

CCS™ SLUMP PUMPING IR

INJECTION RESIN - SLUMP PUMPING

STRUCTURAL EPOXY ADHESIVE FOR PRESSURE INJECTION

TECHNICAL DATA SHEET FOR PROFESSIONAL CONTRACTOR USE ONLY

DESCRIPTION

CCS™ Slump Pumping IR is a two-component, low viscosity, structural epoxy adhesive specifically designed for pressure injection grouting using automatic meter, mix, and dispense application equipment. It is designed for concrete substrate on-grade and vertical concrete substrates where sealing of the opposite side (for containment of the injection adhesive) is not possible. It has the highest viscosity of all ChemCo low viscosity structural epoxy adhesives and it has a short working time to allow it to gel quickly when mixed and injected. "Slump Pumping" is a phrase coined by the founders of ChemCo Systems which means that the injection resin gels, cures quickly, and leaves residual injection resin on the sides of the crack when some of the injection resin drains out of the unsealed backside. The residual injection resin on the walls of the cracks means the crack will be narrower when re-injected. Slump pumping occurs when the crack is re-injected more than once, eventually filling the crack as residual injection resin builds. Primary uses include the repair of cracks and delaminations in concrete, masonry, stone, and wood. CCS™ Slump Pumping IR bonds to dry and damp substrates. It contains no VOC's (volatile organic compounds)

- Meets - ACI 548.15-20 Specification for Crack Repair by Epoxy Injection
- Meets - ICRI Guide for Verifying Field Performance of Epoxy Injection of Concrete Cracks

FEATURES

CCS™ Slump Pumping IR cures to a tough, resilient polymer and has excellent load transfer capability. Exceptional substrate wetting ensures penetration and filling of fine fissures and tributary cracks as narrow as 10 mils (0.25 mm) in width. CCS™ Slump Pumping IR is an economical structural epoxy adhesive designed for use when the backside of a crack cannot be sealed. Its physical properties are sufficient for most general repairs. It has a convenient 2:1 (by vol.) mixing ratio and employs special colorants for contrasting component color.

TYPICAL USES

- The relatively short working life and comparative high viscosity makes the adhesive ideally suited for use in on-grade and vertical applications requiring 'slump pumping' pressure injection procedures.
- In most instances, 'slump pumped' cracks can be re-injected after 40 - 50 minutes of cure time. Unlike many other high modulus structural epoxy adhesives, CCS™ Slump Pumping IR cures to a tough, resilient polymer with excellent load transfer capability.
- Grouting of load bearing voids under equipment.

LIMITATIONS

The minimum substrate temperature for cure is 40°F (4°C).

- For installation in wider cracks use CCS™ Standard IR ranging from 6 mils to 1/4 inch (0.15 mm to 6.35 mm).
- When very narrow cracks of 2 mils (0.05 mm) are encountered, consider using CCS™ Low Viscosity IR.
- For use in installation temperatures of 35°F - 65°F (1.7°C - 18.3°C) or when very narrow cracks are encountered, consider

TECHNICAL DATA

7 days 73°F (23°C) unless otherwise indicated. Compressive strength of cement mortar 4,500 psi (13.0 MPa).

PHYSICAL PROPERTIES		TEST METHOD	VALUE
Mix Ratio by Volume			2:1
Mix Ratio by Weight			100:45
Color	Part A Part B Mixed	VISUAL	Clear Amber Dark Purple Dark Purple
Weight per Gallon:	Part A Part B Mixed	ASTM D1475	9.5 lbs (4.3 kg) 8.4 lbs (3.8 kg) 9.1 lbs (4.1 kg)
Viscosity	Part A Part B Mixed	ASTM D2393	700 cps 150 cps 500 cps
Viscosity @ 40°F (4°C)	Part A Part B Mixed	ASTM D2393	5000 cps 600 cps 2000 cps
Gel Time, 100 g	40° F (4°C) 73° F (23°C)	ASTM D2471	28 mins 7 mins
Tensile Strength		ASTM D638	5,400psi (37.2 MPa)
Tensile Elongation		ASTM D638	2%
Compressive Yield Strength		ASTM D695	14,400 psi (99.3 MPa)
Compressive Modulus		ASTM D695	450,000 psi (3,100 MPa)
Flexural Strength		ASTM D790	9,900 psi (68.3 MPa)
Flexural Modulus		ASTM D790	405,000 psi (2,790 MPa)



Heat Deflection Temp	ASTM D648	110°F (43°C)
Wet Slant Shear Bond Strength 7 Days at 40°F (4°C)	ASTM C882	Concrete Failure
Pull Off Bond Strength	ASTM D1583	400 psi (2.8 MPa)

use of CCS™ Ultra Low Viscosity IR.

- For Installation temperatures above approximately 90°F (32°C), consider using CCS™ HiAmb IR.
- For large voids consider using CCS™ Low Exotherm IR.
- The maximum in-service temperature should be 20°F (-7°C) below the HDT (heat deflection temperature) in bonding applications subjected to substantial and sustained shear stresses that may cause creep.
- Installed thickness in excess of 1/4 inch (6.35 mm) 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.

SUBSTRATES

Concrete (dry, damp, and wet), masonry, stone, steel, and wood.

APPLICATIONS

Cracks, voids, delaminations and annular spaces greater than 1/4" require pre-placed aggregate.

PACKAGING & COLORS

Standard package sizes of Part A + Part B are 3, 15, and 150-gallon (11.36, 56.79 and 567.9 l.)

The standard color of the mixed components is dark purple. A clear amber color is available and may require minimum quantities and/or slightly higher cost.

SHELF LIFE

Three years minimum in unopened, original containers when stored between 50°F and 90°F (10°C and 32°C) in a dry place away from sunlight. Remixing of components may be required upon prolonged storage.

CHEMICAL RESISTANCE

CCS™ Slump Pumping IR 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 and concentration, ambient and solution temperatures, exposure times, and housekeeping procedures. For information on specific chemicals and exposure conditions, contact a ChemCo Systems Technical Representative.

SURFACE PREPARATION

Substrate surfaces must be dry or damp, sound and free of all bond-inhibiting substances. Prepare surfaces in accordance with International Concrete Repair Institute, ICRI Guideline No. 310.2R Selecting and Specifying Concrete Surface Preparation for Sealers,

Coatings, Polymer Overlays, and Concrete Repair, Concrete Surface Profile, CSP 2 to CSP 4. The concrete surfaces should have a minimum strength of 250 psi (1.72 MPa) in direct tension per ASTM C1583 Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method). Steel surfaces should be cleaned to "white metal" according to SSPC-SP 5/NACE No. 1 White Metal Blast Cleaning is a standard used for white metal blast cleaning put forth by the SSPC (Society for Protective Coatings) and NACE (National Association of Chemical Engineers) international standards.

MIXING

CCS™ Slump Pumping IR is a two-component adhesive. The resin to hardener (Part A: Part B) mix ratio is 2:1, by volume.

INSTALLING

CCS™ Slump Pumping IR is installed in accordance with ChemCo Systems specific recommendations. For additional information on repair by pressure injection grouting, see ACI 503.7, Specification for Crack Repair by Epoxy Injection and ICRI Guide for Verifying Field Performance of Epoxy Injection of Concrete Cracks.

CLEAN-UP / DISPOSAL

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.

SAFETY

This bulletin does not accompany the product when sold. For hazard warnings, safe handling, and first aid instructions, CAREFULLY READ THE 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 an 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 eye and skin irritation, 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. Keep away from heat and open flame.

TECHNICAL SUPPORT

Additional information, technical assistance, and management services are also available from a ChemCo Systems Technical Consultant at sales@chemcosystems.com or 650-261-3790.

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.

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PROJECT NOTES



Limited Warranty: Please read all information in the General Guidelines, Technical Data Sheets, Guide Specifications and Safety Data Sheets (SDS) before applying material. These products are for professional use only and preferably applied by professionals who have prior experience with ChemCo Systems materials or have undergone training in application of ChemCo Systems materials. Published technical data and instructions are subject to change without notice. Contact your local ChemCo Systems representative or visit our website for current technical data, instructions, and project specific recommendations.

ChemCo Systems warrants its products to be free of manufacturing defects and that they will meet ChemCo Systems' current published physical properties. Seller's and manufacturer's sole responsibility shall be to replace that portion of the product which proves to be defective. There are no other warranties by ChemCo Systems of any nature whatsoever expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. ChemCo Systems shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. ChemCo Systems shall not be responsible for use of this product in a manner to infringe on any patent held by others. In addition, no warranty or guarantee is being issued with respect to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear or improper application by the applicator. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature and/or physical movement of the substrate or structural defects are also excluded from the limited warranty. ChemCo Systems reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator.

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