

US EPA ARCHIVE DOCUMENT

# Material Safety Data Sheet

## Section 1: PRODUCT AND COMPANY INFORMATION

**Product Name(s):** Lafarge Portland Cement (cement)

**Product Identifiers:** Cement, Portland Cement, Hydraulic Cement, Oil Well Cement, Trinity<sup>®</sup> White Cement, Antique White Cement, Portland Cement Type I, IA, IE, II, I/II, IIA, II L.A., III, IIIA, IV, IVA, V, VA, 10, 20, 30, 40, 50, GU, MS, MH, HE, LH, HS, OWH, OWG Cement, OW Class G HSR

**Manufacturer:**

Lafarge North America Inc.  
12950 Worldgate Drive, Suite 500  
Herndon, VA 20170

**Information Telephone Number:**

703-480-3600 (9am to 5pm EST)

**Emergency Telephone Number:**

1-800-451-8346 (3E Hotline)

**Product Use:**

Cement is used as a binder in concrete and mortars that are widely used in construction. Cement is distributed in bags, totes and bulk shipment.

**Note:**

This MSDS covers many types of Portland cement. Individual composition of hazardous constituents will vary between types of Portland cement.

## Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

| Component          | Percent (By Weight) | CAS Number | OSHA PEL -TWA (mg/m <sup>3</sup> )                                       | ACGIH TLV-TWA (mg/m <sup>3</sup> ) | LD <sub>50</sub> (mouse, intraperitoneal) | LC <sub>50</sub> |
|--------------------|---------------------|------------|--------------------------------------------------------------------------|------------------------------------|-------------------------------------------|------------------|
| Portland Cement*   | 100                 | 65997-15-1 | 15 (T); 5 (R)                                                            | 10 (R)                             | NA                                        | NA               |
| Calcium Sulfate*   | 2-10                | 13397-24-5 | 15 (T); 5 (R)                                                            | 10 (T)                             | NA                                        | NA               |
| Calcium Carbonate* | 0-5                 | 1317-65-3  | 15 (T); 5 (R)                                                            | 10 (T)                             | NA                                        | NA               |
| Calcium Oxide      | 0-5                 | 1305-78-8  | 5 (T)                                                                    | 2 (T)                              | 3059 mg/kg                                | NA               |
| Magnesium Oxide    | 0-4                 | 1309-48-4  | 15 (T)                                                                   | 10 (T)                             | NA                                        | NA               |
| Crystalline Silica | 0-0.2               | 14808-60-7 | [(10) / (%SiO <sub>2</sub> +2)] (R); [(30) / (%SiO <sub>2</sub> +2)] (T) | 0.025 (R)                          | NA                                        | NA               |

Note: Exposure limits for components noted with an \* contain no asbestos and <1% crystalline silica

Cement is made from materials mined from the earth and is processed using energy provided by fuels. Trace amounts of chemicals may be detected during chemical analysis. For example, cement may contain trace amounts of calcium oxide (also known as free lime or quick lime), free magnesium oxide, potassium and sodium sulfate compounds, chromium compounds, nickel compounds, and other trace compounds.

## Section 3: HAZARD IDENTIFICATION

|                                                                                     |                                                                                                                                                                                                                                                                                                                                   |                                                                                       |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  | <p style="text-align: center;"><b>WARNING</b></p> <p>Corrosive - Causes severe burns.<br/>Toxic - Harmful by inhalation.<br/>(Contains crystalline silica)</p> <p>Use proper engineering controls, work practices, and personal protective equipment to prevent exposure to wet or dry product.</p> <p>Read MSDS for details.</p> |  |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|

### Section 3: HAZARD IDENTIFICATION (continued)

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**Emergency Overview:** Cement is a solid, grey, off white, or white odorless powder. It is not combustible or explosive. A single, short-term exposure to the dry powder presents little or no hazard. Exposure of sufficient duration to wet cement, or to dry cement on moist areas of the body, can cause serious, potentially irreversible tissue (skin, eye, respiratory tract) damage due to chemical (caustic) burns, including third degree burns.

**Potential Health Effects:**

**Eye Contact:** Airborne dust may cause immediate or delayed irritation or inflammation. Eye contact with large amounts of dry powder or with wet cement can cause moderate eye irritation, chemical burns and blindness. Eye exposures require immediate first aid and medical attention to prevent significant damage to the eye.

**Skin Contact:** Cement may cause dry skin, discomfort, irritation, severe burns, and dermatitis.

Burns: Exposure of sufficient duration to wet cement, or to dry cement on moist areas of the body, can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. A skin exposure may be hazardous even if there is no pain or discomfort.

Dermatitis: Cement is capable of causing dermatitis by irritation and allergy. Skin affected by dermatitis may include symptoms such as, redness, itching, rash, scaling, and cracking.

Irritant dermatitis is caused by the physical properties of cement including alkalinity and abrasion.

Allergic contact dermatitis is caused by sensitization to hexavalent chromium (chromate) present in cement. The reaction can range from a mild rash to severe skin ulcers. Persons already sensitized may react to the first contact with cement. Others may develop allergic dermatitis after years of repeated contact with cement.

**Inhalation (acute):** Breathing dust may cause nose, throat or lung irritation, including choking, depending on the degree of exposure. Inhalation of high levels of dust can cause chemical burns to the nose, throat and lungs.

**Inhalation (chronic):** Risk of injury depends on duration and level of exposure.

Silicosis: This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease. See Note to Physicians in Section 4 for further information.

Carcinogenicity: Cement is not listed as a carcinogen by IARC or NTP; however, cement contains trace amounts of crystalline silica and hexavalent chromium which are classified by IARC and NTP as known human carcinogens.

Autoimmune Disease: Some studies show that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders such as scleroderma (thickening of the skin), systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys.

Tuberculosis: Silicosis increases the risk of tuberculosis.

Renal Disease: Some studies show an increased incidence of chronic kidney disease and end-stage renal disease in workers exposed to respirable crystalline silica.

### Section 3: HAZARD IDENTIFICATION (continued)

**Ingestion:** Do not ingest cement. Although ingestion of small quantities of cement is not known to be harmful, large quantities can cause chemical burns in the mouth, throat, stomach, and digestive tract.

**Medical Conditions Aggravated by Exposure:** Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) or sensitivity to hexavalent chromium can be aggravated by exposure.

### Section 4: FIRST AID MEASURES

**Eye Contact:** Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns.

**Skin Contact:** Wash with cool water and a pH neutral soap or a mild skin detergent. Seek medical attention for rash, burns, irritation, dermatitis, and prolonged unprotected exposures to wet cement, cement mixtures or liquids from wet cement.

**Inhalation:** Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

**Ingestion:** Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.

**Note to Physician:** The three types of silicosis include:

- Simple chronic silicosis – which results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).
- Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.
- Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.

### Section 5: FIREFIGHTING MEASURES

|                                 |                                                           |                                |                                                                                                                              |
|---------------------------------|-----------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Flashpoint &amp; Method:</b> | Non-combustible                                           | <b>Firefighting Equipment:</b> | Cement poses no fire-related hazard. A SCBA is recommended to limit exposures to combustion products when fighting any fire. |
| <b>General Hazard:</b>          | Avoid breathing dust. Wet cement is caustic.              |                                |                                                                                                                              |
| <b>Extinguishing Media:</b>     | Use extinguishing media appropriate for surrounding fire. | <b>Combustion Products:</b>    | None.                                                                                                                        |

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**Section 6: ACCIDENTAL RELEASE MEASURES**

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**General:** Place spilled material into a container. Avoid actions that cause the cement to become airborne. Avoid inhalation of cement and contact with skin. Wear appropriate protective equipment as described in Section 8. Scrape wet cement and place in container. Allow material to dry or solidify before disposal. Do not wash cement down sewage and drainage systems or into bodies of water (e.g. streams).

**Waste Disposal Method:** Dispose of cement according to Federal, State, Provincial and Local regulations.

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**Section 7: HANDLING AND STORAGE**

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**General:** Keep bulk and bagged cement dry until used. Stack bagged material in a secure manner to prevent falling. Bagged cement is heavy and poses risks such as sprains and strains to the back, arms, shoulders and legs during lifting and mixing. Handle with care and use appropriate control measures.

Engulfment hazard. To prevent burial or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains cement. Cement can buildup or adhere to the walls of a confined space. The cement can release, collapse or fall unexpectedly.

Properly ground all pneumatic conveyance systems. The potential exists for static build-up and static discharge when moving cement powders through a plastic, non-conductive, or non-grounded pneumatic conveyance system. The static discharge may result in damage to equipment and injury to workers.

**Usage:** Cutting, crushing or grinding hardened cement, concrete or other crystalline silica-bearing materials will release respirable crystalline silica. Use all appropriate measures of dust control or suppression, and Personal Protective Equipment (PPE) described in Section 8 below.

**Housekeeping:** Avoid actions that cause the cement to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust. Use PPE described in Section 8 below.

**Storage Temperature:** Unlimited. **Storage Pressure:** Unlimited.

**Clothing:** Promptly remove and launder clothing that is dusty or wet with cement. Thoroughly wash skin after exposure to dust or wet cement.

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**Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION**

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**Engineering Controls:** Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits.

**Personal Protective Equipment (PPE):**

**Respiratory Protection:** Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator that is properly fitted and is in good condition when exposed to dust above exposure limits.

**Eye Protection:** Wear ANSI approved glasses or safety goggles when handling dust or wet cement to prevent contact with eyes. Wearing contact lenses when using cement, under dusty conditions, is not recommended.

## Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION (continued)

**Skin Protection:** Wear gloves, boot covers and protective clothing impervious to water to prevent skin contact. Do not rely on barrier creams, in place of impervious gloves. Remove clothing and protective equipment that becomes saturated with wet cement and immediately wash exposed areas.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

|                          |                                  |                             |                       |
|--------------------------|----------------------------------|-----------------------------|-----------------------|
| <b>Physical State:</b>   | Solid (powder).                  | <b>Evaporation Rate:</b>    | NA.                   |
| <b>Appearance:</b>       | Gray, off white or white powder. | <b>pH (in water):</b>       | 12 – 13               |
| <b>Odor:</b>             | None.                            | <b>Boiling Point:</b>       | >1000° C              |
| <b>Vapor Pressure:</b>   | NA.                              | <b>Freezing Point:</b>      | None, solid.          |
| <b>Vapor Density:</b>    | NA.                              | <b>Viscosity:</b>           | None, solid.          |
| <b>Specific Gravity:</b> | 3.15                             | <b>Solubility in Water:</b> | Slightly (0.1 - 1.0%) |

## Section 10: STABILITY AND REACTIVITY

**Stability:** Stable. Keep dry until use. Avoid contact with incompatible materials.

**Incompatibility:** Wet cement is alkaline and is incompatible with acids, ammonium salts and aluminum metal. Cement dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

**Hazardous Polymerization:** None. **Hazardous Decomposition:** None.

## Section 11 and 12: TOXICOLOGICAL AND ECOLOGICAL INFORMATION

For questions regarding toxicological and ecological information refer to contact information in Section 1.

## Section 13: DISPOSAL CONSIDERATIONS

Dispose of waste and containers in compliance with applicable Federal, State, Provincial and Local regulations.

## Section 14: TRANSPORT INFORMATION

This product is not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations.

## Section 15: REGULATORY INFORMATION

**OSHA/MSHA Hazard Communication:** This product is considered by OSHA/MSHA to be a hazardous chemical and should be included in the employer's hazard communication program.

**CERCLA/SUPERFUND:** This product is not listed as a CERCLA hazardous substance.

**EPCRA SARA Title III:** This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.

**EPCRA SARA Section 313:** This product contains none of the substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

**Section 15: REGULATORY INFORMATION (continued)**

- RCRA:** If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.
- TSCA:** Portland cement and crystalline silica are exempt from reporting under the inventory update rule.
- California Proposition 65:** Crystalline silica (airborne particulates of respirable size) and Chromium (hexavalent compounds) are substances known by the State of California to cause cancer.
- WHMIS/DSL:** Products containing crystalline silica and calcium carbonate are classified as D2A, E and are subject to WHMIS requirements.


**Section 16: OTHER INFORMATION**
**Abbreviations:**

|                   |                                                                      |       |                                                       |
|-------------------|----------------------------------------------------------------------|-------|-------------------------------------------------------|
| >                 | Greater than                                                         | NA    | Not Applicable                                        |
| ACGIH             | American Conference of Governmental Industrial Hygienists            | NFPA  | National Fire Protection Association                  |
| CAS No            | Chemical Abstract Service number                                     | NIOSH | National Institute for Occupational Safety and Health |
| CERCLA            | Comprehensive Environmental Response, Compensation and Liability Act | NTP   | National Toxicology Program                           |
|                   |                                                                      | OSHA  | Occupational Safety and Health Administration         |
| CFR               | Code for Federal Regulations                                         | PEL   | Permissible Exposure Limit                            |
| CL                | Ceiling Limit                                                        | pH    | Negative log of hydrogen ion                          |
| DOT               | U.S. Department of Transportation                                    | PPE   | Personal Protective Equipment                         |
| EST               | Eastern Standard Time                                                | R     | Respirable Particulate                                |
| HEPA              | High-Efficiency Particulate Air                                      | RCRA  | Resource Conservation and Recovery Act                |
| HMIS              | Hazardous Materials Identification System                            | SARA  | Superfund Amendments and Reauthorization Act          |
| IARC              | International Agency for Research on Cancer                          | T     | Total Particulate                                     |
|                   |                                                                      | TDG   | Transportation of Dangerous Goods                     |
| LC <sub>50</sub>  | Lethal Concentration                                                 | TLV   | Threshold Limit Value                                 |
| LD <sub>50</sub>  | Lethal Dose                                                          | TWA   | Time Weighted Average (8 hour)                        |
| mg/m <sup>3</sup> | Milligrams per cubic meter                                           | WHMIS | Workplace Hazardous Materials Information System      |
| MSHA              | Mine Safety and Health Administration                                |       |                                                       |

This MSDS (Sections 1-16) was revised on March 1, 2008.

An electronic version of this MSDS is available at: [www.lafarge-na.com](http://www.lafarge-na.com) under the Products section.

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