



**1. Product Name**

Holcim GranCem® Cement

**2. Manufacturer**

Holcim (US) Inc.  
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**3. Product Description**

**BASIC USE**

Holcim GranCem® cement is a cost-effective, basic raw building material that is used in a wide variety of commercial and architectural concrete construction applications. Uses include cast-in-place, precast, bridges, roads, pipe, blocks, prestress concrete mixtures, masonry mortars, grouts, agglomerating and solidification. When properly used in concrete mixtures, GranCem cement is particularly suitable for providing white effects, sulfate and alkali-silica reaction (ASR) resistance, low permeability and low heat for mass-concrete applications.

**COMPOSITION & MATERIALS**

The primary ingredient of GranCem cement is granulated blast-furnace slag (GBFS) that is ground to a fine powder. When mixed with water and Portland cement (the traditional way that GranCem cement is used), the concrete sets and hardens into a solid monolithic mass. The hydration reaction forms a gel-like material called calcium silicate hydrate. All Holcim manufacturing is quality controlled to ensure optimum product performance and uniformity.

**GRADES**

GranCem cement is produced to meet the requirements of ASTM C989, which designates materials by grades. GranCem cement is a ground granulated blast-furnace slag (GGBFS) material.

**LIMITATIONS**

There are many variables that affect concrete performance beyond the control of the GGBFS manufacturer. Good concreting practices are required in order to achieve desired results. As with all Portland cement based concrete, attention must be given to formwork, batching, mixing, placing, finishing and curing.

**SIZES**

GranCem cement can be shipped by bulk, in barge, rail or truck quantities, as measured in metric tons.

**4. Technical Data**

**APPLICABLE STANDARDS**

ASTM International - ASTM C989 Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars

GranCem cement is manufactured to conform to all requirements of ASTM C989.

**PHYSICAL/CHEMICAL PROPERTIES**

GranCem cement is a finely divided material that typically is finer than Type I Portland cement; is an off-white color; presents a specific gravity of about 2.88; and is handled and dispensed like Portland cement.

**5. Installation**

**METHODS**

Concrete is a structural material consisting of hard, chemically inert material (usually aggregate) bonded together by Portland cement (which can be partially replaced with GranCem cement) and water. Coarse aggregate can include gravel, crushed gravel or crushed stone; fine aggregate is also called sand. 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. Paste is composed of Portland cement, GranCem cement, water, chemical admixtures and, if required, entrained air for freeze/thaw durability.

**Admixtures**

Freshly mixed (plastic) and hardened properties of concrete can be changed by adding admixtures (chemical, mineral or both) to concrete during batching. These admixtures are used to:

- Adjust time of setting and/or hardening rate
- Reduce water demand
- Increase workability



GranCem Cement

- Entrain air
- Provide cost-effectiveness
- Adjust other concrete properties

**Trial-Batch Mixtures**

For development of trial-batch mixtures, GranCem cement typically replaces, kilo for kilo (pound for pound), Portland cement in concrete, mortar and grout mixtures. The optimum amount of GranCem cement replacement of portland cement can vary with the application. Table 1 lists commonly seen replacement amounts for several applications for use in developing a first trial-batch mixture.

**Application**

GranCem cement has demonstrated compatibility with Types I, II, III and V Portland cements, as well as with some combinations of fly ash or silica fume.

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

Freshly mixed concrete should be plastic or semifluid and moldable.

GranCem cement is manufactured under controlled conditions, and it is laboratory tested to ensure consistent quality and uniformity. Do not change sources or proportions during a construction project without the prior approval of the project engineer.

**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 GranCem cement can cause serious, poten-

tially irreversible tissue destruction in the form of chemical (caustic) burns. If GranCem 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**

GranCem cement is available throughout most of the United States.

**COST**

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

**7. Warranty**

Upon request, Holcim can provide Material Certification Reports demonstrating that GranCem cement meets or exceeds 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)

TABLE 1 GRANCHEM REPLACEMENT TECHNICAL DATA <sup>1</sup>

| Concrete, mortar or grout applications                        | GranCem cement amount (by mass) replacement of Portland cement |
|---------------------------------------------------------------|----------------------------------------------------------------|
| Mass concrete                                                 | 65 - 75%                                                       |
| Sulfate resistance                                            |                                                                |
| Type II equiv.                                                | ≥ 35%                                                          |
| Type V equiv.                                                 | ≥ 50%                                                          |
| Alkali-silicate reactive resistance                           | ≥ 35%                                                          |
| Improving alkali-silica reaction "pop-off" flaking resistance | ≥ 35%                                                          |
| High strength                                                 | 35 - 50%                                                       |
| Optimized de-icer scaling resistance                          | 25 - 35%                                                       |
| White-concrete effect                                         | 35 - 75%                                                       |
| Main-line paving                                              | 25 - 50%                                                       |
| Industrial floors                                             | 15 - 50%                                                       |
| Enhanced workability                                          | 15 - 50%                                                       |
| General-use concrete                                          | 15 - 50%                                                       |
| Low permeability                                              | ≥ 30%                                                          |

<sup>1</sup> Commonly seen GranCem cement amounts, with kilo-for-kilo replacement of Portland cement for a first trial-batch mixture used to evaluate performance.

**Corporate Headquarters**

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