

KEMKO® 038 Regular IR

INJECTION RESIN - STRUCTURAL EPOXY ADHESIVE

FOR PRESSURE INJECTION

PRODUCT IS ONLY AVAILABLE TO KEMKO® APPLICATORS IN U.S., CANADA, AND INTERNATIONAL CUSTOMERS

TECHNICAL DATA SHEET

KEMKO® 038 Regular IR is a two-component, low viscosity, structural epoxy adhesive resin / hardener specifically designed for pressure injection grouting using KIP™ (KEMKO® Injection Process) System automatic meter, mix, and dispensing application equipment. 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. External Reinforcement of steel plate 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. KEMKO® 038 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 Guide for Verifying Field Performance of Epoxy Injection of Concrete Cracks

FEATURES

The physical properties of the product allow its use in applications requiring resistance to creep and stress relaxation, maintenance of mechanical properties at high ambient temperatures, high load bearing strength, and excellent adhesion under adverse application conditions, e.g., cold, wet concrete.

- KEMKO® 038 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" are improved with pre-placed aggregate.

COLORS

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 cost.

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	10,200 psi (72.33 MPa)
Elongation at Break		ASTM D638	2.1%
Compressive Yield Strength		ASTM D695	16,500 psi (113.76 MPa)
Compressive Modulus		ASTM D695	550,000 psi (3,792 MPa)
Flexural Strength		ASTM D790	12,000 psi (82.74 MPa)
Flexural Modulus		ASTM D790	550,000 psi (3,792.12 MPa)
Heat Deflection Temp		ASTM D648	140°F (60°C)
Bond Strength (moist cure)	2 days 14 days	ASTM C882	3,100 psi (21.37 MPa) 3,900 psi (26.89 MPa)
Bond Pull-Off Strength to Concrete		ASTM C1583	400 psi (2.8 MPa)

PACKAGING

Standard kit sizes of Part A + Part B are 3, 15, and 150 gallon (11.36, 56.78 and 567.8 l.). Cartridges available.

SHELF LIFE AND SHIPPING

Three years minimum 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 KEMKO® 068 LoVis IR.
- For Installation temperatures above approximately 90°F (32°C), consider use of KEMKO® 030, HiAmb IR.
- For large voids consider use KEMKO® 077.
- For cracks that cannot be sealed on the backside consider using KEMKO® 050.
- The maximum in-service temperature should be 20°F (10°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 for sealers used as epoxy dams. 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 standard.

MIXING

KEMKO® 038 is a two-component adhesive specifically designed for use with KIP™ System automatic meter, mix, and dispense application equipment. The resin to hardener (Part A : Part B) mix ratio is 2:1, by volume. The KIP™ System Guideline Specification includes provisions

for routine periodic testing of the KIP™ System grouting equipment to determine that it is metering the components accurately and delivering thoroughly mixed material.

INSTALLATION

The KIP™ System, its products and equipment are only available from KEMKO® licensee/applicators. KEMKO® 038 is installed in accordance with KIP® System Guideline Specification procedures and ChemCo System 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. Minimum Temperature: Installation 40°F (4°C) substrate temperature.

CHEMICAL RESISTANCE

KEMKO® 038 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 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.

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. This product is available only to KIP System applicators.



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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.

Disclaimer: All guidelines, recommendations, statements, and technical data contained herein are based on information and tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. It is the user's responsibility to satisfy himself, by his own information and test, to determine suitability of the product for his own intended use, application and job situation and user assumes all risk and liability resulting from his use of the product. We do not suggest or guarantee that any hazard listed herein are the only ones which may exist. Neither seller nor manufacturer shall be liable to the buyer or any third person for any injury, loss or damage directly or indirectly resulting from use of, or inability to use, the product. Recommendations or statements, whether in writing or oral, other than those contained herein shall not be binding upon the manufacturer, unless in writing and signed by a corporate officer of the manufacturer. Technical and application information is provided for the purpose of establishing a general profile of the material and proper application procedures. Test performance results were obtained in a controlled environment and ChemCo Systems makes no claim that these tests or any other tests accurately represent all environments. ChemCo Systems is not responsible for typographical errors.

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