1. Product Name

- Portland Cement

2. Manufacturer

Holcim (US) Inc.
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3. Product Description

Basic Use

Portland Cement is a basic building material, which is used in a wide variety of commercial and architectural concrete construction applications. Concrete made with Portland Cement using the proper mix design can be resistant to the attack of harsh environmental influences, such as frost and de-icing chemicals. Uses include:

Portland Cement is produced to meet one of the applicable designations. Some cements may meet several designations such as Types I and II and may also meet some of the optional requirements of the above specifications (such as low alkali or low activity with aggregates).

- Concrete Masonry Units (CMU)
- Bridges
- Cast-in-place
- Drains
- Grouts
- Masonry mortars
- Pipe
- Precast
- Roads
- Tilt-up
- Water tanks
- Pre-stress concrete members

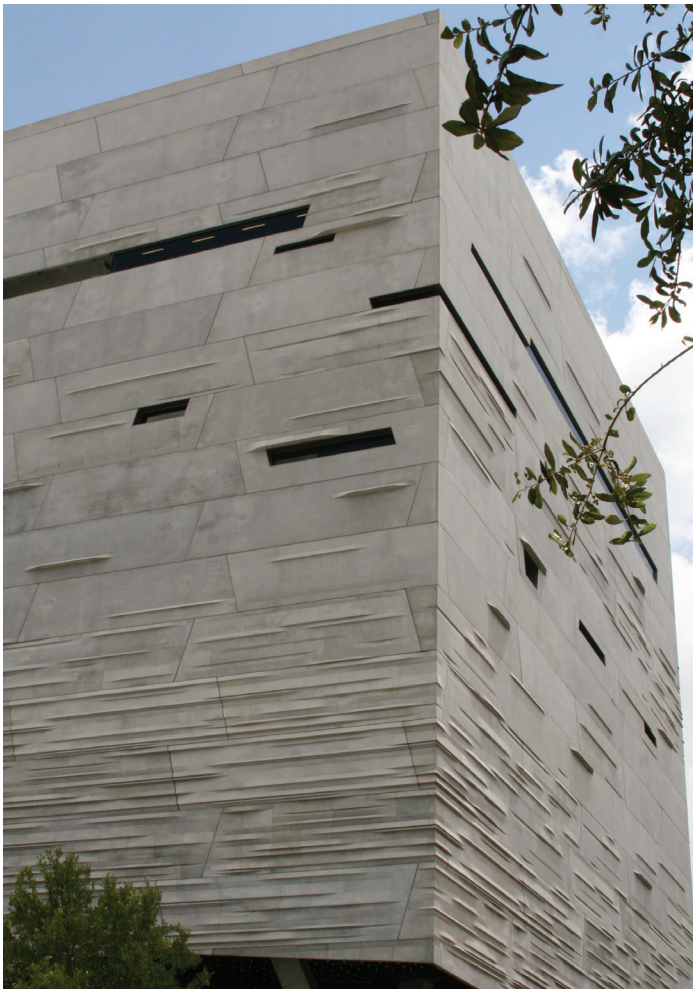
Sizes

Portland Cement is supplied in bulk quantities (tons) or 42 kilograms (92 pound) bags for Type I, Type I/II, Type IA, Type II (MH) and Type V or 21 kilograms (46 pound) bags for Type I and Type. Portland Cement is shipped by rail, barge and/or truck.

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 into a solid monolithic mass. The hydration of calcium silicates forms a gel-like material called calcium silicate hydrate.

All manufacturing is quality controlled to ensure product performance and uniformity.



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Portland Cement Types

- **Type I** Normal
- **Type II** (MH) Moderate Heat of Hydration and Moderate Sulfate Resistance
- **Type III** High Early Strength
- **Type V** High Sulfate Resistance

Benefits

- Versatile basic building material that is suitable for a variety of concrete construction applications
- Meets ASTM C150 and AASHTO M 85 requirements for Portland cement
- Depending on project location and cement source, the cement may contribute to regional credits in some green building assessment systems

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.

4. Technical Data

Applicable Standards

ASTM International

- **ASTM C150** Standard Specification for Portland Cement
- **American Association of State and Highway Transportation Officials (AASHTO)**
- **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. They are formulated to provide consistent strength, workability and durability.

5. Installation

Methods

Concrete is a structural material consisting of hard, chemically inert material (usually sand and gravel) bonded together by cement and water. The character of structural concrete is largely determined by the water-cement ratio. The amount of cement in relation to the amount of aggregate is especially critical to a durable, strong concrete.

Freshly mixed (plastic) and hardened properties of concrete can be changed by adding chemical and mineral admixtures to concrete during batching. Admixtures are used to adjust setting time and/or hardening, reduce water demand, increase workability, entrain air, provide cost-effectiveness and adjust other concrete properties.

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

Exposure of sufficient duration to wet Holcim Portland Cement can cause serious, potentially irreversible tissue destruction in the form of chemical (caustic) burns. If Holcim Portland Cement gets into the eyes, immediately rinse them thoroughly with water and seek medical attention. For more complete information, reference is made to the applicable Safety Data Sheets (SDS), which should be consulted prior to use of this product. These SDS are available at **www.holcim.us**.

6. Availability and Cost

Availability: Portland Cement is available throughout most of the United States.

Cost: Pricing information can be obtained from the nearest Holcim US Sales Office.

7. Warranty

Upon request, Holcim US can provide Material Certification reports demonstrating that Portland Cement meets applicable ASTM standards. Holcim will not guarantee finish work, having no control over use of this product. Holcim shall not be responsible for condition of cement after delivering to dealer or distributor.

8. Maintenance

In areas where concrete cleaners and sealers are required, proper instructions should be followed. Contact the appropriate product manufacturer before application.

9. Technical Services

Technical service is available by contacting the nearest Holcim Sales Office at (888) 646-5246. With advance notice, technical service can be provided at jobsite locations.

For questions on any technical information contained in this document, contact a Holcim Technical Service Engineer for further detail.

10. Filing Systems

Additional product information is available from the manufacturer.

Freshly mixed concrete should be plastic or semifluid and moldable. Portland Cements are manufactured under controlled conditions and laboratory tested to ensure consistent quality and uniformity.

Precautions

Direct contact with the skin should be avoided. If contact occurs, the skin should be washed with water as soon as possible.

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