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| Type: | Two-component, low viscosity, epoxy resin / hardener. |
| Primary Use: | Filling of wide cracks, gaps, voids and inadequate consolidations in concrete. Filling of cracks and delaminations in wood structures. Tank grouting. |
| Substrates: | Concrete, masonry, stone (dry and damp), steel and sealed wood. |
| Applications: | Cracks, voids, delaminations and annular spaces greater than 1/4" width; used in conjunction with preplaced aggregate wherever possible. Has extraordinary chemical and radiation resistance due to its aromatic amine cure. |
| Minimum Temp: | Installation- 50 deg. F, Cure- 50 deg. F (substrate temperature). |
| Shelf Life: | Three years minimum in sealed containers (see below for conditions). |

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 077, Large Void IR is a two-component, low viscosity, low exotherm, epoxy adhesive specifically designed for pressure injection grouting using KIP System automatic meter, mix and dispense application equipment. Primary uses include filling wide cracks, gaps and delaminations in concrete, masonry, stone and steel; filling voids in porous and inadequately consolidated (honeycombed) concrete and grout; and, filling wide cracks and delaminations in wood structures. The product is designed for applications requiring material thickness in excess of 1/4 inch. Wherever possible, use dry, preplaced aggregate in conjunction with the adhesive. KEMKO 077 bonds to dry and damp substrates. The components do not contain volatile organic compounds (VOC's).

Features: KEMKO 077 has a long working life and a low exotherm reaction (minimal heat generation during cure) that make it suitable for applications where a relatively large mass of adhesive is employed. The low exotherm cure characteristics, particularly when used in conjunction with preplaced aggregate, minimizes heat build-up and the attendant material shrinkage upon cooling. The low viscosity, long working life and exceptional substrate wetting allows deep penetration into structures where voids and honeycombs may be located and ensures the filling of fine tributary cracks. KEMKO 077 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 50 deg F. 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. 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 077 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 or damp 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 077 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 077 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

Typical Properties (1)

| Property | Test Method | Value |
|--|--------------|---------------------------|
| Mix Ratio, A:B, by vol | | 2 : 1 |
| by wt | | 100 : 46 |
| Color: Part A | VISUAL | Clear amber |
| Part B | | Dark purple |
| Mixed | | Dark purple |
| Weight per Gallon, lb: Part A | ASTM D 1475 | 9.5 |
| Part B | | 7.9 |
| Mixed | | 9.0 |
| Viscosity, cp: Part A | ASTM D 2393 | 550 |
| Part B | | 70 |
| Mixed | | 250 |
| Gel Time, 1 quart, hours | ASTM D 2471 | 2.25 |
| Tensile Strength, psi | ASTM D 638 | 6500 |
| Elongation at Break, % | ASTM D 638 | 2.5 |
| Compressive Yield Strength, psi | ASTM D 695 | 11,000 |
| Compressive Modulus, psi | ASTM D 695 | 310,000 |
| Flexural Strength, psi | ASTM D 790 | 8500 |
| Hardness, Shore D | ASTM D 2240 | 80 |
| Heat Deflection Temp., deg F | ASTM D 648 | 108 |
| Slant Shear Strength, psi (Cure schedule, 14 days @ 73 F) | 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.

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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KEMCO® and KIP System™ are tradenames of ChemCo Systems, Inc

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