

# USG ULTRACAL® BRAND 30 GYPSUM CEMENT

## SOUTHARD, OK

### DESCRIPTION

USG Ultracal® Brand 30 Gypsum Cement is designed for the patternmaking industry as the ultimate gypsum cement tooling medium. When extreme accuracy and greater surface hardness are required (as in duplicator models), use USG Ultracal 30 Gypsum Cement. It provides extremely low expansion properties, gradual set and a long period of plasticity.

Ideal for splash-casting molds and models for phenolic, polyester and epoxy resins, USG Ultracal 30 Gypsum Cement is water soluble – there is no need for organic solvents for cleanup. USG Ultracal 30 Gypsum Cement is noncombustible. When properly used, USG Ultracal 30 Gypsum Cement is easy to work with. Always follow handling and use directions and safety warnings on the package.

Please contact your local USG Sales Representative for further assistance for specific use information.

### TYPICAL PHYSICAL PROPERTIES

<b>Normal Consistency</b>	33 - 38 lbs. water/100 lbs. product (15 - 17 kg water/45 kg product)
<b>Hand Mix Vicat Set, Target</b>	18 - 30 minutes
<b>Compressive Strength, One Hour After Set</b>	2000 psi (13.8 MPa)
<b>Compressive Strength, Dry</b>	6500 psi (44.8 MPa)
<b>Density, Wet</b>	116 lbs./cu. ft. (1858 kg/m <sup>3</sup> )
<b>Density, Dry</b>	103 lbs./cu. ft. (1650 kg/m <sup>3</sup> )
<b>pH Reaction</b>	Alkaline
<b>% Expansion, Final</b>	0.08%

**NOTE** The *Typical Physical Properties* in the above table were achieved under controlled laboratory conditions with freshly produced material, results may vary.

### MIXING INSTRUCTIONS

#### MIX PREPARATION

Use potable water at temperatures between 70 °F (21 °C) and 100 °F (38 °C). Because variations in slurry (USG Ultracal 30 Gypsum Cement and water mixture) temperature produce variations in set time, it is important to keep both the USG Ultracal 30 Gypsum Cement and water in a stable temperature environment prior to use. The higher the temperature of the slurry, the shorter the set time. Conversely, the lower the temperature of the slurry, the longer the set time.

Weigh both the USG Ultracal 30 Gypsum Cement and the water prior to use for each mix. The water-to-USG Ultracal 30 Gypsum Cement ratio is critical because it governs the strength and the density of the final cast.

#### SOAKING

Sift or strew USG Ultracal 30 Gypsum Cement into the water slowly and evenly. Do not drop large amounts of USG Ultracal 30 Gypsum Cement directly into the water as proper soaking of the USG Ultracal 30 Gypsum Cement may not occur. USG Ultracal 30 Gypsum Cement should be fully dispersed in the water prior to mixing. Small batches require less soaking time than large batches. See USG IG503 *Plaster Mixing Procedures* for specific soaking instructions.

#### MIXING

Mixing USG Ultracal 30 Gypsum Cement slurry is one of the most important steps in producing USG Ultracal 30 Gypsum Cement casts with optimal strength, absorption, hardness and other important properties.

Mechanically mixed slurries develop uniform casts with optimal strengths. USG Ultracal 30 Gypsum Cement can be mechanically mixed through both batch and continuous processes. Proper blade and bucket dimensions are important for obtaining the best batch mix (see USG IG503 *Plaster Mixing Procedures* for details).

Longer mixing times result in higher mold strength and shorter set times.

## POURING

To prevent air entrainment and provide a uniform, smooth surface, careful pouring of USG Ultracal 30 Gypsum Cement slurry is necessary. Agitation of the filled mold is a further step used to prevent air at or near the mold surface. Whenever possible, USG Ultracal 30 Gypsum Cement slurry should be poured carefully in the deepest area so that the slurry flows evenly across the surface of the case mold.

Pouring a large amount of slurry directly on the face of the case mold may result in slight densification of the USG Ultracal 30 Gypsum Cement mold at the point where it strikes the surface of the case. This produces a hard spot, giving uneven absorption.

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## DRYING

All casts should be dried as quickly as is safely possible after manufacture so that maximum physical properties can develop. Dry to a constant weight.

The best drying rooms or ovens provide 1) uniform and rapid circulation (minimum of 15-30 fps (4.6-9.1 mps)) of air with no "dead spots" having little or no air movement, 2) equal temperatures throughout the entire area, and 3) provisions for exhausting a portion of the air while replacing it with fresh air. High humidity surrounding the drying room or oven inhibits drying efficiency because the air pulled into the room is incapable of picking up much moisture from the molds.

The maximum temperature at which USG Ultracal 30 Gypsum Cement molds are safe from calcination is 120 °F (49 °C). With substantial free water in the mold, a higher drying temperature can be used initially without difficulty. As drying progresses, the temperature must be reduced to prevent calcination. Before removing molds from the dryer, the temperature should approach that of the area around the dryer to prevent thermal shock.

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## STORAGE AND USE

When properly used, USG Ultracal 30 Gypsum Cement is easy to work with. Keep indoors at temperatures between 65 °F - 75 °F (18 °C - 24 °C) and 45% - 55% RH. Do not stack more than two pallets high. Keep from drafts. Rotate stock. USG Ultracal 30 Gypsum Cement should be used within 6 months of the manufacturing date located on the package. Always follow handling and use directions and safety warnings on the package.

### PRODUCT INFORMATION

See [usg.com](http://usg.com) for the most up-to-date product information.

### DANGER

Causes skin irritation. Causes serious eye damage. May cause cancer by inhalation of respirable crystalline silica. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Use only in a well-ventilated area, wear a NIOSH/MSHA-approved respirator. Wear protective gloves/protective clothing/eye protection. If swallowed, inhaled, or skin irritation occurs get medical attention. When mixed with water, this material hardens and becomes very hot sometimes quickly. DO NOT attempt to make a cast enclosing any part of the body using this material. If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses and continue rinsing. Wash contaminated clothing before reuse. Dispose of in accordance with local, state, and federal regulations. For more information call Product Safety: 800-507-8899 or see the SDS at [usg.com](http://usg.com)  
**KEEP OUT OF REACH OF CHILDREN.**

### TRADEMARKS

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### SAFETY FIRST!

Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read SDS and literature before specification and installation.

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