

## CCS™ GROUT, LOW VISCOSITY

### Structural Epoxy Adhesive for Pressure Injection Grouting

CCS Grout, Low Viscosity is a two component, very low viscosity, structural, epoxy adhesive designed for low temperature applications with automatic meter, mix and dispense pressure injection equipment. The physical properties allow its use in applications requiring resistance to creep and stress relaxation, maintenance of mechanical properties at high in-service temperatures, high load bearing strength and excellent adhesion under adverse application conditions. Exceptional substrate wetting and very low viscosity allow filling of fine crack and void networks as narrow as 2 mils. CCS Grout, Low Viscosity can be injected at lower temperatures than other epoxy resin products. Primary uses include the repair of cracks and delaminations in concrete, masonry, stone and wood; filling of voids in porous and honeycombed concrete and grout; adhesive bonding of steel plates and FRP (external reinforcement) and anchoring bolts, dowels and rebar into concrete, masonry or rock. CCS Grout, Low Viscosity meets the requirements of ASTM C 881, Type IV, Grade 1 (structural load bearing) and AASHTO M 235.

#### Feature:

Convenient 2: 1, by vol. mix ratio

Fast cure for short downtime

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

Very low viscosity for low temperature use

Does not embrittle; stays tough and resilient

Contrasting A and B component colors

Environmentally safe - No VOC solvents

**Limitations:** The recommended substrate temperature during installation is approx. 35-90°F. For installation temperatures above approx. 90°F, consider use of CCS Grout, Standard - High Ambient Temperature.) 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. Installed thickness in excess of 1/4" may require the use of pre-placed aggregate to dissipate heat generated during the cure process. 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 of part B is dark purple. Clear amber by special order.

**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.

**Chemical Resistance:** CCS Grout, Low Viscosity has excellent resistance to a wide range of commonly encountered chemicals including acids and bases, aircraft and automotive fluids, cutting oils, etc. Performance is 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 but must be sound and free of all bond-inhibiting substances. Prepare cracks by blowing clean with oil-free compressed air or by flushing with an appropriate cleansing solution as required to remove foreign substances and contaminants. Prepare exposed surfaces for bonding 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 Grout, Low Viscosity is a two-component system designed specifically for use with automatic meter, mix and dispense application equipment. The resin to hardener (Part A: Part B) mix ratio is 2:1, by volume. Job specifications should include provisions for routine periodic testing of the grouting equipment to determine that it is metering the components accurately and delivering thoroughly mixed material. Read 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.

**Installing:** Install material in accordance with established industry procedures and guidelines. Use only trained workmen with experience in pressure injection repair. For additional information on repair by pressure injection grouting, see *ACI 503R, Chapter 7, "Applying Epoxy Compounds."* Allow for adequate cure of the epoxy adhesive before the structure is returned to service.

**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 by wt		2: 1 100: 43
Color:	Part A Part B	VISUAL	Clear amber Dark purple
Mixed			Dark purple
Weight per Gallon, lb:	Part A Part B Mixed	ASTM D 1475	9.5 8.1 9.1
Viscosity, cp:	Part A Part B Mixed	ASTM D 2393	310 105 215
Mixed Viscosity	@ 40°F, cp	ASTM D 2393	1200
Gel Time, 100 g, minutes:	@40°F @73°F	ASTM D 2471	90 19
Tensile Strength, psi		ASTM D 638	10,400
Elongation at Break, %		ASTM D 638	2.4
Compressive Yield Strength, psi		ASTM D 695	16,000
Compressive Modulus, psi		ASTM D 695	537,000
Flexural Strength, psi		ASTM D 790	11,500
Flexural Modulus, psi		ASTM D 790	450,000
Heat Deflection Temperature, °F		ASTM D 648	140
Bond Strength, psi: 2 days (moist cure)		ASTM C 882	3579
14 days (moist cure)			3713

(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.

**Handling and Toxicity:** This bulletin does not accompany the product when sold. For hazard warnings, safe handling and first aid instructions, 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 - 3 (Serious Hazard). Contains alkaline amines. Danger! Causes severe eye and skin burns. May cause allergic skin and respiratory reaction. 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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