

CCS™ IR GROUT, UNDERWATER

STRUCTURAL EPOXY ADHESIVE FOR PRESSURE INJECTION GROUTING

TECHNICAL DATA SHEET FOR PROFESSIONAL CONTRACTOR USE ONLY

DESCRIPTION

CCS™ IR Grout, Underwater is a two-component, low viscosity, structural epoxy adhesive designed for application with 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 and high load-bearing strength. Excellent substrate wetting and water displacement properties provide adhesion and high bond strength under adverse application conditions, e.g., cold, submerged concrete. Primary uses include the structural repair of cracks and delaminations in concrete, masonry, stone, and sealed wood; filling of voids in porous and honeycombed concrete and grout; adhesive bonding of steel plates (external reinforcement); and, anchoring bolts, dowels, and rebar into concrete, masonry, or rock when the substrate is immersed or submerged in water. Underwater bonds to dry, damp and wet substrates and to substrates immersed or submerged in fresh or saltwater. It has a convenient 2:1 (by volume) mixing ratio and employs special colorants for contrasting component color.

FEATURES

- Convenient 2:1, by vol. mix ratio
- Fast cure for short downtime
- Bonds to dry, damp, wet, immersed and submerged substrates
- Suitable for use in both fresh and salt water
- Exceptional wetting for adhesion under adverse conditions
- Does not embrittle; stays tough and resilient
- Contrasting A and B component colors
- Environmentally safe-No VOC solvents

SURFACE PREPARATION

Concrete surfaces may be dry, damp, wet, immersed, or submerged but must be sound end free of all bond-inhibiting substances. Prepare cracks by blowing clean with oil-free compressed air or by flushing clean with an appropriate cleansing solution as required to remove foreign substances and contaminants. Prepare exposed surfaces for bonding according to 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. In underwater end tidal zone applications where cleaning of the substrate is possible, the product may have to be applied within a relatively short period (30 minutes to several hours) after substrate preparation to achieve a strong bond. Contamination of the concrete surface may negatively affect the bonding capability of the product.

MIXING

CCS™ IR Grout, Underwater 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 all safety data sheet (SDS) 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.

TECHNICAL DATA¹

PHYSICAL PROPERTIES ²	TEST METHOD	VALUE
Mix Ratio, A:B		2:1 by volume 100:44. by weight
Color		Part-A: Clear amber Part-B: Dark purple Mixed: Dark purple
Weight per Gallon	ASTM D1475	Part-A 9.5 lbs Part-B: 8.3 lbs Mixed: 9.1 lbs
Viscosity	ASTM D2393	Part-A: 300 cp Part-B: 150 cp
Viscosity @ 40°F	ASTM D2393	Part-A: 1800 cp Part-B: 850 cp
Gel Time 100 gm @ 40°F @ 73°F	ASTM D2471	50 minutes 15 minutes
Tensile Strength	ASTM D638	7,800 psi
Elongation at Break	ASTM D638	2%
Compressive Yield Strength	ASTM D695	14,600 psi
Heat Deflection Temperature	ASTM D648	130°F
Wet Slant Shear Strength, psi (Cure schedule, 3 days @ 40°F)	AASHTO T-237	Cement mortar failure ⁽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.

(3) Compressive strength of cement mortar, 4500 psi.



INSTALLING

Install material according to 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. The use of rags and solvents such as acetone or heavy-duty detergents facilitates cleaning. Cured product may be removed from tools by soaking in an epoxy stripper.

CHEMICAL RESISTANCE

CCS™ IR Grout, Underwater 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.

PACKAGING & COLORS

- Standard package sizes of Part A & Part B are 3 and 15 gallons.
- Standard Part B 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 long-term storage.

LIMITATIONS

The minimum substrate temperature for cure is 40°F. 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. For installation temperatures near or

below 40°F or when very narrow cracks are encountered, consider the use of CCS™ IR Grout, Low Viscosity. Installed thickness over 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.

HANDLING AND TOXICITY

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 allergic skin reactions. 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. Combustible, corrosive. Do not get in eyes, 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.



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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