



**1. Product Name**

Holcim Portland Cement

**2. Manufacturer**

Holcim (US) Inc.  
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Highway overpass

**3. Product Description**

**BASIC USE**

Holcim Portland Cement is a cost-effective, basic building material which is used in a wide variety of commercial and architectural concrete construction applications. Uses include cast-in-place, pre-cast, tilt-up, water tanks, drains, bridges, roads, pipes, concrete masonry units (CMU), pre-stressed concrete members, masonry mortars and grouts. When used to make concrete with the proper mix design, Holcim Portland Cement is able to resist the attack of harsh environmental influences such as frost, water, oil and de-icing chemicals.

**COMPOSITION & MATERIALS**

The primary ingredients of Holcim Portland Cement are calcium silicates 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 Holcim manufacturing is quality controlled to ensure optimum product performance and uniformity.

**TYPES**

- Type GU - Hydraulic cement for general construction used when 1 or more of the special types are not required.
- Type HE - High Early Strength
- Type MS - Moderate Sulfate Resistance
- Type HS - High Sulfate Resistance
- Type MH - Moderate Heat of Hydration

- Type LH - Low Heat of Hydration
- Type I - Normal
- Type II - Moderate Sulfate Resistance
- Type III - High Early Strength
- Type V - High Sulfate Resistance

Holcim Portland Cement is produced to meet 1 or more of the applicable requirements of ASTM C150 for Types I, II, III and V, and ASTM C1157 for Types GU, MS, HS, MH and LH. Some cements may meet several specifications such as Types I, II and GU. Holcim, in some locations, also manufactures air entrained cements as well as cements which meet some of the optional requirements of the above specifications (such as low alkali or low activity with aggregates).

**SIZES**

Holcim Portland Cement can be shipped by bulk rail and truck quantities measured in tons or packaged in standard bags.

**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. Special 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 C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens)
- ASTM C115 Standard Test Method for Fineness of Portland Cement by the Turbidimeter
- ASTM C150 Standard Specification for Portland Cement
- ASTM C151 Standard Test Method for Autoclave Expansion of Portland Cement
- ASTM C185 Standard Test Method for Air Content of Hydraulic Cement Mortar
- ASTM C191 Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
- ASTM C204 Standard Test Method for Fineness of Hydraulic Cement by Air Permeability Apparatus
- ASTM C266 Standard Test Method for Time of Setting of Hydraulic-Cement Paste by Gillmore Needles
- ASTM C1157 Standard Performance Specification for Hydraulic Cement

**PHYSICAL/CHEMICAL PROPERTIES**

Holcim Portland Cements are manufactured to conform to all applicable requirements of ASTM C150 and ASTM C1157 and formulated to provide consistent strength, durability and workability as well as finished product appearance. See Tables 1 and 2.

**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.

Freshly mixed concrete should be plastic or semifluid and moldable. Holcim Portland Cements are manufactured under controlled conditions and laboratory tested to ensure consistent quality and uniformity. Never change sources or proportions during a construction project.

**PRECAUTIONS**

Direct contact with the skin should be avoided. If contact occurs, the skin should be washed with water as soon as possible. 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 Material Safety Data Sheets (MSDS), which should be consulted prior to use of this product. These MSDS are available upon request.

**6. Availability & Cost**

**AVAILABILITY**

Holcim Portland Cement is available throughout most of the United States.

**COST**

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

TABLE 1 HOLCIM CEMENT PHYSICAL PROPERTIES PER ASTM C150 REQUIREMENTS

Property	Type I	Type II	Type III	Type V
Fineness, m/g				
Turbidimeter (min)	160	160	-	160
Air permeability (min)	280	280	-	280
Time of set				
Vicat (minutes)				
Initial (min)	45	45	45	45
Final (max)	375	375	375	375
Gillmore (minutes)				
Initial (min)	60	60	60	60
Final (max)	600	600	600	600
Air content (max)	12%	12%	12%	12%
Autoclave expansion (max)	0.80%	0.80%	0.80%	0.80%
Compressive strength (min)				
1 day, MPa (psi)	-	-	12 (1740)	-
3 days, MPa (psi)	12 (1740)	10 (1450)	24 (3480)	8 (1160)
7 days, MPa (psi)	19 (2760)	17 (2470)	-	15 (2180)
28 days, MPa (psi)	-	-	-	21 (3050)

TABLE 2 HOLCIM CEMENT PHYSICAL PROPERTIES PER ASTM C1157 REQUIREMENTS

Properties	GU	HE	MS	HS	MH	LH
Autoclave length change, maximum	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%
Time of set, vicat test						
Initial (min)	> 45	> 45	> 45	> 45	> 45	> 45
Initial (min)	< 420	< 420	< 420	< 420	< 420	< 420
Strength range (MPa)						
1 day	-	10	-	-	-	-
3 days	10	17	10	5	5	-
7 days	17	-	17	10	10	5
28 days	-	-	-	17	-	17
Heat of hydration, kJ/kg (kcal/kg)						
7 days (max)	-	-	-	-	290 (70)	250 (60)
28 days (max)	-	-	-	-	-	290 (70)
Mortar bar expansion at 14 days (max)	0.020%	0.020%	0.020%	0.020%	0.020%	0.020%
Sulfate expansion (sulfate resistance)						
8 months (max)	-	-	0.10%	0.05%	-	-
1 year (max)	-	-	-	0.10%	-	-



**7. Warranty**

Upon request, Holcim can provide Material Certification Reports demonstrating that Holcim Portland Cements meet or exceed applicable ASTM standards. For more warranty information, contact the nearest Holcim Sales Office.

**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. With advance notice, technical service can be provided at jobsite locations.

**10. Filing Systems**

- Reed First Source
- Additional product information is available from the manufacturer.
- [www.holcim.us](http://www.holcim.us)
- [www.cementonline.us](http://www.cementonline.us)
- [www.masonrybydesign.com](http://www.masonrybydesign.com)

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