ChemCo Systems
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CCS™ Grout, Low Modulus

Low Modulus Epoxy Adhesive For Pressure Injection Grouting

CCS Grout, Low Modulus is a two component, low viscosity, low modulus epoxy adhesive designed for application with automatic meter, mix and dispense pressure injection equipment. Primary uses include non-structural pressure injection grouting of cracks, delaminations and voids in concrete, masonry, stone, wood and FRP; filling of voids in porous and honeycombed concrete; (e.g. where repair with a low modulus/stress relieving adhesive is specified such as water stop filling of control and construction joints. CCS Grout, Low Modulus is an excellent adhesive for bonding performed polymer or elastomeric products to rigid substrates. Applications requiring material placement in excess of 1/4" may be facilitated by pre-placing aggregate in the void. CCS Grout, Low Modulus bonds to dry, damp and wet concrete, masonry, and stone. Polymer substrate such as rigid PVC, Neoprene, etc. should be dry at time of application. Meets ASTM C 881, Type III, Grade 1 requirements.

Features

Convenient 2:1, by vol. mix ratio
Fast cure for short downtime
Bonds to dry, damp and wet substrates
Exceptional wetting for filling of fine cracks
Bonds flexible to rigid substrates
Does not embrittle; stays tough and resilient
Contrasting A and B component colors
Environmentally safe - No VOC solvents

Limitations: The minimum substrate temperature for cure is 40 °F. CCS, Grout Low Modulus is not recommended for use as a rigid materials bonding agent in applications subjected to substantial or sustained shear stresses that may result in creep. Installed thickness in excess of ¼" 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 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 Modulus 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. Performance is a function of the specific chemical, the 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. 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 Grout, Low Modulus is a two-component system designed specifically for use with automatic meter, mix and dispenses 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 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 (1)

Property (2)		Test Method	Value
Mix Ratio, A:B	by vol		2:1
	by wt		100:43
Color:	Part A	VISUAL	Clear amber
	Part B		Dark purple
	Mixed		Dark purple
Weight per Gallon, lb:	Part A	AASTM D 1475	9.2
	Part B		7.8
	Mixed		8.7
Viscosity, cp:	Part A	ASTM D 2393	325
	Part B		230
	Mixed		370
Gel Time, 100 g, minutes:	@73° F	ASTM D 2471	30
Tensile Strength, psi		ASTM D 638	2100
Elongation at Break, %		ASTM D 638	70
Tensile Modulus, psi		ASTM D 638	16,000
Bond Strength to ASTM C 109		ASTM D 4541	
Cement Mortar, psi:	dry		500 (3)
	damp		430 (3)

(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.

(3) 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, 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. 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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