

TUF CAL™ Plaster



- High early strength
- Excellent chip resistance
- Great for larger, hollow casts

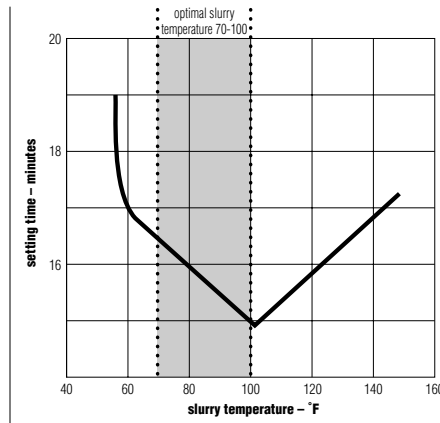
Technical Properties	English	Metric
Use Consistency (parts of water by weight per 100 parts plaster)	50	50
1 Hr. Compressive Strength	2,000 psi	6.8 MN/m ²
Dry Compressive Strength	4,300 psi	29.6 MN/m ²
Maximum Setting Expansion	0.210%	0.210%
Density Wet	108.6 lb/ft ³	1.74 g/cm ³
Dry	85.6 lb/ft ³	1.37 g/cm ³
Set Time*	27-37 min.	27-37 min.

*Other set times may also be available. Call your sales representative for more information. Hand mix times will be longer.

General Directions and Guidelines

Preparing the Mix

Use potable water at temperatures between 70 and 100 °F (21 and 38 °C). Since variations in slurry (the plaster and water mixture) temperature produce variations in setting time, it is important to keep both the plaster and water in a stable temperature environment prior to use. The higher the temperature of the water, the shorter the set time. See the graph below.



Measuring

Weigh both the plaster and water for each mix. The water-to-plaster ratio is critical because it governs the strength and the density of the final cast.

Soaking

Sift or strew the plaster into water slowly and evenly. Do not drop handfuls of plaster directly into the water. Allow soaking for 1-2 minutes. The plaster should be fully dispersed in the water prior to mixing. Small batches require less soaking than large batches. See bulletin IG503 for specific soaking instructions.

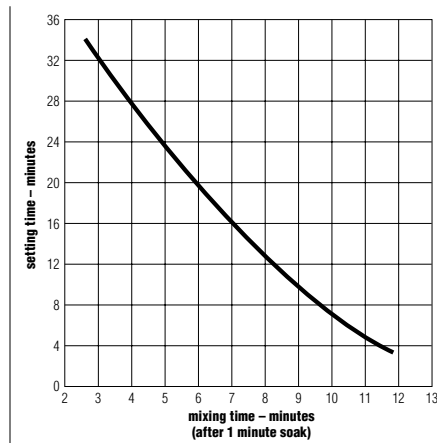
Mixing

Mixing the plaster slurry is one of the most important steps in producing plaster casts with maximum strength, hardness, and other important properties.

Mechanically mixed plasters develop uniform casts with optimal strengths. Plasters can be mechanically mixed through both batch and continuous processes. Proper blade and bucket dimensions are important for obtaining the best batch mix (see IG503 for details).

**Mixing
(continued)**

Longer mixing times result in higher cast strength and shorter setting times. The relationship between mixing time and both compressive strength and setting time is shown below.



Pouring

To prevent air entrapment and provide a uniform, smooth surface, careful pouring of the slurry is necessary. Agitation of the filled mold is a further step used to prevent air at or near the surface of the cast piece. Whenever possible, the slurry should be poured carefully in the deepest area so the slurry flows evenly across the surface of the mold.

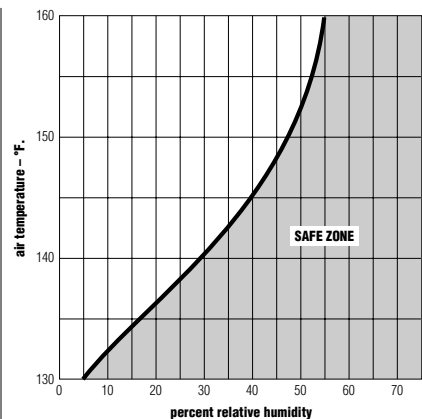
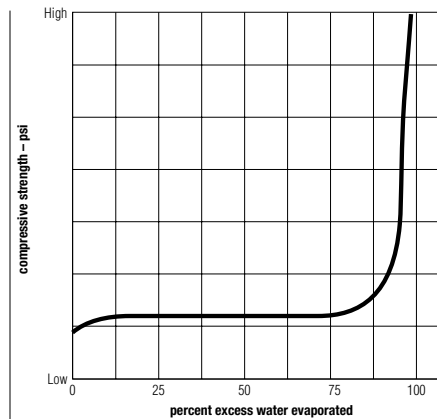
Pouring a large amount of slurry directly on the face of the mold may result in slight densification of the cast at the point where the slurry strikes the surface of the mold.

Drying

All plaster 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) 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 the efficiency of the drying because the air pulled into the room is incapable of picking up much moisture from the molds.

The maximum temperature at which plaster casts are safe from calcination is 120 °F (49 °C). With substantial free water in the cast piece higher drying temperatures can be used without difficulty. As drying progresses, the temperature must be reduced to prevent calcination. The safe drying zone is in the shaded area of graph (below, right). Before removing casts from the dryer, the temperature should approach that of the area around the dryer to prevent thermal shock. See IG502 for more details on proper drying.



Storage

Keep in a dry, stable environment indoors. Do not stack more than 2 pallets high. Keep from drafts. Rotate stock.

Warning

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. Failure to follow these instructions can cause severe burns that may require surgical removal of affected tissue or amputation of limb. Dust can cause eye, skin, nose, throat, or respiratory irritation.

Avoid eye contact and inhalation of dust. Wear eye protection. If eye contact occurs, flush thoroughly with water. If dusty, wear a NIOSH/MSHA-approved respirator. Use proper ventilation to reduce dust exposure. Do not ingest. If ingested call physician. Product safety information: USA (800) 507-8899. **KEEP OUT OF REACH OF CHILDREN.**

Trademarks

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