corporation Last Revised: August 2010 MSDS for Silica provisions for a user training program, respirator maintenance and cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-35-NIOSH or visit website:

	http://www.cdc.gov/niosh/npg (search for crystalline silica). Emergency or planned entry into unknown concentrations or IDLH conditions (50mg/m3 for crystalline silica-quartz): Any self-contained breathing apparatus that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus. Escape from unknown or IDLH conditions (50mg/m3 for crystalline silica-quartz): Any airpurifying, full-face piece respirator with a high-efficiency particulate filter or any appropriate escape-type, self-contained breathing apparatus.
General Hygiene Considerations	: There are no known hazards associated with this material when used as recommended. The guidelines in this SDS are recognized as good industrial hygiene practices. Avoid breathing dust. Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Granular, crushed or ground sand
Color	: White or tan
Odor	: Odorless.
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: 3110 °F
Freezing point	: No data available
Boiling point	: 4046 °F
Flash point	: No data available
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Specific gravity	: 2.66
Solubility	: Insoluble
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

None.

10.2. Chemical stability

The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions

Will not occur.

10.4. Conditions to avoid

Dust generation.

10.5. Incompatible materials

Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trixode, oxygen difluoride, hydrogen peroxide, and others may cause fires and/or explosions. Heating a mixture of powdered magnesium with slightly wet silica may cause a violent explosion .A violent reaction may result from combination of manganese trifluoride and silica. Finely divided silica will often react with burning sodium. Combination with xenon hexafluoride may form the explosive zenon trioxide.

10.6. Hazardous decomposition products

Silica will dissolve in hexafluoric acid and produce a corrosive gas (silicon tetrafluoride).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed.

Silica Sand	
ATE (oral)	500.000 mg/kg bodyweight

Quartz (14808-60-7)

LD50 oral rat	500 mg/kg
ATE (oral)	500.000 mg/kg

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : May cause cancer.

IARC - The International Agency for Research on Cancer ("IARC") concluded that "crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)". For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C,"A Review of Human Carcinogens: Arsenic, Metals, Fibres and Dusts " (2011).

The American College of Occupational and Environmental Medicine ("ACOEM") notes: "In 1996, [IARC] re-classified silica as a Class I human lung carcinogen, based on sufficient animal and human data. Although the degree of increased risk varies (with relative risks ranging from 1.3 to 6.9), the risk appears to be greatest in workers with silicosis who smoke. The cancer risk to silica-exposed workers without silicosis (especially if they are not smokers) is less clear despite continuing research, some of which has yielded disparate results." ACOEM, "Medical Surveillance of Workers Exposed to Crystalline Silica", June 2005.

The EU Scientific Committee for Occupational Exposure Limits (SCOEL) concluded in June 2002 (SCOEL Sum Doc. 94-final): "The main effect in humans of inhalation of respirable silica dust is silicosis. There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk."

Quartz (14808-60-7)

IARC group	1 - Carcinogenic to humans
National Toxicology Program (NTP) Status	2 - Known Human Carcinogens

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : May cause damage to organs through prolonged or repeated exposure.

The method of exposure that can lead to the adverse health effects described below is inhalation.

Silicosis: The major concern is silicosis, caused by the inhalation of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute.

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many

years (15 to 20 or more) of prolonged repeated inhalation of relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath and cough. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pumonale).

Accelerated Silicosis can occur with prolonged repeated inhalation of high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid.

Acute Silicosis can occur after the repeated inhalation of very high concentrations of respirable crystalline silica over a short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough, weakness and weight loss. Acute silicosis is fatal.

Autoimmune Diseases: Several studies have reported excess cases of several autoimmune disorders, – scleroderma, systemic lupus erythematosus, rheumatoid arthritis – among silica-exposed workers).

Tuberculosis: Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to tuberculosis bacteria. Individuals with chronic silicosis have a three-fold higher risk of contracting tuberculosis than similar individuals without silicosis.

Kidney Disease: Several studies have reported excess cases of kidney diseases, including end stage renal disease, among silica-exposed workers. For additional information on the subject, the following may be consulted: "Kidney Disease and Silicosis", Nephron, Volume 85, pp. 14-19 (2000).

Non-Malignant Respiratory Diseases: The reader is referred to Section 3.5 of the NIOSH Special Hazard Review cited below, for information concerning the association between exposure to crystalline silica and chronic bronchitis, emphysema and small airways disease. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of crystalline silica, or the level of crystalline silica in the dust).

Sources of information:

The NIOSH Hazard Review - Occupational Effects of Occupational Exposure to Respirable Crystalline Silica published in April 2002 summarizes and discusses the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable crystalline silica. The NIOSH Hazard Review should be consulted for additional information, and citations to published studies on health risks and diseases associated with occupational exposure to respirable crystalline silica. The NIOSH Hazard Review is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or through the NIOSH web site, www.cdc.gov/niosh/topics/silica, then click on the link "NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica".

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

In accordance with DOT

Crystalline Silica (quartz) is not a hazardous material for purpose of transportation under the U.S. Department of Transportation Table of Hazardous Materials, 49 CFR 172.101.

SECTION 15: Regulatory information

15.1. US Federal regulations

Quartz (14808-60-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

TSCA No.: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

Clean Air Act: Crystalline silica (quartz) mined and processed by Superior Silica Sands, LLC is not processed with or does not contain any Class I or Class II ozone depleting substances.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

NTP: Silica, crystalline (respirable size) is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

15.2. US State regulations

Quartz (14808-60-7)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes				

Quartz (14808-60-7)

U.S. - Massachusetts - Right To Know List
U.S. - Minnesota - Hazardous Substance List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

California Proposition 65: Crystalline silica (airborne particles of respirable size) is classified as a substance known to the State of California to be a carcinogen.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

Pennsylvania Worker and Community Right to Know Act: Quartz is a hazardous substance under the Act, but it is not a special hazardous substance or an environmental hazardous substance.

Other:
EINECS No.: 238-878-4

EEC Label (Risk/Safety Phrases): R 48/20, S22, S38

CLP Label (Hazard Class/Hazard Statement/Precaution Statements): STOT RE 1/ H372/ P260, P285, P501

IARC: Crystalline silica (quartz) is classified in IARC Group 1.

Australian Inventory of Chemical Substances (AICS): All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

Japan Ministry of International Trade and Industry (MITI): All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law Registry Number 1-548.

Korea Existing Chemicals Inventory (KECI) (set up under the Toxic Chemical Control Law): Listed on the ECL with registry number 9212-5667.

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Listed for PICCS.

National, state, provincial or local emergency planning, community right-to-know or other laws, regulations or ordinances may be applicable--consult applicable national, state, provincial or local laws.

SECTION 16: Other information

Full text of H-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Carc. 1A	Carcinogenicity, Category 1A
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
H302	Harmful if swallowed
H350	May cause cancer
H373	May cause damage to organs through prolonged or repeated exposure

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

Safety Data Sheet Portland Cement

Section 1. Identification

GHS product identifier: Portland Cement

Chemical name: Calcium compounds, calcium silicate compounds, and other calcium compounds containing iron and aluminum make up the majority of this product.

Other means of identification: Cement, ASTM Type I, II, III, V, Portland Limestone Cement, Hydraulic Cement, CSA Type GU, GUb, GUL, MS, MH, MHL, HE, HEL, LH, LHL, HS

Relevant identified uses of the substance or mixture and uses advised against: Building materials, construction, a basic ingredient in concrete.

Supplier's details:

Lehigh White Cement Company
7660 Imperial Way, Allentown, PA 18195
(610) 366-4600

Emergency telephone number (24 hours): **CHEMTREC: (800) 424-9300**

Section 2. Hazards Identification

Overexposure to portland cement can cause serious, potentially irreversible skin or eye damage in the form of chemical (caustic) burns, including third degree burns. The same serious injury can occur if wet or moist skin has prolonged contact exposure to dry portland cement.

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture:
SKIN CORROSION/IRRITATION – Category 1
SERIOUS EYE DAMAGE/EYE IRRITATION – Category 1
SKIN SENSITIZATION – Category 1
CARCINOGENICITY/INHALATION – Category 1A
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE)
[Respiratory tract irritation] – Category 3

GHS label elements

Hazard pictograms:

Signal word: Danger

Hazard statements:
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause respiratory irritation.
May cause cancer.

Precautionary statements:

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Use outdoors in a well ventilated area. Wash any exposed body parts thouroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.Contaminated clothing must not be allowed out of the workplace.

Response: If exposed or concerned: Immediately get medical advice/attention if you feel unwell or irritation or rash occurs.If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If in eyes: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do.If inhaled: Remove person to fresh air and keep comfortable for breathing. If swallowed: Rinse mouth. Do not induce vomiting.

Storage: Restrict or control access to stockpile areas (store locked up). Engulfment hazard: To prevent burial or suffocation, do not enter a confined space, such as a silo, bulk truck or other storage container or vessel that stores or contains cement without an effective procedure for assuring safety. Store in a well ventilated area. Keep container tightly closed.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

	None known
Hazards not otherwise classified (HNOC):	Respirable Crystalline Silica (RCS) may cause cancer. Repeated inhalation of respirable crystalline silica (quartz) may cause lung cancer according to IARC and NTP; ACGIH states that it is a suspected cause of cancer. Other forms of RCS (e.g., tridymite and cristobalite) may also be present or formed under certain industrial processes.
Supplemental Information:	

Section 3. Composition/information on ingredients

Substance/mixture:	Mixture
Chemical Name:	Calcium compounds, calcium silicate compounds, and other calcium compounds containing iron and aluminum make up the majority of this product.

CAS number/other identifiers

Ingredient name	%	CAS number
Portland Cement	100%	65997-15-1
The structure of Portland cement may contain the following in some concentration ranges:		
Calcium oxide	A-B	1305-78-8
Quartz	C-D	14808-60-7
Hexavalent chromium*	E-F	18450-29-9
Portland cement also contains gypsum, limestone and magnesium oxide in various concentrations. However, because these components are not classifiable as a hazard under Title 29 Code of Federal Regulations 1910.1200, they are not required to be listed in this section.		
Gypsum	G-H	13397-24-5
Limestone	I-J	1317-65-3
Magnesium oxide	K-L	1309-48-4

Any concentration shown as a range is to protect confidentiality or is due to process variation.
*Hexavalent chromium is included due to dermal sensitivity associated with the component.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye Contact:	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Chemical burns must be treated promptly by a physician.
Inhalation:	Seek medical help if coughing or other symptoms persist. Inhalation of large amounts of portland cement requires immediate medical attention. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If the individual is not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in a recovery position and get medical attention immediately. Maintain an open airway.
Skin Contact:	Get medical attention immediately. Heavy exposure to portland cement dust, wet concrete or associated water requires prompt attention. Quickly remove contaminated clothing, shoes, and leather goods such as watchbands and belts. Quickly and gently blot or brush away excess portland cement. Immediately wash thoroughly with lukewarm, gently flowing water and non-abrasive pH natural soap. Seek medical attention for rashes, burns, irritation, dermatitis and prolonged unprotected exposure to wet cement, cement mixtures or liquids from wet cement. Burns should be treated as caustic burns. Portland cement causes skin burns with little warning. Discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain or the severity of the burn until hours after the exposure Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure.
Ingestion:	Get medical attention immediately. Call a poison center or physician. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Remove victim to fresh air and keep at rest in a

position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Have victim drink 60 to 240 mL (2 to 8 oz.) of water. Stop giving water if the exposed person feels sick as vomiting may be dangerous. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Most important symptoms/effects, acute and delayed potential acute health effects

Eye contact: Causes serious eye damage.
Inhalation: May cause respiratory irritation.
Skin contact: Causes severe burns. May cause an allergic skin reaction.
Ingestion: May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact: Adverse symptoms may include the following: pain, watering and redness.
Inhalation: Adverse symptoms may include the following: respiratory tract irritation and coughing.
Skin contact: Adverse symptoms may include the following: pain or irritation, redness and blistering may occur, skin burns, ulceration and necrosis may occur.
Ingestion: Adverse symptoms may include the following: stomach pains.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments: Not applicable.
Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media: Do not use water jet or water-based fire extinguishers.
Specific hazards arising from the chemical: No specific fire or explosion hazard.
Hazardous thermal decomposition Products: Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides and metal oxide/oxides.
Special protective actions for fire-fighters: Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders: For personal protective clothing requirements, please see Section 8.
Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Inform the relevant authorities if the product has entered the environment, including waterways, soil or air. Materials can enter waterways through drainage systems.

Methods and materials for containment and cleaning up

Small spill: Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of waste material by using a licensed waste disposal contractor.

Large spill: Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place dust in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Large spills to waterways may be hazardous due to alkalinity of the product. Dispose of waste material using a licensed waste disposal contractor. Note: see section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure by obtaining and following special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material and keep the container tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities: A key to using the product safely requires the user to recognize that portland cement reacts chemically with water to produce calcium hydroxide which can cause severe chemical burns. Every attempt should be made to avoid skin and eye contact with cement. Do not get portland cement inside boots, shoes or gloves. Do not allow wet, saturated clothing to remain against the skin. Promptly remove clothing and shoes that are dusty or wet with cement mixtures. Launder/clean clothing and shoes before reuse. Do not enter a confined space that stores or contains portland cement unless appropriate procedures and protection are available. Portland cement can build up or adhere to the walls of a confined space and then release or fall suddenly (engulfment).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Cement, portland, chemicals	**ACGIH TLV (United States, 3/2012)** TWA: 1 mg/m³ 8hours. Form: Respirable fraction **NIOSH REL (United States, 6/2009)** TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total **OSHA PEL (United States, 6/2010)** TWA: 5mg/m³. 8 hours. Form: Respirable fraction TWA: 15 mg/m³. 8 hours. Form: Total dust

Calcium oxide	**ACGIH TLV (United States, 3/2012)** TWA: 2 mg/m³ 8 hours **NIOSH REL (United States, 6/2009)** TWA: 2mg/m³ 10 hours. **OSHA PEL (United States, 6/2010)** TWA: 5 mg/m³ 8 hours.
Limestone	**NIOSH REL (United States, 6/2009)** TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total **OSHA PEL (United States, 6/2010)** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust
Magnesium oxide	**ACGIH TLV (United States, 3/2012)** TWA: 10 mg/m³ 8 hours. Form: Inhalable fraction **OSHA PEL (United States, 6/2010)** TWA: 15 mg/m³ 8 hours. Form: Total particulates
Quartz	**ACGIH TLV (United States, 3/2012)** TWA: 0.025 mg/m³ 8 hours. Form: Respirable fraction **NIOSH REL (United States, 6/2009)** TWA: 0.05 mg/m³ 10 hours. Form: Respirable dust **OSHA PEL Z-3 (United States, 9/2005)** TWA: 10 mg/m³ divided by % SiO_2 + 2: Respirable TWA: 30 mg/m³ divided by % SiO_2 + 2: Total
Calcium sulfate (gypsum)	**ACGIH TLV (United States, 3/2012)** TWA: 10 mg/m³ 8 hours. Form: Respirable fraction **NIOSH REL (United States, 6/2009)** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust **OSHA PEL Z-1 (United States, 2/2006)** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust

Appropriate engineering controls: Use only with adequate ventilation. If user operations generate dust, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures: Clean water should always be readily available for skin and (emergency) eye washing. Periodically wash areas contacted by portland cement with a pH neutral soap and clean, uncontaminated water. If clothing becomes saturated with portland cement, garments should be removed and replaced with clean, dry clothing.

Eye/face protection: To prevent eye contact, wear safety glasses with side shields, safety goggles or face shields when handling dust or wet cement. Wearing contact lenses when working with cement is not recommended.

Skin protection

Hand protection: Use impervious, waterproof, abrasion and alkali-resistant gloves. Do not rely on barrier creams in place of impervious gloves. Do not get portland cement inside gloves.

Body protection: Use impervious, waterproof, abrasion and alkali-resistant boots and protective long-sleeved and long-legged clothing to protect the skin from contact with wet portland cement. To reduce foot and ankle exposure, wear impervious boots that are high enough to prevent portland cement from getting inside them. Do not get portland cement inside boots, shoes, or gloves. Remove clothing and protective equipment that becomes saturated with cement and immediately wash exposed areas of the body.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved. .

Respiratory protection: Use properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product, and assigned protection factor of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical State:	Solid. [Powder]	**Lower and Upper explosive flammable limits**	Not applicable
Color:	Gray or white	**Vapor pressure:**	Not applicable
Odor:	Odorless	**Vapor density:**	Not applicable
Odor threshold:	Not available	**Relative density:**	2.3 to 3.1
pH:	>11.5 [Conc. (% w/w): 1%]	**Solubility:**	Slightly soluble in water
Melting point:	Not available	**Solubility in water:**	0.1 to 1%
Boiling point:	>1000°C (>1832°F)	**Partition coefficient: n-octanol/water:**	Not applicable
Flash point:	Not flammable. Not combustible	**Auto-ignition temperature:**	Not applicable
Burning time:	Not available	**Decomposition temperature:**	Not available
Burning rate:	Not available	**SADT:**	Not available
Evaporation Rate:	Not applicable	**Viscosity:**	Not applicable
Flammability (solid, gas):	Not applicable		

Section 10. Stability and reactivity

Reactivity: Reacts slowly with water forming hydrated compounds, releasing heat and producing a strong alkaline solution until reaction is substantially complete.

Chemical Stability: The product is stable.

Possibility of hazardous reactions: Under normal circumstances of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible materials: Reactive or incompatible with the following materials: oxidizing materials, acids, aluminum and ammonium salt. Portland cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved. Reacts with acids, aluminum metals and ammonium salts. Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silicates dissolve readily in hydrofluoric acid producing a corrosive gas-silicon tetrafluoride.

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity: Portland Cement LD50/LC50 = Not available

Irritation/Corrosion: **Skin:** May cause skin irritation. May cause serious burns in the presence of moisture.
Eyes: Causes serious eye damage. May cause burns in the presence of moisture.

Respiratory: May cause respiratory tract irritation.

Sensitization: May cause sensitization due to the potential presence of trace amounts of hexavalent chromium.

Mutagenicity: There are no data available.

Carcinogenicity:
Classification below:

Product/ingredient name	OSHA	IARC	ACGIH	NTP
Cement, portland, chemicals	-	-	A4	-
Quartz	-	1	A2	Known to be a human carcinogen.

Reproductive toxicity: There are no data available.

Teratogenicity: There are no data available.

Specific target organ toxicity (single exposure)

Name	Category	Route of Exposure	Target Organs
Calcium oxide	Category 3	Inhalation and skin contact	Respiratory tract irritation, skin irritation
Cement, portland, chemicals	Category 3	Inhalation and skin contact	Respiratory tract irritation, skin irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of Exposure	Target Organs
Quartz	Category 1	Inhalation	Respiratory tract and kidneys

Aspiration hazard: There are no data available.

Information on the likely routes of exposure

Potential acute health effects:

Eye contact: Causes serious eye damage.
Inhalation: May cause respiratory irritation.
Skin contact: Causes severe burns. May cause an allergic skin reaction.
Ingestion: May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics:

Eye contact: Adverse symptoms may include the following: pain, watering, redness.
Inhalation: Adverse symptoms may include the following: respiratory tract irritation, coughing
Skin contact: Adverse symptoms may include the following: pain or irritation, redness, blistering may occur, skin burns, ulcerations and necrosis may occur
Ingestion: Adverse symptoms may include the following: stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure:

Short term exposure
Potential immediate effects: No known significant effects or critical hazards.
Potential delayed effects: No known significant effects or critical hazards.

Long term exposure
Potential immediate effects: No known significant effects or critical hazards.
Potential delayed effects: No known significant effects or critical hazards.

Potential chronic health effects:

General: Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. If sensitized to hexavalent chromium, a severe allergic dermal reaction may occur when subsequently exposed to very low levels.

Carcinogenicity: Portland cement is not classifiable as a human carcinogen. Crystalline silica is considered a hazard by inhalation. IARC has classified crystalline silica as a Group 1 substance, carcinogenic to humans. This classification is based on the findings of laboratory animal studies (inhalation and implantation) and epidemiology studies that were considered sufficient for carcinogenicity. Excessive exposure to crystalline silica can cause silicosis, a non-cancerous lung disease.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental effects: No known significant effects or critical hazards.

Fertility effects: No known significant effects or critical hazards.

Numerical measures of toxicity: Acute toxicity estimates: There are no data available.

Section 12. Ecological Information

Toxicity

Product/ingredient name	Result	Species	Exposure
Calcium oxide	Chronic NOEC 100 mg/L Fresh water	Fish-Oreochromis niloticus-Juvenile (Fledgling, Hatchling, Weanling)	46 days

Persistence and degradability: There are not data available.
Bioaccumulative potential: There are not data available.
Mobility in soil: Soil/water partition coefficient (Koc): Not available.
Other adverse effects: No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Untreated waste should not be released to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe manner. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff, and contact with soil, waterways, drains and sewers.

Section 14. Transportation information

	DOT Classification	IMDG	IATA
UN number	Not regulated	Not regulated	Not regulated
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	None	None	None
Additional information	-	-	-

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available.

Section 15. Regulatory Information

TSCA 6 final risk management: Chromium, ion (Cr6+)
United States inventory (TSCA 8b): Cements are considered to be statutory mixtures under TSCA. CAS 65997-15-1 is included on the TSCA inventory.
CERCLA: This product is not listed as a CERCLA substance
Clean Air Act Section 112 (b): Hazardous Air Pollutants (HAPs) – Not listed
Clean Air Act Section 602: Class I Substances - Not listed
Clean Air Act Section 602: Class II Substances - Not listed
DEA List I Chemicals: (Precursor Chemicals) – Not listed
DEA List II Chemicals: (Essential Chemicals) – Not listed

SARA 311/312

Classification: Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire Hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Calcium oxide	A-B	No	No	No	Yes	No
Quartz	>0.1	No	No	No	No	Yes
Chromium, ion (Cr6+)	<0.1	No	No	No	Yes	Yes

SARA 313

	Product name	CAS number	%
Form R-Report requirements	Chromium, ion (Cr6+)	8540-29-9	<0.1

State regulations

Massachusetts: The following components are listed: cement, portland, chemicals, limestone
New York: None of the components are listed.
New Jersey: The following components are listed: cement, portland, chemicals, gypsum, limestone
Pennsylvania: The following components are listed: cement, portland, chemicals, gypsum, limestone

California Prop. 65

WARNING: This product contains crystalline silica and chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires the above warning in the absence of definitive testing to prove the defined risks do not exist.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Quartz	Yes	No	No	No
Chromium, ion (Cr6+)	Yes	Yes	0.001µg/day (inhalation)	8.2 micrograms/day (ingestion)

International regulations

International lists: **Canadian Domestic Substances List (DSL):** Portland cement is included on the DSL.
Mexico Inventory (INSQ): All components are listed or exempted.

Section 16. Other Information

Date of issue: May 21, 2015
Version: May 21, 2015
Revised Section(s): N/Ap

Notice to reader

While the information provided in this safety data sheet is believed to provide a useful summary of the hazards of portland cement as it is commonly used, the sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product. In particular, the data furnished in this sheet do not address hazards that may be posed by other materials mixed with portland cement to produce portland cement products. Users should review other relevant material safety data sheets before working with this portland cement or working on portland cement products, for example, portland cement concrete.

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Lehigh Hanson, except that the product shall conform to contracted specifications. The information provided herein was believed by the Lehigh Hanson to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence, or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

Abbreviations

ACGIH — American Conference of Governmental Industrial Hygienists
CAS — Chemical Abstract Service
CERCLA — Comprehensive Emergency Response and Comprehensive Liability Act
CFR — Code of Federal Regulations
DOT — Department of Transportation
GHS — Globally Harmonized System
HEPA — High Efficiency Particulate Air
IATA — International Air Transport Association
IARC — International Agency for Research on Cancer
IMDG — International Maritime Dangerous Goods
NIOSH — National Institute of Occupational Safety and Health
NOEC — No Observed Effect Concentration
NTP — National Toxicology Program
OSHA — Occupational Safety and Health Administration
PEL — Permissible Exposure Limit
REL — Recommended Exposure Limit
RQ — Reportable Quantity
SARA — Superfund Amendments and Reauthorization Act
SDS — Safety Data Sheet
TLV — Threshold Limit Value
TPQ — Threshold Planning Quantity
TSCA — Toxic Substances Control Act
TWA — Time-Weighted Average
UN — United Nations

CMC COATING TEXAS

901 Cantrell St
WAXAHACHIE, TX 75168-2569
(972)937-9841 FAX (972)937-3995

BUILDERS EQUIPMENT & SUPPLY CO

Sin#: 9925200827
Load: C16
Project: STOCK

County: Ellis

Gentlemen:

This is to certify that all reinforcing steel for the above project has been coated in accordance with the TXDOT specifications item 440 and resin manufacturer's recommended specifications requirements.

Representative samples of the coated bars have been tested and the test results conform to the specification requirements.

We further certify LILLY/VALSPAR 720A009 or Akzo Nobel Fusion Bonded Epoxy Powder from lot(s): **QJ22295NA** was used to coat reinforcing steel from heats listed below.

All bar is grade (420) 60 unless otherwise noted:

Bar Size		Weight		Heat #'s	Mill....
Metric	Imperial	Metric	Imperial		**(other than CMC)**
(10)	3	2,047	4,512	3053686	
(13)	4	0			
(16)	5	0			
(16)	5	0			
(22)	7	0			
(25)	8	0			
(29)	9	0			
(32)	10	0			
SM.RD	3/8"	0			
	ttl. MG's:	**2,047**			
		ttl. LB's:	**4,512**		

The steel listed was manufactured by CMC Steel, unless otherwise stated above under **Mill** and shipped on Load **C16**. We further certify that all manufacturing processes have occurred in the United States of America.

SUBSCRIBED AND SWORN TO BEFORE ME, a Notary Public in and for said County and State, on this the 12/23/2015

Notary Public, Ellis Co., Texas
Gabriela Villegas

GABRIELA VILLEGAS
Notary Public, State of Texas
My Commission Expires
June 18, 2018

Contracted Manufacturer of ERICO Lenton Form Saver

CRSI MEMBER

CMC STEEL TEXAS
1 STEEL MILL DRIVE
SEGUIN TX 78155-7510

CERTIFIED MILL TEST REPORT

For additional copies call
830-372-8771

We hereby certify that the test results presented here are accurate and conform to the reported grade specification

William VanderWaal
Quality Assurance/Reliability Manager

HEAT NO.:3053686 SECTION: REBAR 10MM (#3) 40'0" 420/60 GRADE: ASTM A615-15a Gr 420/60 ROLL DATE: 02/01/2015 MELT DATE: 01/30/2015	SOLD TO	CMC COATING WAXAHACHIE 901 CANTRELL STREET WAXAHACHIE TX US 75165-3120 972-937-9841	SHIP TO	CMC Coatings Waxahachie 901 Cantrell St Waxahachie TX US 75165-3120 972 937 9841	Delivery#: 81594267 BOL#: 70573512 CUST PO#: CUST P/N: DLVRY LBS / HEAT: 46200.000 LB DLVRY PCS / HEAT: 3072 EA

Characteristic	Value	Characteristic	Value	Characteristic	Value
C	0.39%				
Mn	0.63%				
P	0.012%				
S	0.048%				
Si	0.24%				
Cu	0.41%				
Cr	0.18%				
Ni	0.21%				
Mo	0.089%				
V	0.001%				
Cb	0.002%				
Sn	0.013%				
Al	0.002%				
Yield Strength test 1	71.3ksi				
Tensile Strength test 1	108.5ksi				
Elongation test 1	11%				
Elongation Gage Lgth test 1	8IN				
Bend Test Diameter	1.313IN				
Bend Test 1	Passed				

THIS MATERIAL IS FULLY KILLED, 100% MELTED AND MANUFACTURED IN THE USA, WITH NO WELD REPAIR OR MERCURY CONTAMINATION IN THE PROCESS.

REMARKS :

Akzo Nobel Coatings Inc.
Powder Coatings

AkzoNobel

CERTIFICATE OF COMPLIANCE

Product Name: RB-600 (HKF30R)
Product Description: RESICOAT® GREEN REBAR COATING

To Whom It May Concern:

This is to certify that the batch number of Resicoat RB-600 fusion bonded epoxy powder coating listed below is chemically the same material as tested by Wiss Janney Elstner Associates of Northbrook Illinois to ASTM A 775. I certify that it meets the requirements of ASTM A 775. Resicoat RB-600 also meets the requirements of ASTM D 3963, ASTM A 884, and AASHTO M 284.

The following batch was manufactured in the United States and qualifies as "U.S. made end products", "domestic construction materials", and "domestic manufactured goods". When applied to steel or iron in the U.S. this coating meets the Buy America provisions set forth in FHWA 23 CFR 635.410 Section 1041(a) of the ISTEA.

Batch: _QJ22295NA____ Production Date: _9-23-2015___ Batch Size: __28,700_____ Lbs.

Quality Assurance Supervisor Kenny McFarlin
Signed

State/Commonwealth TN County of Davidson

On this the 26th Day of Oct Month 2016 Year before me Rebecca Hoover
Name of Notary Public

The undersigned Notary Public, personally appeared Kenny McFarlin ☑ Personally known to me
Name(s) of Signer(s)

REBECCA L. HOOVER STATE OF TENNESSEE NOTARY PUBLIC DAVIDSON COUNTY My Commission Expires 03-10-2019

To be the person(s) whose name(s) is/are subscribed to the Within instrument, and acknowledged to me that he/she/they Executed the same for the purposes therin stated.

Witness my hand and official seal

Rebecca Hoover
Signature of Notary Public

CAUTION: Special safety practices should be followed when using any powder coating. For further information, please refer to the specific product Material Safety Data Sheet (MSDS). The information contained in this COC has been determined through the application of accepted engineering practice and is believed to be reliable. Since the conditions of application and use of our products are beyond our control, no warranty is expressed or implied regarding accuracy of the information, the results to be obtained from the use of the product, or that such use will not infringe on any patent. This information is furnished with the express condition that you will make your own tests to determine the suitability of the product for your particular use. RESICOAT® is a registered trademark of Akzo Nobel.

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