



# ChemCo Systems

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## CCS™ Bonder Paste, Chem/Rad Resistant

### Epoxy Paste Adhesive For Chemical/Radiation Resistant Bonding

CCS Bonder Paste, Chem/Rad Resistance is a two component, long working life, high modulus and creep resistant, epoxy paste adhesive designed for bonding precast concrete segments to concrete or steel, bonding concrete, masonry, stone and steel to themselves or each other and filling spalls, gaps and cracks where high chemical and/or radiation resistance is required. The product is unique in the degree of chemical and radiation resistance attained by an ambient temperature curing epoxy adhesive. CCS Bonder Paste, Chem/Rad Resistance may be applied on horizontal, vertical and overhead surfaces and is non-sag up to 1/4 inch in thickness. The product may be extended with up to 1 volume of dried silica sand without loss of non-sag properties. Sand extension reduces the heat generated by the curing reaction and allows for the placement of thicker cross sections of material when resistance to sag or flow is not an application requirement, CCS Bonder Paste, Chem/Rad Resistance employs a convenient 2 : 1, by volume mix ratio and bonds to dry and damp substrates. Due to its long working life, the product is ideally suited for applications requiring significant installation time.

#### Features

- Convenient 2:1, by vol. mix ratio
- High chemical and radiation resistance
- Bonds to dry and damp substrates
- No sag or flow at applied thickness of 1/4 inch
- Environmentally safe - No VOC solvents

**Limitations:** The recommended minimum substrate temperature during installation is 60 deg. F. The minimum substrate temperature for cure is 50 deg. F. The maximum in-service temperature should not exceed 20 deg. F below the HDT in bonding applications subjected to substantial and sustained shear stresses that may cause creep. Do not add solvents or otherwise thin this material.

**Packaging & Colors:** Standard package sizes of Part A & Part B are 3 and 15 gallons. Color is Dark amber (unpigmented)

**Shelf Life:** One-year minimum in unopened, original containers when stored between 60 and 90 deg. F in a dry place away from sunlight. Remixing of components may be required upon prolonged storage.

**Chemical Resistance:** CCS Bonder Paste, Chem/Rad Resistance provides excellent resistance to water, detergent and salt solutions, alcoholic and carbonated beverages, gasoline, kerosene, crude, fuel and mineral oil, strong alkali and inorganic acids in concentrations up to 25% and to most organic acids. Exposure to organic acids, strong acids and alkali in higher concentrations, hot water (above 140° F), bleaches and other highly corrosive chemicals should be occasional and time limited. Resistance under these conditions should be determined by actual test before the product is applied. The product has limited resistance to hydrocarbon solvents. CCS Bonder Paste, Chem/Rad Resistance also is resistant to radiation. For specific information on chemical resistance/exposure conditions and radiation resistance, contact a ChemCo Systems, Inc., technical representative.

**Surface Preparation:** Concrete surfaces may be dry or damp (not wet) but must be sound and free of all bond-inhibiting substances. Prepare surfaces in accordance with *ASTM D 4259* or *ACI 503R* and ChemCo Systems' specific recommendations. Cleaned concrete surfaces should have a minimum strength of 250 psi in direct tension. Steel surfaces should be cleaned to "white metal" according to SSPC SP 5.

**Mixing:** CCS Bonder Paste, Chain/Red Resistance is a two-component system. The resin to hardener (Part A : Part B) mix ratio is 2 :1, by volume. Read all material safety data (MSDS) information before handling the product. Wear safety glasses and clean neoprene rubber gloves when handling the materials. Premix the individual components before drawing from bulk packaging. Transfer the appropriate quantities of Part A and Part B into a mixing container. Use quantities that can be applied before the pot life of the material expires. Blend thoroughly using a Jiffy mixer blade attached to a low speed (350 - 750 rpm) electric or pneumatic drill. Proper mixing will take 2 - 3 minutes. The preferred aggregate for extending the material is high silica content sand (>85% SiO<sub>2</sub>), washed, kiln-dried, graded bagged. The sand particles should be round to sub angular in shape. Depending on the application, #16, 20 or 30 mesh size is recommended. Add aggregate to the combined Parts A and B and mix an additional 2 - 3 minutes.

**Installing:** For fairing, leveling and gap filling applications, apply mixed material on the prepared substrate using a margin or finishing trowel. When bonding two solid surfaces, apply mixed material with a trowel to the surfaces and spread to the specified bond line thickness on both surfaces to be mated. Establish contact between the surfaces using positive contact pressure. Maintain contact pressure until the adhesive has set. Remove excess material (squeeze-out) before the material sets. Fill wide cracks and voids by pumping or caulking the material in place.

**Clean up:** Excess mixed product is best removed from the work area and tools before it hardens. Use of rags and solvents such as acetone or heavy-duty detergents facilitate cleaning. Cured product may be removed from tools by soaking in an epoxy stripper.

TYPICAL PROPERTIES <sup>(1)</sup>

Property <sup>(2)</sup>	Test Method	Value
Mix Ratio, A:B,	by vol	2:1
	by wt	100:49
Color:	Part A	Amber
	Part B	Dark amber
	Mixed	Dark amber
Weight per Gallon (approx.), lb	Part A	9.5
	Part B	9.2
	Mixed	9.4
Non-Sag Thickness, inches	ASTM D 2730	¼
Gel Time, 225 g, minutes	ASTM D 2471	50
Open Time, 1/2" bead, hours	CHEMCO	4
Compressive Yield Strength, psi	ASTM D 695	8000
Compressive Modulus, psi	ASTM D 695	200,000
Flexural Strength, psi	ASTM D 790	6000
Flexural Modulus, psi	ASTM D 790	200,000
Heat Deflection Temp, deg. F	ASTM D 648	115
Slant Shear Strength, dry, psi	AASHTO T-237	Cement mortar failure (3)
Compressive Yield Strength Development, psi	ASTM D 695	
	@ 25 hours	1500
	@ 40 hours	6400
	@ 48 hours	7500
	@ 14 days	8000

- (1) The properties listed are typical and descriptive of the product and should not be used for specification purposes. For specification preparation, reference the ChemCo Systems, Inc., product guideline specification.
- (2) Cure schedule, 14 days at 73° ± 4 F and test temperature, 73° ± 4 F unless otherwise indicated.
- (3) Cure schedule, 7 days at 73° ± 4 F and test temperature, 73° ± 4 F. Compressive strength of cement mortar, 4500 psi.

**Handling and Toxicity:** This bulletin does not accompany the product when sold. For hazard warnings, safe handling and first aid instructions, READ CAREFULLY THE MATERIAL SAFETY DATA SHEETS AND CONTAINER WARNING LABELS.

**Part A:** Liquid epoxy resin, HMIS Health Hazard Rating - 2 (Moderate Hazard). Warning! Causes eye and skin irritation. May cause allergic skin reaction.

Harmful if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid prolonged or repeated contact with skin.

**Part B:** Liquid epoxy hardener, HMIS Health Hazard Rating - 3 (Serious Hazard). Contains alkaline amines. Danger! Causes severe eye and skin burns. May cause allergic skin and respiratory reaction. Combustible, corrosive. Do not get in eyes or skin or on clothing. Avoid breathing vapor. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Keep away from heat and open flame.

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