



# ChemCo Systems

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## CCS™ BONDER LIQUID, SWL

### Short Working Life Epoxy Liquid Adhesive For Bonding

CCS Bonder Liquid, SWL (Short Work Life) is a two component, short working life, structural, epoxy liquid adhesive designed for application on horizontal surfaces and in downward oriented holes. The 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. Primary applications include the structural bonding of plastic (fresh) concrete to hardened (existing) concrete, bonding of hardened concrete, masonry and stone to themselves and each other, grouting keyways, and anchoring bolts, dowels and rebar into downward oriented holes in concrete, masonry or stone. The product is designed for bonding and grouting applications requiring short set times and for bonding fresh to existing concrete at low ambient temperatures. The working/cure time and viscosity of Bonder Liquid, SWL can be adjusted by blending with the appropriate companion products (see below). The product bonds to dry, damp and wet (no free standing water) substrates and meets the *ASTM C 881* requirements for bonding agents in load bearing applications.

#### Features

Convenient 2 : 1, by vol. mix ratio

Short work life for fast cure or use at low temperatures

Bonds to dry, damp and wet (no free standing water) substrates

Adjustable work life/viscosity using product blends

Exceptional substrate wetting/water displacement

Environmentally safe- No VOC solvents

**Limitations:** The recommended minimum substrate temperature during installation and for cure is 40 deg F. (For installation and cure at high ambient temperatures or when a longer work life is needed, use CCS Bonder Liquid, LWL). The maximum in-service temperature should not exceed 20 deg F below the HDT in applications subjected to substantial and sustained shear stresses that may cause creep. When bonding plastic concrete containing resinous admixtures, establish the suitability of the concrete mix before actual use. Do not add solvents or otherwise thin this material

**Packaging & Colors:** Standard package sizes of Part A & Part B are 3 and 15 gallons. Standard color is Concrete gray (blue-gray)

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

**Chemical Resistance:** Bonder Liquid, SWL has excellent resistance to a wide range of commonly encountered chemicals including acids and bases, aircraft and automotive fluids, cutting oils, etc. Performance is a function of the specific chemical and concentration, exposure times and housekeeping procedures. 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 (no free standing water) 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:** Bonder Liquid, SWL 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. Mixing will take 2 - 3 minutes. Pour mixed material onto the prepared substrate and spread to the specified coverage with a V-notch trowel, squeegee or paint roller. For large areas, spray application of the material is recommended. When mating two solid surfaces, apply bonding agent to both surfaces. Allow all coated substrate surfaces to rest for 5 - 10 minutes before pouring fresh concrete or mating with another surface. In plastic to hardened concrete bonding applications, the bond line should be at least 15 mils. Lightweight concrete may require a second coat of adhesive. In other bonding applications, bond line thickness is less critical but should be at least 4 mils above the peaks in the surface profile.

**Blending With Compatible Products:** The working life/cure time of Bonder Liquid, SWL may be increased, if required, by pre-blending the Part B with the Part B of the long work life product, Bonder Liquid, LWL. The viscosity of Bonder Liquid, SWL may be increased by blending the mixed product with mixed companion paste product, Bonder Paste, SWL. The long and short work life and liquid and paste forms of the product employ a 2:1 (by vol.) mixing ratio that must be maintained at all times.

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

Property <sup>(2)</sup>		Test Method	Value		
Mix Ratio, A : B,	by vol		2 : 1		
	by wt		100 : 35		
Weight per Gallon, lb:	Part A	ASTM D 1475	12.1		
	Part B		8.1		
	Mixed		10.8		
Viscosity, p:	Part A Part B Mixed	ASTM D 2393	<b>@ 50F</b>	<b>@ 73F</b>	<b>@ 105 F</b>
			300	105	35
			10	5	1
			80	40	10
Gel Time, 1 quart,	hours	ASTM D 2471	0.5	0.3	0.1
Thin Film Properties:					
Open Time, hours		AASHTO T-237	4	3	0.2
Hard Dry Time, hours		ASTM D 1640	24	8	2
Cure Time, days		AASHTO T-237	10	4	1
Tensile Strength, psi		ASTM D 638	6500		
Elongation at Break, %		ASTM D 638	1.5		
Compressive Yield Strength, psi		ASTM D 695	12,000		
Compressive Modulus, psi		ASTM D 695	350,000		
Flexural Strength, psi		ASTM D 790	10,500		
Flexural Modulus, psi		ASTM D 790	400,000		
Heat Deflection Temp., deg F		ASTM D 648	124		
Bond Strength, psi:	2 day moist cure	ASTM C 882	1650		
	14 day moist cure		2550		

(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, 7 days at 73 ± 4 F and test temperature, 73 ± 4 F unless otherwise indicated.

**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.

**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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