

KEMKO® 026 UW IR

Epoxy Adhesive for
Underwater Pressure
Injection Grouting

- TYPE:** Two-component, solvent-free, epoxy resin / hardener.
- PRIMARY USE:** Underwater applications (fresh and salt water)
Structural repair of cracks and delaminations in concrete, masonry and wood.
Filling of porous and honeycombed concrete and grout.
Adhesive bonding of steel or FRP plates (external reinforcement).
Anchoring bolts, dowels and rebar into concrete, masonry or stone.
Filling annular space in underwater piling applications with FRP jackets
- SUBSTRATES:** Concrete, masonry, stone, steel, wood and FRP (dry, damp, wet or submerged).
- MINIMUM TEMP:** Installation: 35° F
- APPLICATIONS:** Cracks, voids, delaminations and annular spaces up to 1/4" width; greater than 1/4" with pre-placed aggregate.
- ASTM C 881:** Meets the requirements ASTM C 881 Type IV load bearing applications and AASHTO M235.

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, Inc. This product is available only through KIP System (KEMKO Injection Process) licensee/applicators.

DESCRIPTION: KEMKO® 026, UW IR is a two-component, low viscosity, structural, epoxy adhesive specifically designed for pressure injection grouting using KIP System automatic meter, mix and dispense 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); and, anchoring bolts, dowels and rebar into concrete, masonry or stone when the substrate is immersed or submerged in water. Applications requiring material thickness in excess of 1/4 inch may be facilitated by pre-placing aggregate in the void. KEMKO 026 bonds to dry, damp and wet substrates and to substrates immersed or submerged in fresh or salt water. The components do not contain volatile organic compounds (VOC's).

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 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. Unlike many other high modulus epoxy adhesives, KEMKO 026 cures to a tough, resilient polymer and has excellent load transfer capability. It has a convenient 2:1 (by vol.) mixing ratio and employs special colorants for contrasting component color.

LIMITATIONS: The recommended minimum substrate temperature during installation is 35°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. Installed thickness in excess of 1/4 inch 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: Standard package sizes of Part A + Part B are 3, 15 and 150 gallon units.

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: KEMKO 026 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, Inc., technical representative.

COLOR SELECTION: 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.

SURFACE PREPARATION: Substrate surfaces may be dry, damp, wet, immersed or submerged but must be sound and 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 in accordance with *ASTM D 4259*, 'Standard Practice for Abrading Concrete,' or *ACI 503R, Chapter 5*, 'Preparing Surfaces for Epoxy Compound Application,' and ChemCo Systems, Inc.'s 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 and tidal zone applications where cleaning of the substrate is possible, the product may have to be applied within a relatively short period of time (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: KEMKO 026 is a two-component adhesive designed specifically 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

INSTALLING: The KIP System, its products and equipment are only available from KEMKO licensee/applicators. KEMKO 026 is installed in accordance with KIP System Guideline Specification procedures and ChemCo Systems, Inc.'s specific recommendations. For additional information on repair by pressure injection grouting, see *ACI 503R, Chapter 7*, 'Applying Epoxy Compounds.'



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TYPICAL PROPERTIES (1)

| PROPERTY | TEST METHOD | VALUE |
|--|---------------------------|---|
| MIX RATIO, A:B, | BY VOL BY WT | 2 : 1 100 : 44 |
| COLOR: | PART A PART B MIXED | VISUAL CLEAR AMBER DARK PURPLE DARK PURPLE |
| WEIGHT PER GALLON, LB: | PART A PART B MIXED | ASTM D 1475 9.5 8.3 9.1 |
| VISCOSITY, CP: | PART A PART B | ASTM D 2393 290 160 |
| VISCOSITY @ 40° F, CP: | PART A PART B | ASTM D 2393 1700 900 |
| GEL TIME, 100 G, MINUTES: | @ 40° F @ 73° F | ASTM D 2471 50 6 |
| TENSILE STRENGTH, PSI | ASTM D 638 | 8600 |
| ELONGATION AT BREAK, % | ASTM D 638 | 2 |
| COMPRESSIVE YIELD STRENGTH, PSI | ASTM D 695 | 15,800 |
| COMPRESSIVE MODULUS, PSI | ASTM D 695 | 260,000 |
| HEAT DEFLECTION TEMP, DEG F | ASTM D 648 | 135 |
| WET SLANT SHEAR STRENGTH, PSI (CURE SCHEDULE, 3 DAYS @ 40° F) | AASHTO T-237 | CEMENT MORTAR FAILURE (2) |
| BOND STRENGTH, PSI CURE AT CONSTANT 40° F | ASTM C882 | 2430, 2 DAY MOIST 2770, 14 DAY MOIST |

(1) CURE SCHEDULE, 7 DAYS AT 73° ± 4° F AND TEST TEMPERATURE, 73° ± 4° F UNLESS OTHERWISE INDICATED.

(2) COMPRESSIVE STRENGTH OF CEMENT MORTAR, 4500 PSI.

CLEAN UP: 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.

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.

DISCLAIMER: NO EXPRESS WARRANTY IS MADE WITH RESPECT TO THE RESULTS OF ANY USE OF THIS PRODUCT. NO IMPLIED WARRANTIES, INCLUDING AND NOT LIMITED TO AN IMPLIED WARRANTY OF MERCHANTABILITY OR AN IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THIS PRODUCT. NO LIABILITIES FOR PERSONAL INJURY, LOSS OR DAMAGE RESULTING FROM THE USE OF THIS PRODUCT IS ASSUMED. CHEMCO SYSTEMS, INC. RESERVES THE RIGHT TO ALTER OR DISCONTINUE THE PRODUCT DESCRIBED HEREIN AT ANY TIME AND WITHOUT PRIOR NOTICE.

KEMKO® KIP System are trade names of ChemCo Systems, Inc.

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