Safety Data Sheet

Portland Cements (Type I, II, III EcoMent, Class A Oilwell Cement)

Section 1: Identification

MANUFACTURER'S NAME & ADDRESS: Capitol Aggregates Inc.
11551 Nacogdoches Rd.
San Antonio, Texas 78217

PRODUCT NAME:	**Portland Cements (Type I,I/II, and III, EcoMent, Class A Oilwell Cement)**

EMERGENCY TELEPHONE NUMBER: (210) 871 6111
SDS INFORMATION OR ASSISTANCE: (210) 871-7247
COMPANY PHONE NUMBER: (210) 871 7260
CHEMICAL NAME: Portland Cement
CAS NUMBER: 65997-15-1
TRADE NAME or SYNONYMS: (Portland Cement, Type I,1/II, III, Oil Well cement, Oil Field Cement Class A)
PRODUCT USE: General Construction

Section 2: Hazards Identification

WARNING! CONTACT WITH WET OR DRY PORTLAND CEMENTS IS DANGEROUS AND MAY CAUSE SEVERE SKIN IRRITATION, CHEMICAL BURNS, AS WELL AS DAMAGE TO HUMAN TISSUE, INCLUDING EYES AND OTHER ORGANS. IN ADDITION, BREATHING CEMENT DUST OVER A PERIOD OF TIME MAY IN SOME CASES RESULT IN CANCER AND OTHER DISEASES.

Classification of the substance or mixture:

SKIN CORROSION/IRRITATION — Category 1A

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
(EXTENDED EXPOSURE)) [Respiratory tract irritation] — Category 1

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 (Inhalation).

May cause cancer (inhalation).

EMERGENCY OVERVIEW:

Appearance/Odor: Gray to black or white powder. No odor.

Carcinogen, Acute & Chronic Toxin WARNING:

- Portland Cements are **NOT** listed by the National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), or OSHA as carcinogens. However, Portland Cements may contain <0.1% sand or crystalline silica. The IARC classifies respirable crystalline silica as a Group I- Known Human Carcinogen. The NTP also lists respirable crystalline silica as a known carcinogen. Portland Cements may also contain trace amounts of hexavalent chromium, which is classified by IARC as a Group-1 Known Human Carcinogen and by NTP as a Known Carcinogen.

OSHA REGULATORY STATUS:

This product is considered HAZARDOUS by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

POTENTIAL HEALTH EFFECTS:

LIKELY ROUTES OF EXPOSURE: Cement dusts: Inhalation, Eye or Skin contact, or Ingestion. Wet cement: Skin and Eye contact

TARGET ORGAN(S): Lungs, Skin, Eyes, Stomach/Intestines, other internal organs.

EYE

- Avoid eye contact. Exposure to dust may be irritating to the eyes and may impair vision. Exposure may result in conjunctivitis and inflammation of the mucous membrane covering the inner eyelid and front of the eyeball.
- Particulates from Portland Cements, (dust), may cause eye irritation resulting in pain, swelling and inflammation of the eyes.
- Contact with wet Portland Cements, e.g., unhardened cement, mortar or slurries, may cause caustic burns to the eyes.

- Calcium oxide compounds create severe burns as the compounds tend to react with the moisture and protein of the eyes, forming clumps of moist compounds that act as reservoirs for continued release of calcium hydroxide.

WHEN WORKING WITH PORTLAND CEMENTS (WET OR DRY) ALWAYS WEAR PROTECTIVE EYEWEAR MEETING APPLICABLE OSHA STANDARDS.

SKIN

- Avoid skin contact. Exposure to cement dusts may be irritating to the skin by chemical or mechanical means. This condition may be aggravated by perspiration or moisture.
- Contact with wet Portland Cements, e.g., unhardened cement, mortar or slurries, may cause severe skin irritation or chemical burns which may not be apparent or painful for 12 to 48 hours after exposures of 1 to 6 hours. This condition may be aggravated by perspiration or moisture.
- Contact with wet Portland Cements may result in contact dermatitis, which is characterized by dryness, chapping, and reddening and, in some cases, may result in allergic contact dermatitis, which may in turn cause more frequent episodes and longer duration of skin conditions.
- Skin sensitivity may occur if hexavalent chromium is present in the cement.
- Skin contact with more hydrated forms of calcium sulfate may cause thermal burns during the hardening process.

WHEN WORKING WITH PORTLAND CEMENTS (WET OR DRY) ALWAYS WEAR PROTECTIVE IMPERVIOUS CLOTHING, WATERPROOF GLOVES AND, IF APPROPRIATE, WATERPROOF KNEEPADS AND BOOTS, MEETING APPLICABLE OSHA STANDARDS.

INHALATION

- Avoid prolonged and repeated inhalation of cement dust. Acute and chronic exposure to dusts may be irritating to the respiratory tract and may provoke bronchoconstriction.
- Respirable dusts can cause bothersome deposits in the nasal passages. Nuisance dusts cause toxicity from physical overloading of the respiratory clearance mechanisms.
- Significant deterioration of pulmonary function, chronic bronchitis, and emphysema can develop with prolonged overexposure to high concentrations of dusts.
- Continued overexposure to cement dust containing silica can result in silicosis, a chronic, progressive and sometimes fatal lung disease that is characterized by the presence of typical nodulation of the lungs leading to fibrosis. Silicosis can develop in weeks with high exposures and after years of lower exposure. Symptoms and signs of silicosis include cough, shortness of breath, wheezing, decreased pulmonary function, and changes in chest X-rays. Some studies have shown that respirable silica may also be associated with increased risk of autoimmune disorders, chronic kidney disease and end stage renal disease.
- Particulates from cement dust may cause upper respiratory tract irritation resulting in coughing, production of phlegm, or difficulty breathing.

- Excessive, long-term inhalation of cement dusts may contribute to the development of occupational bronchitis and reduced breathing capacity, and may lead to the increased susceptibility to lung disease.
- Chronic overexposure to dusts of Portland Cements has resulted in perforation of the nasal septum.
- Exposure to calcium sulfate dust causes upper respiratory tract irritation primarily as a nuisance dust.
- Respirable silica, and hexavalent chromium, which may be present in small or trace amounts in portland cements, are classified as known carcinogens.

AVOID BREATHING CEMENT DUST. IF POSSIBLE, USE THESE PRODUCTS FROM AN UPWIND LOCATION. IF DUSTY CONDITIONS CANNOT BE AVOIDED, WEAR A NIOSH/MSHA APPROVED RESPIRATOR.

INGESTION

- Minute amounts accidentally ingested during industrial handling are not likely to cause injury.
- Ingestion of Portland Cements may cause irritation of the mouth, throat, esophagus and stomach with nausea, vomiting and diarrhea.
- Ingestion may also cause mucosal burns of the mouth, esophagus, and stomach; and bezoar formations in the stomach and intestines. Most will pass spontaneously, but larger ones may cause obstruction and require surgical removal.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

- Chronic exposure to nuisance dusts may enhance susceptibility to respiratory tract infections.
- Silica can cause silicosis a chronic, progressive and sometimes fatal lung disease which, in turn, increases the risk of pulmonary tuberculosis infection. Some studies have shown that silica may also be associated with increased risk of autoimmune disorders, chronic kidney disease and end stage renal disease..
- Smoking may increase the risk of developing lung disorders associated with silicosis. Smoking and lung disease may exacerbate the effects of exposure. Genetic factors may also exacerbate the effects of exposure.
- History of smoking is also a contributing factor in the chronic respiratory effects associated with cement dusts.
- Exposure to Portland Cements can result in allergic contact dermatitis, which may in turn cause more frequent episodes and longer duration of skin conditions.
- There have been several epidemiological studies suggesting an association between chronic exposure to Portland Cements and cancers.
- Drying and chapping may make the skin more susceptible to other irritants, sensitizers and disease.

Section 3: Composition / Information on Ingredients

Component	CAS No.	Wt.%	Hazardous?	GHS-US
Portland Cements, which essentially consists of the following:				
Tricalcium Silicate $3CaO \cdot SiO_2$	12168-85-3	<70	NO	Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335
Dicalcium Silicate $2CaO \cdot SiO_2$	10034-77-2	<20	NO	
Tricalcium Aluminate $3CaO \cdot Al_2O_3$	12042-78-3	<15	NO	
Tetracalcium Aluminoferrite $4CaO \cdot Al_2O_3 \cdot Fe_2O_3$	12068-35-8	<7	NO	
Calcium Sulfate Dihydrate (Gypsum) $CaSO_4 \cdot 2H_2O$ (and/or other hydrated forms of Calcium Sulfate (CAS No. 7778-18-9), $CaSO_4 \cdot XH_2O$)	13397-24-5	<9	YES	Not Classified
Crystalline Silica (quartz)	14808-60-7	<0.1%	Yes	Acute Tox. 4 (Oral), H302 Carc. 1A, H350 STOT RE 1, H372

Crystalline Silica is reported as total silica and not just the respirable fraction.

Any concentration shown as a range is to protect confidentiality of trade secret information or is due to process variation. Portland Cements consist of finely ground Portland Cement clinker interground with limestone and a small amount of calcium sulfate to control set. Portland Cement clinker is a sintered material produced by heating to a high temperature (>1200 ℃) a mixture of substances such as limestone and shale from the earth's crust. The substances manufactured are essentially hydraulic calcium silicates contained in a crystalline mass, not separable into the individual components.

In addition to the elements listed above, these products may also contain small amounts of calcium oxide (CaO), magnesium oxide (MgO), potassium sulfate (K2SO4) and sodium sulfate (Na2SO4), which are considered hazardous (and the case of crystalline silica, carcinogenic) and trace amounts (below 0.1%) of chromium salts or compounds (including hexavalent chromium which is also considered carcinogenic) or other metals (including nickel compounds).

This SDS covers several different types of Portland Cements and the composition of the individual constituents mentioned above may vary among the different types. Particle sizes may also vary among different types of Portland Cements.

Section 4: 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. **Get prompt medical attention**.

SKIN CONTACT
Get medical attention immediately. Heavy exposure to dust of Portland Cements, 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 Cements. Immediately wash thoroughly with lukewarm, gently flowing water and non-abrasive pH neutral soap. Seek medical attention for rashes, burns, irritation, dermatitis and prolonged unprotected exposures to wet cement, cement mixtures or liquids from wet cement. Burns should be treated as caustic burns. Portland Cements cause 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. If redness or irritation occurs and persists, **seek medical attention**.

INHALATION
Seek medical help if coughing or other symptoms persist. Inhalation of large amounts of Portland Cements 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 recovery position and **get medical attention immediately**. Maintain an open airway.

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

NOTES TO PHYSICIAN
See all of the above and the POTENTIAL HEALTH EFFECTS in Section 2 above. In particular, note that (i) calcium oxide compounds create severe burns as the compounds tend to react with the moisture and protein of the eyes, forming clumps of moist compounds that act as reservoirs for continued release of calcium hydroxide and (ii) prolonged inhalation of crystalline silica can result in silicosis, a disabling and potentially fatal lung disease, tuberculosis and other diseases, as well as the aggravation of other conditions.

Section 5: Fire Fighting Measures

FLAMMABLE PROPERTIES:
Noncombustible and not explosive.

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.

THERMAL DECOMPOSITION PRODUCTS
Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides and metal oxide/oxides.

PROTECTION OF FIREFIGHTERS:
See POTENTIAL HEALTH EFFECTS in Section 2, and Personal Protective Equipment (PPE) listed under Sections 2 and 8. Firefighters and other emergency service providers should avoid breathing cement dust. Keep up-wind of the fire. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA).

Section 6: Accidental Release Measures

PERSONAL PRECAUTIONS:
Use personal protective equipment (PPE) specified in Section 8 (Exposure Controls/Personal Protection). Also see Section 3 (Hazards Identification), Section 7 (Handling & Storage), and Section 10 (Stability & Reactivity). Clean up quickly and avoid generating dust. Wear suitable respiratory protection if dusty conditions arise. Avoid contact with eyes.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP
Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Vacuum or sweep material and place in a disposal container. Avoid creating dusty conditions and prevent wind dispersal. Spills to waterways may be hazardous due to alkalinity of the product. Dispose of waste material using a licensed waste disposal contractor.

REFERRENCE TO OTHER SECTIONS

Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

ENVIRONMENTAL PRECAUTIONS:
Do not allow spilled material to enter sewers or waterways. Spills to waterways may be hazardous due to alkalinity of the product.

OTHER INFORMATION:
Notify appropriate local authorities of spills into sewers or waterways.

Section 7: Handling and Storage

PRECAUTIONS FOR SAFE HANDLING:
Bagged Portland Cements are heavy and pose risk to the back, legs and other parts of the body when lifting. Bags should be handled carefully and safely using appropriate equipment. Always handle bags in well ventilated areas. Do not swallow. Avoid generating and breathing dust. Good housekeeping is important to prevent accumulation of dust. The use of compressed air for cleaning clothing, equipment, etc, is not recommended. Do not breathe dust. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Minimize dust generation and avoid prolonged and repeated exposure to dusts.

ADVICE FOR 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.

STORAGE:
Keep dry until used. No other special storage procedures are necessary for the protection of Portland Cements. Keep workers off large piles of these products to minimize dust levels and always follow the safety guidelines in the next following paragraph. Do not enter a silo or other enclosure containing bulk quantities of these products without using all appropriate safety precautions as engulfment or suffocation may occur. Portland Cements may form a surface crust which appears solid but may not support the weight of humans. Accordingly, do not stand on Portland cement without using all appropriate safety precautions, including, without limitation, properly employed harnesses, lifelines and all other necessary safety equipment.

OTHER:
Cutting or grinding hardened products containing Portland Cements may release respirable crystalline silica. Use appropriate measures to control dust and wear PPE.
KEEP THESE PRODUCTS OUT OF THE REACH OF CHILDREN.

Also see Section 8 (Exposure Controls/Personal Protection).

Section 8: Exposure Controls / Personal Protection

EXPOSURE GUIDELINES:

Component (%)	CAS No.	OSHA PEL (8-hour TWA)	ACGIH TLV-TWA
Portland Cement clinker	65997-15-1	5 mg/m³ (respirable dust) 15 mg/m³ (total dust)	1 mg/m³ (respirable dust) 10mg/m³ (total dust)
Tricalcium silicate (20-70)	12168-85-3	see Nuisance Dusts PEL	see Nuisance Dusts TLV
Dicalcium silicate (10-60)	10034-77-2	see Nuisance Dusts PEL	see Nuisance Dusts TLV
Tetracalcium aluminoferrrite (5-15)	12068-35-8	see Nuisance Dusts PEL	see Nuisance Dusts TLV
Calcium sulfate Gypsum (2-10)	13397-24-5	see Nuisance Dusts PEL	see Nuisance Dusts TLV
Calcium oxide (0-5)	1305-78-8	5mg/m³	2mg/m³
Tricalcium aluminate (1-15)	12042-78-3	see Nuisance Dusts PEL	see Nuisance Dusts TLV
Magnesium oxide (0-4)	1309-48-4	15 mg/m³ (total dust)	10 mg/m³ (total dust)
Nuisance dusts	---	5 mg/m³ (respirable dust) 15 mg/m³ (total dust)	5 mg/m³ (respirable dust) 10 mg/m³ (total dust)
Crystalline silica (0-.1)	14808-60-7	10 mg/m³ /percent silica + 2 (respirable dust) 30 mg/m³/percent silica + 2 (total dust)	0.025 mg/m³ (respirable dust)

APPROPRIATE ENGINEERING CONTROLS:
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits. Use product upwind to prevent eye and/or respiratory exposure. It is recommended that local exhaust be used to control airborne dust levels whenever feasible.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

EYE/FACE PROTECTION
To prevent eye contact, wear appropriate protective eyewear meeting applicable OSHA standards, i.e. safety glasses with side shields, safety goggles or face shields when handling wet or dry Portland Cements or cement dust. Dust goggles should be worn in extremely dusty conditions. Wearing contact lenses when working with cement is not recommended.

SKIN PROTECTION
Precautions must be taken to protect skin. Avoid contact with the skin, as cement burns the skin with little warning since the heat produced by cement burning is not easily sensed by human skin. Use barrier creams; impervious, abrasion- and alkali-resistant protective clothes, gloves; kneepads, and boots meeting applicable OSHA standards to protect skin from contact with wet cement in plastic (unhardened) concrete, mortar or slurries. Immediately after working with cement or cement containing materials, workers should remove clothing soiled with cement dust and shower with soap and water. Affected clothes should also be thoroughly cleaned.

RESPIRATORY PROTECTION
Precautions must be taken. Avoid breathing cement dust. For dust concentrations above the exposure limits for nuisance dust or silica, a NIOSH/MSHA-approved particulate dust respiratory must be used in accordance with the requirements of 29 CFR 1910.134.

GENERAL HYGIENE CONSIDERATIONS
Practice good housekeeping and hygiene practices to minimize generating and spreading airborne dust. Always wash areas of the body (hands, face, arms, etc.) that have come in contact with the product. Always wash hands and face with soap and water before eating, drinking, or smoking.

Section 9: Physical and Chemical Properties

Physical State: Solid. [Powder.]

Color: Gray or white.

Odor: Odorless.

Odor threshold: Not available.

pH: >11.5 [Conc. (% w/w): 1%]

Melting point: Not available.

Boiling point: >1000°C (>1832°F)

Flash point: Not flammable. Not combustible.

Burning time: Not available.

Burning rate: Not available.

Evaporation rate: Not applicable.

Flammability (solid, gas): Not applicable

OTHER INFORMATION - VOC CONTENT UNAVAILABLE

Lower and upper explosive (flammable) limits: Not applicable.

Vapor pressure: Not applicable.

Vapor density: Not applicable.

Relative density: 3.15

Solubility: Slightly soluble in water.

Solubility in water: 0.1 to 1%

Partition coefficient: n-octanol/water: Not applicable.

Auto-ignition temperature: Not applicable.

Decomposition temperature: Not available.

SADT: Not available.

Viscosity: Not applicable.

Section 10: Stability and Reactivity

REACTIVITY
No dangerous reaction known under conditions of normal use. Reacts slowly with water forming hydrated compounds, releasing heat and producing a strong alkaline solution until reaction is near completion. An alkali reaction from components of Portland Cements will corrode aluminium.

CHEMICAL STABILITY:
Product is stable. Keep dry until used.

Portland Cements react slowly with water forming hardened hydrated compounds, releasing heat and producing a strong alkaline solution.

POSSIBILITY OF HAZARDOUS REACTIONS
Under normal conditions of storage and use, hazardous reactions will not occur.

CONDITIONS TO AVOID:
Moisture – product must be kept dry until ready to use. Avoid high generation of dusts. See "OTHER INFORMATION" in this section for additional conditions to avoid.

INCOMPATIBLE MATERIALS:
Portland Cements are 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. Portland Cements also react with aluminum metals and ammonium salts. Aluminum power 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:
Silica-containing respirable dust particles may be generated if dried product is handled.

OTHER INFORMATION
See also additional precautions Section 5 (Fire Fighting Measures), Section 6 (Accidental Release Measures) and Section 7 (Handling & Storage).

Section 11: Toxicological Information

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity: Not classified. 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

A; General Product Information:

The Occupational Safety and Health Administration (OSHA), the National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) have not listed Portland Cements as a carcinogen.

B: Component Carcinogenicity

These products, however, do contain constituents which are listed by IARC and NTP as carcinogens.Respirable crystalline silica in the form of quartz or cristobalite from occupational sources is listed by the International Agency for Research on Cancer (IARC) and National Toxicology Program (NTP) as a lung carcinogen. Prolonged exposure to respirable crystalline silica has been known to cause silicosis, a lung disease, which may be disabling. While there may be a factor of individual susceptibility to a given exposure to respirable silica dust, the risk of contracting silicosis and the severity of the disease is clearly related to the amount of dust exposure and the length of time (usually years) of exposure.

Chronic Toxicity

Crystalline silica is considered hazardous by inhalation. IARC has classified 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. NTP has also classified respirable crystalline silica as a known carcinogen. Excessive exposure to crystalline silica can cause silicosis, a chronic, progressive and sometimes fatal lung disease which, in turn, increases the risk of pulmonary tuberculosis infection.

Hexavalent chromium has also been classified by IARC as a Group 1 carcinogenic to humans and by NTP as a known carcinogen. Some of the adverse health effects from hexavalent chromium exposures, include nasal and sinus cancers, kidney and liver damage, nasal and skin irritation and ulceration, and eye irritation and damage.

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	3	Inhalation & Skin Contact	Respiratory tract irritation, skin irritation
Cement, Portland Chemicals	3	Inhalation & Skin Contact	Respiratory tract irritation, skin irritation

Specific target organ toxicity (repeated exposure)

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

Aspiration Hazard: There are no data available

INFORMATION ON LIKELY ROUTES OF EXPOSURE

Dermal contact. Eye contact. Inhalation. Ingestion.

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: Causes damage to organs (lung) through prolonged or repeated exposure. (Respirable crystalline silica in the form of quartz or cristobalite from occupational sources is listed by the International Agency for Research on Cancer (IARC) and National Toxicology Program (NTP) as a lung carcinogen. Prolonged exposure to respirable crystalline silica has been known to cause silicosis, a lung disease, which may be disabling. While there may be a factor of individual susceptibility to a given exposure to respirable silica dust, the risk of contracting silicosis and the severity of the disease is clearly related to the amount of dust exposure and the length of time (usually years) of exposure.)

Section 12: Ecological Information

ECOTOXICITY:
Portland Cements harden with water or moisture and is not expected to present unusual ecotoxicity risks. Do not flush to sewer or allow to enter waterways. Portland Cements are alkaline and can increase localized water PH until completely hardened. See Section 9 & 10 for relevant physical and chemical properties.

PERSISTENCE AND DEGRADABILITY
There are no data available

BIOACCUMULATIVE POTENTIAL
There are no 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

WASTE TREATMENT / 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 applicable requirements of environmental protection and waste disposal legislation and any regional local authority applicable 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 applicable 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. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

Section 14: Transport Information

UN NUMBER
Not Applicable

UN PROPER SHIPPING NAME
Not Applicable

BASIC SHIPPING DESCRIPTION
U.S. Department of Transportation (DOT) Highway/Rail (Bulk): Not classified
U.S. Department of Transportation (DOT) Highway/Rail (Non-bulk): Not classified

ADDITIONAL INFORMATION:

The DOT description is provided to assist in the proper shipping classification of this product and may not be suitable for all required shipping descriptions.

Section 15: Regulatory Information

OSHA:
Portland Cements are considered hazardous chemicals under 29 CFR 1910.1200 and should be included in employers' hazardous communication programs.

TSCA (Toxic Substances Control Act):
Portland Cements are considered to be statutory mixtures under TSCA. Cement, Portland, Chemicals [65997-15-1] is included on the TSCA inventory

CERCLA:
This product in not listed as a CERCLA hazardous substance

CLEAN AIR ACT

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

DEA List I Chemicals: (Precursor Chemicals) — Not listed
DEA List II Chemicals: (Essential Chemicals) — Not listed

SARA TITLE III:
Section 302:
This product contains no "Extremely Hazardous Substances."

Section 311/312:
These products are considered a hazardous chemical and may have both immediate (acute) and delayed (Chronic)health effects.

Section 313:
This product does not contain any constituents listed under SARA (Title III) Section 313 in amounts requiring supplier notification under 40 CFR part 372 Subpart C

FEDERAL HAZARDOUS SUBSTANCE ACT
Portland Cements are "hazardous substances" subject to statutes promulgated under this Act.

INTERNATIONAL REGULATIONS
Not applicable since not shipped internationally.

US STATE REGULATIONS:

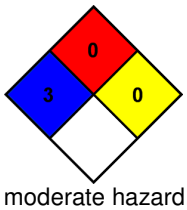
California Proposition 65:
These Portland Cements may contain the following chemicals known to the State of California to cause cancer:

Name	CAS Number
Crystalline Silica	14808-60-7
Chromium VI compounds	Various
Nickel Compounds	Various
Nickel	Various
Lead	Various

California law requires the manufacturer to give the above warning in the absence of definitive testing to prove that the defined risks do not exist.

Section 16: Other Information

NFPA Ratings:



Health: 3
Flammability: 0
Reactivity: 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Capitol Aggregates Inc.
11551 Nacogdoches Rd.
San Antonio, Texas 78217
(210)-871-6111

WARNING
Portland cement is made from a number of different substances, including calcium sulfate ($CaSO_4 \bullet 2H_20$) and calcium carbonate ($CaCO_3$). Small amounts of crystalline silica (Si02), calcium oxide (CaO), magnesium oxide (MgO), potassium sulfate (K_2SO_4) and sodium sulfate (Na_2SO_4) may also be present, as may trace amounts of hexavalent chromium (CrVI). These substances are considered to be hazardous. Crystalline silica and hexavalent chromium are substances which some health organizations believe are carcinogens.
CONTACT WITH WET OR DRY CEMENT IS DANGEROUS AND MAY CAUSE SEVERE SKIN IRRITATION, CHEMICAL BURNS, AS WELL AS DAMAGE TO HUMAN TISSUE, INCLUDING EYES AND OTHER ORGANS. IN ADDITION, BREATHING CEMENT DUST OVER A PERIOD OF TIME MAY IN SOME CASES RESULT IN CANCER AND OTHER DISEASES. AS A RESULT, PROTECT YOURSELF FROM CONTACT WITH THIS PRODUCT. DO NOT BREATHE CEMENT DUST. WHEN WORKING WITH CEMENT (WET OR DRY) ALWAYS WEAR PROTECTIVE IMPERVIOUS CLOTHING, EYEWEAR, WATERPROOF GLOVES AND, IF APPROPRIATE, WATERPROOF KNEEPADS AND BOOTS. IN DUSTY CONDITIONS, ALSO WEAR A NIOSH/MSHA APPROVED RESPIRATOR. If any contact with skin or eyes occurs, immediately flush the area thoroughly with clean water and rinse any affected clothing. If ingested, drink water; do not induce vomiting. In the event of eye contact, inhalation, ingestion, or if irritation or pain is severe or persists, seek medical attention immediately. BEFORE USING, ALSO READ THE SAFETY DATA SHEET FOR THIS PRODUCT FOUND AT **WWW.CAPITOLAGGREGATES.COM.**

KEEP OUT OF THE REACH OF CHILDREN

Product Identifier:
PORTLAND CEMENT
CAS NO. 65997-15-1

Hazard Statement: **DANGER**
Can cause severe skin burns and eye damage. May cause an allergic skin reaction.
May cause cancer (Inhalation). May cause respiratory irritation (inhalation).

ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
ASTM	American Society for Testing and Materials
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DOT	Department of Transportation
ft^3	Cubic Foot
IARC	International Agency for Research on Cancer
m^3	Cubic meter
mg	Milligram
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
N/A	Not applicable
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
RQ	Reportable Quantity
TLV	Threshold Limit Value
TRI	Toxic Release Inventory
TSCA	Toxic Substance Control Act

NOTE: This SDS attempts to describe as accurately as possible the potential exposures associated with normal use of these products. Health and safety precautions on this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable environmental, health, and safety laws and regulations.

Revised September 23, 2015
Supersedes any and all previous versions (extensive revisions were made)

Disclaimer of Warranty:

While the information provided herein is believed to provide a useful summary of the hazards of the different types of Portland Cements designated above as commonly used, this SDS cannot anticipate and provide all of the information that might be needed by every individual in every situation. Inexperienced users should obtain proper training prior to using any Portland Cements and no one should use any Portland Cements without following all applicable safety laws and regulations related to its storage, handling, use and disposal and without first understanding the potential hazards of mixing Portland Cements with other materials. This SDS does not cover such potential hazards.

The information provided in this SDS is believed by Capitol Aggregates, Inc. to be accurate at the time it was prepared or it was prepared from sources then believed to be reliable. It is the

responsibility of the user independently to investigate and understand other pertinent sources of information and to comply with all laws, regulations and procedures applicable to the safe storage, handling, use and disposal of Portland Cements. It is also the responsibility of the user to independently determine the suitability or fitness of any of the products covered by this SDS for their intended uses.

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Dear Customer

Whether you are a long term customer or a new contractor, we would like to thank you for purchasing Capitol Aggregates Products. We are a Texas owned Company and produce all of our products in the State of Texas. This Safety Data Sheet (SDS), provided for the product you purchased or intend to use is a revision and replaces any previous versions formerly known as Material Safety Data Sheets or (MSDS). We are providing you this SDS as required by the Mine Safety & Health Administration's (MSHA), or the Occupational Safety & Health Administration, OSHA, and any applicable State Right-To –Know laws. The requirements applicable to the OSHA and MSHA Hazard Communication Standards can be found at 29 CFR 1910.1200 for OSHA and 30 CFR 47 for MSHA.

It is an important responsibility for you as a customer or contractor to communicate this information to your employees, customers, and contractors who may use, contact, or be exposed to this product. It is also an important consideration and responsibility for you to follow any applicable laws that require you to forward a copy of this SDS to your customers or end users. Please direct this SDS to the person responsible for safety and health compliance at your company as they may be able to assist you with any of the necessary requirements. If you need additional copies or have questions about this SDS please contact 210-871-6111, or visit us at www.capitolaggregates.com .

Spanish language versions will be available in the near future at www.capitolaggregates.com .

Sincerely

Chuck Ross
Director of Safety