



# User's Guide

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**CC Cement**  
**High Temperature Cement**

## General

OMEGA® CC High Temperature Cement is a zircon base, two-part ceramic cement which has many exceptional characteristics including:

- Resists temperatures to 1550°F (843°C) as well as cryogenic conditions (-200°C).
- Resists water, oil, electricity, most solvents and all acids (except hydrofluoric).
- Heat conductive and thermal shock resistant.
- Excellent electrical insulator.
- Adheres to metals, ceramics, glass, porcelain, and most other surfaces.
- Excellent mechanical strength.
- Ceramic-like body.

CC High Temperature Cement is an inorganic cement used for embedding heating elements; insulating thermocouples; coating resistors and coils; sealing and assembling parts which require high resistance to electricity, chemicals, and thermal shock.

## Handling

### CAUTION

- Avoid prolonged breathing of vapors - work in well ventilated area
- Protect skin against contamination
- Protect eyes against contamination
- Do not take internally

CC Cement Liquid Binder is an alkaline material and may irritate eyes and skin. Avoid contact with eyes and skin by wearing gloves and goggles or a face shield. CC Cement powder Filler is a harmful dust. Avoid breathing dust by wearing respirators. Wash thoroughly with soap and water after handling the liquid Binder and/or the powder Filler before eating and smoking.

## Shelf Life

The CC High Temperature Cement has a shelf life of one (1) year when stored in closed, tightly sealed containers in a dry location at 70°F.

## Application

The CC High Temperature Cement is supplied in two containers-one being the powder, Zirconium Silicate, the other being the liquid, Sodium Silicate. These two components are mixed together as needed. **The usual mixture is 80% powder Filler to 20% liquid Binder by weight.** CC Cement may be mixed to a thinner consistency by regulating the amount of liquid Binder used; however, the use of excess liquid will reduce mechanical strength, increase shrinkage and delay the set time. CC may be used in a vacuum, depending on application, without out-gasing. The mixture may be applied by brushing, dipping, pouring molding or by mechanical dispenser.

## Curing

CC Cement hardens with an internal chemical-setting action with an initial set in approximately 30 minutes. The final set is reached in 18 to 24 hours when cured at room temperature. If it is desired to accelerate the curing time, set the drying oven to 65°C (150°F) and the cement will cure in 4 hours. If the drying oven is set to 104°C (220°F), the cement will cure in 3 hours.

## Solvent

To remove cured cement, soak it with Sodium Hydroxide. The cement should soften with time. Wipe clean with cloth.

### NOTE

Material safety information (in the Material Safety Data Sheet) can be obtained by contacting OMEGA Engineering and asking for MSDS-0103.

## Specifications

<b>Color:</b>	Tan
<b>Maximum Service Temperature:</b>	843°C (1550°F)
<b>Thermal Conductivity (K Factor) at 260°C (500°F):</b>	8 Btu·in/ft <sup>2</sup> ·hr.°F
<b>Curing Time:</b>	(2.7 × 10 <sup>3</sup> Cal·cm/cm <sup>2</sup> ·sec·°C)
<b>At Room Temperature:</b>	18 to 24 hours
<b>At 65°C (150°F):</b>	4 hours
<b>At 104°C (220°F):</b>	3 hours
<b>Absorption (Water):</b>	10 to 12%
<b>Shrinkage:</b>	0.50%
<b>Coefficient of Thermal Expansion:</b>	4.6 × 10 <sup>-6</sup> in/in/°F
<b>Density:</b>	141 lb/ft <sup>3</sup> (pcf) 2.26 g/cm <sup>3</sup>
<b>Specific Gravity:</b>	1.92±0.05g/cc
<b>Dielectric Strength ASTM D-149</b>	
<b>At 21°C (70°F):</b>	25.0 to 51.0 Volts/mil (980 to 2000 Volts/mm)
<b>At 399°C (750°F):</b>	12.5 to 25.0 Volts/mil (490 to 980 Volts/mm)
<b>At 801°C (1475°F):</b>	1.3 Volts/mil (51 Volts/mm)
<b>Compressive Strength:</b>	3900 PSI (274 kg/cm <sup>2</sup> )
<b>Tensile Strength:</b>	425 PSI (29 kg/cm <sup>2</sup> )
<b>Volume Resistivity ASTM D-1829</b>	
<b>At 21°C (70°F):</b>	10 <sup>7</sup> to 10 <sup>9</sup> ohm-cm
<b>At 399°C (750°F):</b>	10 <sup>4</sup> to 10 <sup>6</sup> ohm-cm
<b>At 801°C* (1475°F):</b>	10 <sup>2</sup> to 10 <sup>3</sup> ohm-cm
<b>Dielectric Constants:</b>	5.0 to 7.0

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