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Type:	Two-component, low viscosity, epoxy resin / hardener.
Primary Use:	Applications where the ambient installation temperature is above 90 F, including: Structural repair of cracks and delaminations in concrete, masonry and wood. Filling of porous and honeycombed concrete and grout. Adhesive bonding of steel (external reinforcement). Anchoring bolts, dowels and rebar into concrete, masonry and stone.
Substrates:	Concrete, masonry, stone (dry, damp and wet), steel and sealed wood.
Applications:	Cracks, voids, delaminations and annular spaces up to 1/4" width; greater than 1/4" with preplaced aggregate.
Minimum Temp:	Installation- 60 F, Cure- 60 F (substrate temperature).
ASTM C 881:	Meets the requirements of Type IV, Grade 1 for load bearing.
Shelf Life:	Three years minimum in sealed containers (see below for conditions).

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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 030, HiAmb 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 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 stone when the ambient air and/or substrate temperature at the time of installation is greater than approximately 90 deg F. Applications requiring material thickness in excess of 1/4 inch may be facilitated by preplacing aggregate in the void. KEMKO 030 bonds to dry, clamp and wet (no free standing water) substrates. 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, high load bearing strength and excellent adhesion under adverse application conditions, e.g., hot, humid environments. Unlike many other high modulus epoxy adhesives, KEMKO 030 cures to a tough, resilient polymer and has excellent lead transfer capability. Exceptional substrate wetting and extended working life ensure penetration and filling of fine fissures and tributary cracks in warm environments. It has a convenient 2:1 (by vol.) mixing ratio and employs special colorants for contrasting component color.

**Limitations:** KEMKO 030 is recommended for installation at ambient/substrate temperatures above 90 deg F but may be installed at temperatures down to 50 deg F. (For installation temperatures between 50 and 90 deg F, consider use of KEMKO 038, Regular IR. For installation temperatures down to 40 deg F or when very narrow cracks are encountered, consider use of KEMKO 068, LoVis IR.) The minimum substrate temperature for cure is 50 deg F. The maximum in-service temperature should not exceed 20 deg 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 preplaced 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 deg F in a dry place away from sunlight. Remixing of components may be required upon prolonged storage.

**Chemical Resistance:** KEMKO 030 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:** Concrete surfaces may be dry, clamp or wet (no free standing water) 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.

**Mixing:** KEMKO 030 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 motoring the components accurately and delivering thoroughly mixed material.

## Typical Properties (1)

Property	Test Method	Value
Mix Ratio, A:B, by vol by wt		2 : 1 100: 43
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	9.4 8.1 9.0
Viscosity, cp: Part A Part B Mixed	ASTM D 2393	550 110 350
Gel Time, 100 g, minutes	ASTM D 2471	25
Tensile Strength, psi	ASTM D 638	9300
Elongation at Break, %	ASTM D 638	2.5
Compressive Yield Strength, psi	ASTM D 695	15,600
Compressive Modulus, psi	ASTM D 695	405,000
Flexural Strength, psi	ASTM D 790	10,600
Flexural Modulus, psi	ASTM D 790	320,000
Heat Deflection Temp., deg F	ASTM D 648	140
Wet Slant Shear Strength, psi	AASHTO T-237	Cement mortar failure (2)

(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.

**Installing:** The KIP System, its products and equipment are only available from KEMKO licensee/applicators. KEMKO 030 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."

**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, READ CAREFULLY 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.

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