



Sole UK Distributors Of  
**REINHARDT-TECHNIK**  
Metering, Mixing &  
Dispensing Systems



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## Technical Data Sheet

### CERASTIL C3

#### A VERY HIGH STRENGTH CHEMICALLY RESISTANT CERAMIC ADHESIVE

##### Description

**CERASTIL C3** is used to bond ceramics, metals, quartz and glass (for graphite, please use **CERASTIL GC**, graphite cement). It strongly adheres to any clean wettable surface. Properly made joints are gas tight, and highly resistant to water, oil, solvents and all acids except hydrofluoric. The cured adhesive is extremely stable in hostile gaseous environments such as hydrogen and sulphur dioxide. Since it is a good electrical insulator, it is extensively used as a potting compound and binder for electronic components. In the heavy chemical industry it is the preferred joint compound in the construction of acid tanks, silos, kilns, pump bases, chemical sewers and pilot plants.

##### Directions

The materials to be jointed must be thoroughly cleaned to remove rust, oil, films, grease and dirt. For maximum adhesion, degrease and sand or vapour blast.

##### Mixing

**CERASTIL C3** is supplied as a dry powder that is mixed with tap water as needed. The dry powder should be remixed in the can before use as some segregation can occur during storage. The recommended bonding mixture is 86 parts by weight of powder to 14 parts by weight of water. On a volume basis the formula would be 5.3 parts by volume of powder to 1 part by volume of water. The adhesive may be made thicker or thinner as desired by the operator to meet various conditions. However, as a general rule, the strongest cement is made with the least water. The pre-weighed powder should be added to the pre-weighed water and stirred constantly by any convenient method. If the cement is to be used to make gas tight seals it is important that the mixing does not contain minute air bubbles. Small batches can be vacuum degassed if required. Mixing should be continued five minutes after the adhesive is smooth and uniform. The use of warm water (55-65°C) aids wetting and hastens initial set time.

##### Casting-coating

Mix as above, but thin to the consistency of a heavy cream. This may then be poured over the parts to be cast or can be used as a paint.

## CERASTIL C3 (CONT'D)

### Application

**CERASTIL C3** should not be exposed to temperatures below 10°C during mixing, application or setting. Temperatures above 32°C cause the initial set to take place rapidly. This reduces pot life and working time to a point where care must be exercised to avoid wasting adhesive by a premature set-up. Once set-up begins it cannot be reversed and the unused cement should be discarded.

Apply the adhesive with a trowel or spatula to all faces to be joined, working it strongly into the surface. Add excess adhesive to the centre of the joint so that when the surfaces are mated and pressure applied, the adhesive squeezes to the edges, filling the joint. Remove excess adhesive immediately. Cemented joints can be anywhere between 0.4 mm and 3.2 mm thickness. Thicker joints are normally weaker.

### Typical physical properties

Colour	Pale green (when mixed with water)
Density	2 g/cc
Thermal Conductivity (cal/sec/cm <sup>2</sup> /cm/°C)	0.0025
Max. Temperature	1100°C
Coefficient of Thermal Expansion (cm/cm/°C)	12 x 10 <sup>-6</sup>
Tensile strength at 20°C after 1 week	18 kg/cm <sup>2</sup>
after 4 weeks	50 kg/cm <sup>2</sup>
Compressive strength at 20°C after 1 week	175 kg/cm <sup>2</sup>
after 4 weeks	285 kg/cm <sup>2</sup>
Flexural strength at 20°C after 1 week	30 kg/cm <sup>2</sup>
after 4 weeks	75 kg/cm <sup>2</sup>
Water absorption (after 1 hour in boiling water)	1.2%
Modulus of Elasticity	1.0 x 10 <sup>6</sup> kg/cm <sup>2</sup>
Shrinkage (1000°C)	0.8%
Fineness	above 250 microns 4% above 150 microns 24% above 75 microns 9% above 53 microns 2% below 53 microns 61%

## **CERASTIL C3 (CONT'D)**

### **Curing**

**CERASTIL C3** hardens by an internal chemical setting action. It does not require air to cure but it does need circulation to allow the moisture to evaporate. The initial set occurs in a few minutes to several hours depending on the drying temperature.

### **Curing table**

Drying temperature	10	21	32	60
Initial set (hours)	48	24	12	2
Water resistant (days)	16	8	5	2
Max. strength (days)	60	30	15	8

After the initial set, bond strengths up to 25% of final strength will be present. Strengths will continue to increase for a number of days after depending on temperature.

### **Shelf life**

**CERASTIL C3** powder is stable for at least two years when kept dry at room temperature. Thorough remixing of the powder is required after standing more than one month to avoid segregation that may occur during storage.

