

CCS Bonder 217 SECURITY SEAL

Epoxy Paste
for Filling, Fairing,
Leveling and Bonding
Security Sealant

TYPE:	Two-component, solvent-free, epoxy resin / hardener.
PRIMARY USE:	Filling wide slots, cracks, gaps and voids; fairing and leveling uneven surfaces. Bonding rigid construction materials to themselves or each other. Security sealant for precast panel joints in jails and detention centers.
SUBSTRATES:	Concrete, masonry, stone, steel, wood and FRP. Product has very high sag resistance and is suitable for horizontal, vertical and overhead oriented holes, slots and joints.
MINIMUM TEMP:	Installation: 40° F, (substrate temperature).
COVERAGE:	As a joint filler, 0.13 cu. ft./gal.
ASTM C 881:	Meets requirements for paste bonding agents in cured concrete bonding: ASTM C881, Type I,II and IV (non-load and load bearing applications) and AASHTO M-237.

The properties listed in this bulletin are typical and descriptive of the product and should not be used for specification purposes. For specification preparation, reference the specification of this product available from ChemCo Systems, Inc.

Description: CCS™ Bonder 217 is a two-component, high modulus, structural; epoxy paste adhesive designed for application on vertical and overhead surfaces. Primary uses include fairing and leveling uneven concrete, filling of wide slots, cracks, gaps and voids in concrete and masonry, bonding of rigid construction materials, e.g., hardened concrete, masonry, stone, steel, wood and FRP to themselves or each other and anchoring bolts, dowels and rebar into horizontal and overhead oriented holes and slots in concrete, masonry stone or wood. CCS™ Bonder 217 bonds to dry, damp and wet substrates and can be applied up to 3/4 inch thick without sag or flow. The product is toughened with Kevlar® to be non-brittle, pick-proof and exhibits high tear resistance. The product does not contain volatile organic compounds (VOC's).

Features: The excellent physical properties of the product allow its use in applications requiring resistance to creep and stress relaxation, maintenance of mechanical properties at high ambient temperatures and high load bearing strength. Exceptional substrate wetting and water displacement properties ensure excellent adhesion under adverse application conditions, e.g., cold, wet concrete. High sag resistance for overhead applications. Toughened with Kevlar® for improved mechanical shock resistance. Long useful potlife and open times.

Limitations: The recommended minimum substrate temperature during installation and cure is 40°F. The maximum in-service temperature should not exceed 20°F below the HDT in bonding applications subjected to substantial and sustained shear stresses that may cause creep. Do not add solvents to this material. The component viscosity may be decreased by heating with a drum or pail heater for easier mixing and application.

Packaging: Standard package sizes of Part A + Part B are 2, 10 and 100 gallon units.

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

Color Selection: The standard color of the mixed components is concrete gray. Custom colors are available and may require minimum quantities and/or slightly higher cost.

Chemical Resistance: CCS™ Bonder 217 Paste has excellent resistance to a wide range of commonly encountered chemicals including acids and bases, aircraft and automotive fluids, petroleum fuels, cutting oils, etc. It has limited resistance to hydrocarbon solvents. For information on specific chemicals and exposure conditions, contact a ChemCo Systems, Inc., technical representative.

Surface Preparation: Concrete surfaces may be dry, damp or wet but must be sound and free of all bond-inhibiting substances. Prepare surfaces for bonding in accordance with ASTM D 4259, "Standard Practice for Abrading Concrete," or ACI 503R, Chapter 5, "Preparing Surfaces for Epoxy Compound Application," and ChemCo Systems, Inc.'s specific recommendations. Properly prepared 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 217 Paste is a two-component adhesive. The resin to hardener (Part A:Part B) mix ratio is 1:1, by volume. Premix the individual components before drawing from bulk packaging. Wear safety glasses and rubber gloves when handling the material. Transfer the appropriate quantities of Part A and Part B into a mixing container. Use quantities that can be applied before the potlife 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. Pre-warming the separate components to at least 70° F or as high as 125° F will allow easier mixing.

Installing: For fairing and leveling applications, apply mixed material on the prepared substrate using a margin or finishing trowel. Pumping or caulking the material into place may fill wide cracks, gaps and voids. When bonding two solid surfaces, apply bonding agent to both surfaces. 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. To grout bolts, dowels and rebar into horizontal and overhead holes, place the required amount of material in the hole (approx. 40% of hole volume) using a bulk loading caulking gun with a nozzle of appropriate length. Retract the nozzle tip as the hole fills. Insert the bar slowly while rotating to expel air. Secure the bar in the center of the hole. (Albion Engineering is an excellent source for manual and air-operated bulk loading caulk guns.) For external reinforcing applications, flat substrates should have a minimum of 1/16" or 1.5 mm adhesive thickness. For additional application information, see ACI 503R, Chapter 7, "Applying Epoxy Compounds."

YIELD AS JOINT FILLER/LOOP SEALANT:

The following material estimates do not take into consideration material lost in mixing and application or excess material for overfilling the joint or slot.

Joint Dimensions, inches	Approx. Coverage		
	Width	Depth	Lineal feet/gallon
	1/2	1/4	154
	1/2	3/8	102
	3/4	3/8	68
	3/4	1/2	51
	1	3/4	25

TYPICAL PROPERTIES (1)

PROPERTY		TEST METHOD	VALUE		
Mix Ratio, A:B,	by vol		1:1		
	by wt		100:98		
Weight per Gallon, lb:	Part A	ASTM D 1475	8.9		
	Part B		8.8		
	Mixed		8.8		
Viscosity, poise:	Part A Part B Mixed	ASTM D 2393	@ 50 F	@73 F	@105 F
			--	10000	--
			--	8500	--
			--	9250	--
Non-Sag Thickness, inches		ASTM D 2730	--	3/4	--
Gel Time, 1 quart, minutes		ASTM C 881	150	70	33
Thin Film Properties:					
Open Time,	hours	AASHTO T-237	--	3	--
Hard Dry Time,	hours	ASTM D 1640	--	6	--
Cure Time,	days	AASHTO T-237	--	1	--
Compressive Yield Strength, psi		ASTM D 695	8400		
Compressive Modulus, psi		ASTM D 695	250,000		
Flexural Strength, psi		ASTM D 790	10,500		
Flexural Modulus, psi		ASTM D 790	630,000		
Tear Resistance, Lb/In		ASTM D 624	110 (3)		
Heat Deflection Temp, ° F		ASTM D 648	126		
Bond Strength, psi:	2 day cure @ 60° F	ASTM C 882	2100 (2)		
	14 day cure @ 60° F		2500 (2)		

(1) Cure schedule, 7 days at 73° ± 4° F and test temperature, 73° ± 4° F unless otherwise indicated.

(2) Compressive strength of cement mortar, 4500 psi.

(3) Crosshead speed 2 In/Min

Clean up: All tools and equipment must be cleaned before the mixed material cures. Cleaning can be facilitated with a solvent such as acetone or heavy-duty detergents. Cured material may be removed from equipment and tools by soaking in an epoxy stripper.

Handling and Toxicity: This bulletin does not accompany the product when sold. For hazard warnings, safe handling and first aid instructions, see part A and B MSDS.

CAREFULLY READ 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- 2 (Moderate Hazard). Contains alkaline amines. Warning! Causes severe eye and skin irritation. May cause allergic skin and respiratory reaction, mild 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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