SCProbond™ HT-1 Cement

High Temperature Potting Cement

High Temperature Ceramic Cement for Bonding SCProbond™ SiC Grades & Ceramics to Metal Substrates

SCProbond™ HT-1 High Temperature Potting Cement is a chemical-setting material based on a sodium silicate binder that exhibits an extended potlife. The cement can be used for bonding ceramics, glasses, or most metals and can be implemented in thicker applications without deformation. SCProbond™ HT-1 Cement is the ideal material for bonding SCProbond N nitride-bonded silicon carbide brick or tile to stainless steel substrates. To achieve a final set and maximum physical properties the cement must be heat cured at 160°F (71°C) for 8 hours after application. This can be done by placing completed structure in a temperature controlled oven or utilizing heating blankets on localized areas of construction.

CHARACTERISTICS

- Non-Halogen
- Adheres to practically all surfaces that are clean and free of oil and grease.
- Heat conductive and thermal shock resistant.
- Resists all acids (except hydrofluoric).
- Resists temperatures to 2012°F (1100°C)

AREA PREPARATION

Temperature of Working Area

Maintain a product temperature of 50-100°F prior to mixing. At temperatures below 50°F, the application becomes more difficult and viscosity of mixed material increases. Above 80°F, the working time on the material decreases. This can be overcome by working in a cooler area, cooling the mixing equipment, and/or cooling the potable water prior to mixing.

Physical Properties

Filler	Silica	
Density (Wet)	2.075 g/cc	$(129.54\ lb/ft^3)$
Density (Cured)	2.071 g/cc	$(129.29\ lb/ft^3)$
Compressive Strength	17.2MPa	(2500 psi)
pH Value	10.5	
Maximum Particle Size	5.95 microns	(0.023 in)
Maximum Service Temperature	1100°C	(2012°F)
Pot Life	Over 72 hours	
Functional Cure	8 hours at 71°C	(160°F)
Mix Ratio (By Weight)	100:15.5	(Powder to Water)
Coefficient of Thermal Expansion	$6.9 \times 10^{-6}/°C$	$(3.8 \times 10^{-6}/°F)$

Physical properties were determined on specimens prepared under laboratory conditions using applicable ASTM procedures and at the above mixing ratio and density. Actual field conditions may vary and yield different results; therefore, data are subject to reasonable deviation.

Surface Preparation

All surfaces in contact with the SCProbond™ HT-1 Cement should be clean, dry, and free of dust, dirt, grease, oil, and other contaminants. Chemical cleaning is recommended. All welds must be continuous and free of flux. Welds should have a smooth, rounded radius without any sharp edges. It is recommended that metal surfaces are sandblasted to SSPC-SP5 White Blast.

APPLICATION

Mixing

Cement Powder should be thoroughly remixed before use. Weigh out the powder and water separately. Place measured amount of water into a clean mixing container and gradually add the powder while mixing. Mixing should be done mechanically with a drill motor and paddle-type blade attachment. Mix for a minimum 3 to 5 minutes until a smooth consistency is obtained. Material that has begun to set cannot be re-tempered and must be discarded. The cement may be mixed to a thinner consistency by regulating the amount of water used; however, use of excess water will reduce the mechanical strength and increase shrinkage.

Installation

Trowel on an average 1/16"—1/8" thick bed joint of the mixed material on the substrate. Apply the mortar by buttering one side and one head joint (if required) of each tile or unit. Set the tile in place and position by tapping to obtain uniform coverage on bed & side joints. Strike extruded mortar off the face of the tile or installed unit with a trowel.

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SETTING/CURING

This cement is chemical-setting; but requires heat curing at 160°F (71°C) for 8 hours to achieve the final set and develop maximum strength and bond characteristics. Without heat cure, the cement may harden, but will exhibit minimum bond strength.

For those applications that will be exposed to temperatures above 212°F (100°C), an additional ramp in temperature to 220°F (104°C) for approximately 3 hours is recommended to drive off any residual moisture in the coating. The additional ramp in temperature from 160°F (71°C) through 220°F (104°C) should be no more than 20°F/hour (to avoid producing steam which can compromise the final material properties.

PACKAGING

Powder: 50 lb. plastic pails.

CLEAN-UP

All equipment should be cleaned with soap and water before SCProbond™ HT-1 cures.

SHELF LIFE

SCProbond™ HT-1 Powder has a shelf life of one (1) year when stored in unopened, tightly sealed containers in a dry location at 70°F (21°C). If there is a doubt as to the quality of the materials, consult a Silicon Carbide Products, Inc representative.

CAUTION

Consult Material Safety Data Sheets and container label Caution Statements for hazards in handling these materials.

WARRANTY

We warrant that our goods will conform to the description contained in the order, and that we have good title to all goods sold. WE GIVE NO WARRANTY, WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE OR OTHERWISE, EXPRESS OR IMPLIED, OTHER THAN AS EXPRESSLY SET FORTH HEREIN. Users shall determine the suitability of the product for intended application before using, and users assume all risk and liability whatsoever in connection therewith regardless of any suggestions as to application or construction. In no event shall we be liable hereunder or otherwise for incidental or consequential damages. Our liability and your exclusive remedy hereunder or otherwise, in law or in equity, shall be expressly limited to our replacement of nonconforming goods at our factory or, at our sole option, to repayment of the purchase price of nonconforming goods.