

# Rinker Materials

MATERIAL SAFETY DATA SHEET  
for  
**PORTLAND CEMENT**  
Type I, II, or III  
(wet unhardened cement and dry cement)

## Section I - Product and Company Identification

**Material Identity (Trade Names):** Portland Cement Type I, II, or III (Portland Cement, hydraulic cement)

**Manufacturer's Name:** Rinker Materials Corp.

**Emergency Telephone Number:** 1-800-226-3768 ext. 2436

**Address:** 1501 Belvedere Road  
West Palm Bch. Fl 33406

**Telephone Number for Information:** 1-800-226-3768 ext. 2436  
**Internet Web Site:** [www.rinker.com](http://www.rinker.com)

**Preparer:** Clayton Group Services, Inc.,

## Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Chemical Identity/Common Names)	CAS No.	OSHA PEL	ACGIH TLV	MSHA PEL	%
Portland Cement	65997-15-1	15 mg/m <sup>3</sup> (Total) 5 mg/m <sup>3</sup> (Respirable)	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> (Total)	100%
Crystalline Silica (Quartz)	14808-60-7	30/(%SiO <sub>2</sub> +2) mg/m <sup>3</sup> (Total) 10/(%SiO <sub>2</sub> +2) mg/m <sup>3</sup> (Respirable)	0.05 mg/m <sup>3</sup> (Respirable quartz)	30/(%SiO <sub>2</sub> +3) mg/m <sup>3</sup> (Total) 10/(%SiO <sub>2</sub> +2) mg/m <sup>3</sup> (Respirable)	0-3%

## Section III - Physical/Chemical Characteristics

<b>Boiling Point</b>	Not Applicable	<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	3.15
<b>Vapor Pressure (mm Hg)</b>	Not Applicable	<b>Melting Point</b>	Not Applicable
<b>Vapor Density (Air = 1)</b>	Not Applicable	<b>Evaporation Rate (Butyl Acetate = 1)</b>	Not Applicable

**Solubility in Water:** Slightly soluble (0.1 to 1.0 %) in water.

**Appearance and Odor:** Grayish powder that has no odor.

## Section IV - Fire and Explosion Hazard Data

**Flash Point:** Not Combustible

**Flammable Limits:** Not Flammable

**LEL:** N/A

**UEL:** N/A

**Extinguishing Media:** This material is noncombustible. Use extinguishing media appropriate to surrounding fire.

## Section IV - Fire and Explosion Hazard Data (continued)

**Special Fire Fighting Procedures:** Avoid exposing skin to wet cement. Be aware of runoff from fire control methods. Do not release material to sewers or waterways, as product reacts with water and hardens within 2 to 6 hours. Hardened material may clog sewers and waterways.

**Unusual Fire and Explosion Hazards:** None reported.

## Section V - Reactivity Data

<b>Stability:</b> Keep dry until use.	<b>Unstable</b>		<b>Conditions to Avoid:</b> This material is stable at room temperature under normal storage and handling conditions. Product reacts with water and hardens in 2 to 6 hours.
	<b>Stable</b>	X	

**Incompatibility (Materials to Avoid):** Stable under expected conditions of use. Aluminum powder and other alkali and alkaline earth metals will react in wet mortar or concrete, liberating hydrogen gas. Under unexpected conditions of use, material may react with hydrofluoric acid to produce a corrosive gas (silicon tetrafluoride). Also, contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions.

**Hazardous Decomposition or Byproducts:** None reported.

**Hazardous Polymerization:** Not known to occur.

## Section VI - Health Hazard Data

**Route(s) of Entry:**                      **Inhalation?** Yes              **Skin?** No                      **Ingestion?** Unlikely

### Health Hazards:

**Acute Effects:** Exposure to airborne cement dust may cause eye, nose, upper respiratory tract irritation, cough, expectoration, shortness of breath, and wheezing. Eye contact with wet or dry cement may cause burning and possible corneal edema. Direct contact with wet cement may cause extensive skin burns with dermal necrosis. Within 12 to 48 hours (after one to six-hour exposures) possible first, second, or third degree burns may occur. There may be no obvious pain at the time of the exposure. Ingestion of dry cement or unhardened wet cement causes esophagus and stomach burns.

Use of cement for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

### Chronic Effects:

Chronic bronchitis may result from chronic exposure to dust. There are reports of x-ray changes without symptoms in cement workers exposed to Portland Cement. Chronic dermatitis may result from chronic skin exposure to wet cement. The contact dermatitis may clear up only after a prolonged time after the exposures ends.

Portland cement may contain more than 0.1% crystalline silica, which is a cancer hazard if inhaled. Cancer risk depends on duration and level of exposure. Prolonged exposure to crystalline silica can cause silicosis, a progressive pneumoconiosis (lung disease). Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a

## Section VI - Health Hazard Data (continued)

causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk in developing lung cancer, a risk that increases with duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking.

**Carcinogenicity:** Portland cement is not listed on the NTP, IARC, or OSHA lists of carcinogens. However, in October 1996, IARC classified respirable crystalline silica from occupational sources as carcinogenic (Group 1). The NTP indicates that crystalline silica (respirable size) is a known human carcinogen (Group 1). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

### Signs and Symptoms of Exposure:

Cement dust is a skin, eye, and mucous membrane irritant. Its principal health hazard (with the addition of water) occurs when it forms alkaline, abrasive, hygroscopic (moisture absorbing) calcium hydroxide (slaked lime) in powdered or slurried form. Dry cement alone does not cause an alkaline burn. Some individuals appear to tolerate brief skin contact with wet cement, but others develop extensive skin burns. Repeated and prolonged skin contact can cause dermatitis, including: skin dryness, fissures, rashes, and nail dystrophy.

Chronic exposure to respirable dust containing crystalline silica in excess of applicable OSHA PELs, MSHA PELs, and ACGIH TLVs has caused silicosis, a progressive lung disease. Chronic tobacco smoking may further increase the risk of developing chronic lung problems. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis is progressive, and symptoms can appear at any time, even years after exposures have ceased. Symptoms of silicosis may include (but are not limited to): shortness of breath, difficulty breathing with or without exertion, coughing, diminished work capacity, diminished chest expansion, reduction of lung volume, right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

### Medical Conditions Generally Aggravated by Exposure:

Individuals with chronic respiratory disorders or skin diseases should minimize inhalation and skin contact with cement. Inhaling respirable cement dust may aggravate existing respiratory diseases or dysfunction. Exposure to dust may aggravate existing skin and/or eye irritations.

**Physicians Note:** Ingestion of large amounts of material is unlikely. However, to prevent re-exposing the esophagus and stomach, do not induce emesis or perform gastric lavage. Immediate dilution may prevent esophageal burns. For severe burns, consider esophagoscopy within the first 24 hours. Neutralization with acidic agents is not advised because of increased risks of exothermic burns. Water-mineral oil soaks may aid in removing hardened cement from the skin. Dried-on cement is extremely difficult to remove; surgical debridement or even skin grafting may be necessary. Consult an ophthalmologist for ocular burns.

### Emergency and First Aid Procedures:

**Dust or Wet Cement in Eyes:** Gently lift the eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately if irritation persists.

**Wet Cement on Skin:** Quickly remove contaminated clothing. Rinse with flooding amounts of water for at least 15 minutes. Rinsing the exposed area with dextrose water may slow the hardening process. For reddened or blistered skin, consult a physician. Wash affected areas with soap and water. Treat acute dermal reactions to wet cement as you would for lye burns. Consult a physician immediately if irritation persists.

**Inhalation of Dust:** Remove exposed person to fresh air and support breathing as needed. Consult a physician immediately if irritation persists.

**Ingestion:** Never give anything by mouth to an unconscious or convulsing person. If the material is ingested, have the conscious person drink 4 to 8 oz. of water or milk. Consult a physician immediately.

## Section VII - Precautions for Safe Handling and Use

**Steps to Be Taken in Case Material is Released or Spilled:** Cleanup personnel should protect against dust inhalation and direct contact with wet cement using the procedures in Section VIII. Avoid creating airborne dust conditions. Spilled materials, where dust can be generated, may expose cleanup personnel to respirable dust containing crystalline silica. Use methods such as vacuuming (with an appropriate filter) or wet mopping to minimize dust dispersion. Carefully scoop dry material into a suitable container for disposal or reclamation. Wet or unhardened cement should be recycled or allowed to harden and disposed.

**Waste Disposal Method:** Allow wet unhardened cement to harden and dispose in a landfill as common waste. Follow applicable Federal, State, and local regulations for disposal of dry cement. The material is not listed as a hazardous waste under designations by the EPA or DOT.

**Precautions to Be Taken in Handling and Storing:** Follow protective controls defined in Section VIII when handling wet or dry cement. Dry cement should be stored such that moisture does not come in contact with the material until it is ready to be used.

## Section VIII - Control Measures

**Respiratory Protection:** When exposed or likely to be exposed to dust above recommended limits, wear a suitable NIOSH-approved respirator with a protection factor appropriate for the level of exposure. Seek guidance from a qualified industrial hygienist, safety professional, or other suitably knowledgeable individual prior to respirator selection and use. For emergency or nonroutine operations (e.g., confined spaces), additional precautions or equipment may be required. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

<b>Ventilation</b>	<b>Local Exhaust:</b> Provide general or local ventilation systems, as needed, to maintain airborne dust concentrations below the OSHA PELs, MSHA PELs, and ACGIH TLVs. Local exhaust ventilation is preferred since it prevents release of contaminants into the work area by controlling it at the source.	<b>Other:</b> Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of applicable OSHA PELs, MSHA PELs, and ACGIH TLVs should be reduced by all feasible engineering controls including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.
	<b>Mechanical (General):</b> See above recommendations.	<b>Special:</b> None Reported

**Skin Protection:** Wash skin exposed to dust and wet cement thoroughly after handling. If hands or feet will be immersed in cement, wear impervious gloves and/or boots. Wash work clothes after each use.

**Eye Protection:** Wear safety glasses with side shields as minimum protection from blowing dust. Tightly fitting goggles should be worn when excessively (visible) dusty conditions are present or anticipated, or when there is a splash hazard from wet cement.

**Other Protective Clothing or Equipment:** Wear suitable protective clothing, as needed, to minimize skin contact.

**Work/Hygienic Practices:** Avoid dust inhalation and direct contact with skin and eyes. Wear suitable protective clothing and gear when handling cement. If respiratory protection is used, institute a respiratory protection program that includes regular training, inspection, maintenance, and evaluation. To prevent ingestion and skin contact, practice good personal hygiene. Wash contaminated skin before eating, drinking, lavatory use, and before applying cosmetics.

### DISCLAIMER:

The information contained in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. The information set forth herein is based on technical data that the Company believes to be accurate. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside the Company's control, the Company makes no warranties, expressed or implied, and assumes no liability in connection with any use of this information.