LEHIGH PORTLAND CEMENT COMPANY
OSHA 29CFR 1910.1200
CORPORATE OFFICE

Material Safety Data Sheet

for

Portland Cements

Section I-Identity

Manufacturer's name and address: Lehigh Portland Cement Company
7660 Imperial Way
Allentown, PA 18195

Emergency Telephone Number: (215) 366-4650

Chemical Name and Synonyms: Portland Cement (CAS #65997-15-1)
Hydraulic Cement

Trade Name and Synonyms: Lehigh Portland Cements
Lehigh White Portland Cements
Lehigh Colored Portland Cements

Section II-Chemical Data

Chemical family: Calcium Salts

Formula: Portland cement consists of finely ground portland cement clinker mixed with a small amount of calcium sulfate to control set. Portland cement clinker is a sintered material produced by heating to high temperature (greater than 1200 degrees Celsius) 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.

Substances similar to the following are known to be present in portland cement:

\[
\begin{align*}
3\text{CaO}\cdot\text{SiO}_2 & \quad (\text{CAS} \ # \ 12168-85-3) \\
2\text{CaO}\cdot\text{SiO}_2 & \quad (\text{CAS} \ # \ 10034-77-2) \\
3\text{CaO}\cdot\text{Al}_2\text{O}_3 & \quad (\text{CAS} \ # \ 12042-78-3) \\
4\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot\text{Fe}_2\text{O}_3 & \quad (\text{CAS} \ # \ 12068-35-8) \\
\text{CaSO}_4\cdot2\cdot\text{H}_2\text{O} & \quad (\text{CAS} \ # \ 13397-24-5) \\
\end{align*}
\]

Small amounts of CaO, MgO, K\text{SO}_{4}, Na\text{SO}_{4} may also be present.

7660 IMPERIAL WAY • ALLENTOWN, PA 18195 • 215/366-4600 • FAX 215/366-4684

LEHIGH
Section III-Hazardous Ingredients

Ingredients: Portland cements are listed by OSHA in 29 CFR 1010.1000, Table Z-1-A, and require material safety data sheets (FR, January 19, 1989). MSHA (30 CFR 55.5-1, Ref. 2), ACGIH (TLV's for 1973, Appendix E) and ACGIH (TLV's for 1984-5, Appendix D) list portland cements as nuisance dusts. Portland Cements are NOT listed by NTP, IARC, OR OSHA as carcinogens. However, since portland cement is manufactured from raw materials mined from the earth (limestone, marl, sand, shale, clay, etc.) and process heat is provided by burning fossil fuels, trace, but detectable, amounts of naturally occurring, and possible harmful, elements may be found during chemical analysis. Under ASTM standards, portland cement may contain .75 percent insoluble residue. A fraction of these residues may be free crystalline silica.

California & New Jersey Residents see attachment

Section IV-Physical Data

Boiling Point: Not applicable, portland cement is a powdered solid.

Vapor Pressure: Not applicable, portland cement is a powdered solid.

Vapor Density: Not applicable, portland cement is a powdered solid.

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity: \((H_2O=1)\) 3.15

Evaporation Rate: Not applicable, portland cement is a powdered solid.

Appearance and Odor: Gray, white, or colored powder; no odor.

Melting Point: Not applicable.

Section V-Fire and Explosion Hazard Data

Flash Point: Portland cements are noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable.

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: None.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.
Section VI-Health Hazard Data

ACGIH Threshold Limit Value (1988-89): Total dust containing no asbestos and less than 1% silica - 10 mg/m³

OSHA PEL (Transitional): Total dust - 50 million particles/ft³

OSHA PEL (Final): Total dust - 10 mg/m³ Respirable dust - 5 mg/m³

Effects of Overexposure:

Acute: Portland cement when dry is non-hazardous. When in contact with moisture (such as in eyes or on skin) or when mixed with water to make concrete, mortar, or grout it becomes highly caustic and will burn (as severely as third-degree) the eyes or skin. Inhalation of dry portland cement can irritate the upper respiratory system.

Chronic: Cement dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis. (Cement may contain trace (less than 0.05%) amounts of chromium salts or compounds including hexavalent chromium, or other metals found to be hazardous or toxic in some chemical forms. These metals are mostly present as trace substitutions within the principal minerals.)

Emergency and First Aid Procedures: Flush eyes immediately and repeatedly with water and seek prompt medical attention. Wash exposed skin areas with soap and water. If irritation or inflammation occurs seek prompt medical attention.

Section VII-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VIII-Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.
Disposal Method: Small amounts of material can be disposed of as common waste or returned to the container for later use if not contaminated. Large volumes may require special handling.

Section IX-Special Protection Information

Respiratory Protection: Use a MSHA/NIOSH approved respirator in dusty environments.

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: Use tight fitting goggles in dusty environments, or when working in concrete construction.

Skin Protection: Use barrier creams, impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries. Immediately after working with cement or cement-containing materials, workers should shower with soap and water. Precautions must be taken. A cement burn occurs with very little warning as little heat is sensed by the skin.

Section X-Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists</td>
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<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
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<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>ft³</td>
<td>Cubic foot</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<tr>
<td>m</td>
<td>Cubic meter</td>
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<tr>
<td>mg</td>
<td>Milligram</td>
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<tr>
<td>MSHA</td>
<td>Mine Safety and Health Administration</td>
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<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
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<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
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<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>TLV's</td>
<td>Threshold Limit Values</td>
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Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in 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 laws and regulations.

RWK:dam
Attachment

California Residents:
THIS PRODUCT CONTAINS ONE OR MORE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

The State of California (Proposition #65) requires the above warning in the absence of definitive testing to prove that the defined risks do not exist. We believe this product complies with all applicable state and federal laws and regulations governing manufacture, distribution, and intended use.

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New Jersey Residents:
Portland Cement (CAS #65997-15-1) contains:
  Tricalcium Silicate (CAS #12168-85-3)
  Dicalcium Silicate (CAS #10034-77-2)
  Tricalcium Aluminate (CAS #12042-78-3)
  Tetracalcium Aluminoferrite (CAS #12068-35-8)
  Calcium Sulfate (CAS #13397-24-5)