

CCS™ STANDARD IR

INJECTION RESIN - STRUCTURAL EPOXY ADHESIVE

FOR PRESSURE INJECTION

TECHNICAL DATA SHEET

FOR PROFESSIONAL CONTRACTOR USE ONLY

DESCRIPTION

CCS™ Standard IR is a two-component, structural epoxy adhesive resin / hardener specifically designed for pressure injection grouting. Primary uses include the structural 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 (external reinforcement); anchoring bolts, dowels, and rebar into concrete, masonry, or stone and CFRP (carbon fiber-reinforced polymer). Applications requiring material thickness in excess of 1/4 inch (6.35 mm) may be facilitated by pre-placing aggregate in the void. CCS™ Standard IR bonds to damp, wet, and underwater substrates. The components do not contain VOC's (volatile organic compounds).

- Meets - ASTM C881 and AASHTO M235: Meets the requirements for Type IV, Grade 1, Class B and Class C
- Meets - ACI 548.15-20 Specification for Cracked Repair by Epoxy Injection
- Meets - ICRI 210.1R Guide for Verifying Field Performance of Epoxy Injection of Concrete Cracks

FEATURES

The physical properties of the product allows it to be used in applications requiring resistance to creep and stress relaxation, maintenance of mechanical properties at high ambient temperatures, and highload bearing strength. Exceptional substrate wetting and water displacement properties ensure excellent adhesion under adverse application conditions, e.g., cold, wet concrete.

- CCS™ Standard 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 6 mils (0.051 mm) width. Convenient 2:1 (by vol.) mixing ratio.
- Employing special colorants for contrasting component color.

TYPICAL USES

- Structural repair of cracks and delaminations in concrete, masonry, and wood.
- Filling of porous and honeycombed concrete and grout.
- External reinforcement of steel plate and CFRP (carbon fiber reinforced polymer).
- Anchoring bolts, dowels, and rebar into concrete, masonry, and stone.
- Bonding dissimilar items to concrete, masonry, and stone.
- Grouting of tight load bearing voids under equipment.

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.) Cartridges available.

The standard color of the mixed components is dark purple. For decorative application a clear amber color is available and may require minimum quantities and/or slightly higher costs.

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			100:43
Color	Part A Part B Mixed	Visual	Clear Amber Dark Purple Dark Purple
Weight per Gallon	Part A Part B Mixed	ASTM D1475	9.4 lbs (4.3 kg) 8.1 lbs (3.7 kg) 9.0 lbs (4.1 kg)
Viscosity	Part A Part B Mixed	ASTM D2393	400 cp 150 cp 350 cp
Mixed Viscosity @ 50° F (10°C)		ASTM D2393	1,400 cp
Gel Time @ 100 gr	@ 50° F (10°C) @ 73° F (23°C)	ASTM D2471	35 minutes 14 minutes
Tensile Strength		ASTM D638	9,180 psi (63.3 MPa)
Elongation at Break		ASTM D638	2.1%
Compressive Yield Strength		ASTM D695	14,850 psi (102 MPa)
Compressive Modulus		ASTM D695	495,000 psi (3,410 MPa)
Flexural Strength		ASTM D790	10,800psi (74.5 MPa)
Flexural Modulus		ASTM D790	495,000 psi (3,410 MPa)
Heat Deflection Temp		ASTM D648	140°F (60°C)
Bond Strength (moist cure)	2 days 14 days	ASTM C882	2,790 psi (19.2 MPa) 3,510 psi (24.2 MPa)
Bond Pull-Off Strength to Concrete		ASTM C1583	400 psi (2.8 MPa)



SHELF LIFE

Three years in unopened, original containers when stored between 60°F and 90°F (15.6°C and 32.2°C) in a dry place away from sunlight. Remixing of components may be required upon long-term storage. Avoid freezing temperatures.

LIMITATIONS

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

- When very narrow cracks are encountered, consider use of CCS™ Low Viscosity IR.
- For Installation temperatures above approximately 90°F (32°C), consider use of CCS™ HiAmb IR.
- For large voids consider use CCS™ Low Exotherm IR.
- For cracks that cannot be sealed on the backside consider using CCS™ Slump Pumping IR.
- The maximum in-service temperature should be 20°F (-7°C) below the HDT 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, wet, and underwater), masonry, stone, steel, wood, and CFRP.

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™ Standard IR is a two-component adhesive specifically designed 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.

CHEMICAL RESISTANCE

CCS™ Standard 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.

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-3 (Serious Hazard). Contains alkaline amines. Danger! Causes severe eye and skin burns. May cause allergic skin and respiratory reactions. 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.

TECHNICAL SUPPORT

Additional information, technical assistance, and management services are also available from a ChemCo Systems Technical Representative 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.

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