

1. Product Name

- Portland Cement

2. Manufacturer

Holcim (US) Inc.
8700 Bryn Mawr Avenue
Chicago, IL 60631
Phone: (888) 646-5246
E-mail: ask@holcim.com
Web: www.holcim.us

3. Product Description

Usage

Portland cement is a building material that can be used in a wide variety of concrete construction, including commercial and architectural applications. Concrete made with portland cement using proper mix design and construction practices can be durable and resistant to the impact of harsh environmental influences, such as freezing and thawing, exposure to de-icing chemicals, chloride ingress, and sulfate attack.

Portland cement is produced to meet ASTM C150 and AASHTO M 85 for one or more of the designation types (I-V) and may additionally meet optional requirements as presented in the product specific Material Certification Report.

Uses include:

- | | |
|--------------------------------|------------------------------|
| ■ Bridges | ■ Precast |
| ■ Cast-in-place | ■ Pre-stress or post-tension |
| ■ Concrete Masonry Units (CMU) | ■ Ready-mix |
| ■ Drains | ■ Roads |
| ■ Grout | ■ Soil Stabilization |
| ■ Masonry | ■ Tilt-up |
| ■ Pipe | ■ Water tanks |

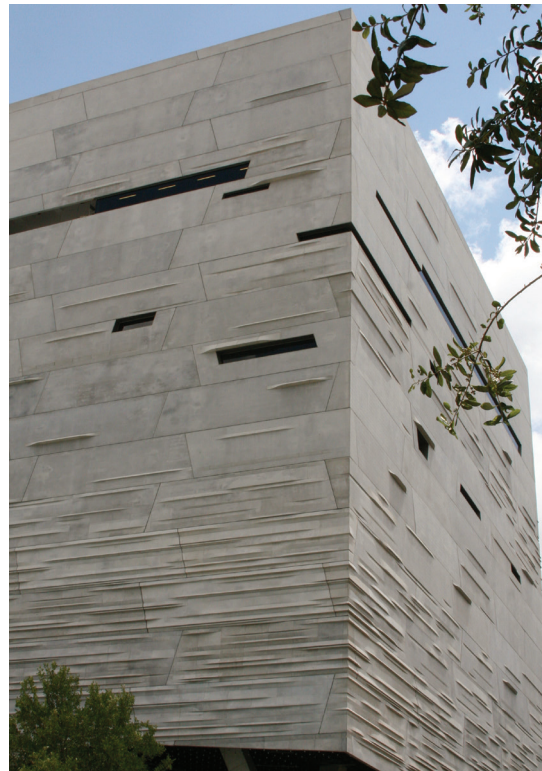
Packaging

Portland cement is regionally available and can be supplied in bulk quantities or may be regionally available in bags.

Composition and Materials

The primary ingredients of portland cement are calcium silicate based clinker and gypsum ground to a fine powder that, when mixed with water, sets and hardens. The hydration of calcium silicates forms a fiber-like material called calcium silicate hydrate (CSH).

All manufacturing is quality controlled to ensure product conformance.



Perot Museum

Cement Types

- **Type I** Normal
- **Type II** Moderate Sulfate Resistance
- **Type III** High Early Strength
- **Type IV** Not Available
- **Type V** High Sulfate Resistance

Benefits

Portland cement is a versatile building material that is suitable for a variety of concrete construction applications. To achieve these and other special properties, particular care is needed when proportioning, batching, placing, finishing and curing concrete containing these products.



Limitations

There are many variables that affect concrete performance beyond the control of the cement manufacturer. Good concreting practices are required in order to achieve desired results. Attention must be given to formwork, batching, mixing, placing, finishing and curing. In special applications, selection of aggregates, admixtures and additives may need to be scrutinized. Holcim (US) Inc. recommends that all concrete mix proportions be evaluated for acceptable performance prior to use.

4. Technical Data**Applicable Standards**

Produced in accordance with:

- **ASTM C150** Standard Specification for Portland Cement
- **AASHTO M 85** Standard Specification for Portland Cement

Physical / Chemical Properties

Portland cements are manufactured to conform to all applicable requirements for the designated type of ASTM C150 and AASHTO M 85.

5. Installation**Requirements**

For installation, consult specific project requirements or applicable specifications and guides as available from the American Society of Testing and Materials (ASTM), American Concrete Institute (ACI), or other reputable industry organization.

Preparatory Work

Deliver products in manufacturer's original, unopened, undamaged, containers with identification labels intact. Store materials protected from exposure to harmful environmental conditions and at temperatures and humidity conditions recommended by the manufacturer.

Verify that site conditions are acceptable for installation. Do not proceed with installation until unacceptable conditions are corrected.

Methods

Concrete is a material that includes several constituents such as cement, aggregate (usually sand and gravel), water, and admixtures. Freshly mixed concrete should generally be plastic or semi-fluid and moldable.

Good concreting practices are required for durable and strong concrete. Proper proportioning, batching, mixing, placing, consolidating, finishing and curing, as well as proper subgrade preparation, formwork, uniform slump, special techniques and other steps are all critical to achieving the desired results.

The character of concrete is largely determined by the water-cement ratio (w/c), and is especially critical to a durable, strong concrete. Freshly mixed (plastic) and hardened properties of concrete can be enhanced by adding supplementary cementitious materials (SCM's) or admixtures during batching. Admixtures may be used to adjust setting time and/or hardening, reduce water demand, increase workability, entrain air, improve cost-effectiveness or other properties.

Safety Precautions

Refer to the applicable Safety Data Sheet (SDS), which should be consulted prior to the use of this product. These SDS's are available at www.holcim.us.

Avoid direct contact with the skin. If contact occurs, wash skin with water as soon as possible. Exposure of sufficient duration to cement can cause serious and potentially irreversible tissue destruction in the form of chemical burns. If cement gets into the eyes, immediately flush eyes thoroughly with water and seek medical attention. Proper PPE is always required.

6. Availability and Cost

Availability: Portland cement is regionally available. Contact the nearest Holcim (US) Inc. sales office for availability in your area.

Cost: Pricing information can be obtained from the nearest Holcim (US) Inc. sales office.

7. Warranty

Upon request, Holcim (US) Inc. can provide Material Certification Reports demonstrating that portland cement meets applicable ASTM and AASHTO standards. Holcim (US) Inc. will not guarantee finish work, having no control over the use of this product. Holcim (US) Inc. shall not be responsible for condition of cement after delivering to dealer or distributor.

8. Technical Services

Technical service is available by contacting the nearest Holcim (US) Inc. sales office at (888) 646-5246.

For questions on any technical information contained in the document, contact a Holcim (US) Inc. Technical Services Engineer for further detail.

9. Filing Systems

Additional product information is available from the manufacturer.

Corporate Headquarters

Holcim (US) Inc.
8700 Bryn Mawr Avenue
Chicago, IL 60631
(888) 646-5246

Corporate Office

6211 Ann Arbor Road
P.O. Box 122
Dundee, MI 48131
(888) 646-5246