KEMKO® 104 UW Putty

Long Potlife, Toughened Epoxy Putty for Underwater Bonding

Type:	Two-component, solvent-free, epoxy resin / hardener.
Primary Uses:	Splash zone or underwater use. Sealing fiberglass forms and pile and pier repair. Sewer pipe repairs. Protecting exposed steel and filling voids. Extreme tackiness and putty consistency allow use in marginal substrates. Useful in applications subject to impacts and shocks or low pressure leaks and flowing water.
Substrates:	Concrete, masonry, stone, steel, wood and FRP
Minimum Temp:	Installation: 50° F (substrate temperature).
Shelf Life:	Two years minimum in sealed containers.

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 licensed applicators.

Description: KEMKO® 104 UW Putty is a two component extremely thick epoxy putty designed for the protection of concrete and steel in the splash zone of saltwater marine structures. The product can also be used to seal or bond surfaces that are continually wet or submerged in seawater, even when subjected to heavy wave action. KEMKO 104 UW Putty can be used as bonding agent in freshwater applications. KEMKO 104 UW Putty is extremely tacky and is toughened with Kevlar® fibers for durability in high wear, mechanical shock and impact-prone repairs.

Typical Applications:

- Concrete coating and spall repair on piers, seawalls, dock floors, drainage ditches, abutments and sewer pipe.
- Protection and patching of steel structure surfaces such as pilings, drilling rigs, ship hulls, buoys, well jackets and bulkheads.
- Patching and protective coating of wooden boats, pilings and telephone poles.
- As an underwater adhesive

Limitations: The material is not recommended for use below 50° F. Heavy wave-action before set may dislodge material. Placement of sample test patches or repairs are highly recommended before commencement of large-scale repairs or modifications. Do not add solvents or otherwise thin this material.

Packaging: Standard package sizes of Part A + Part B are 1.8 and 9 gallon units.

Shelf Life: Two 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 104 UW Putty 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. 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 concrete gray (blue-gray). Custom colors are available and may require minimum quantities and/or slightly higher cost.

Application Instructions:

Surface Preparation

Wet or dry sandblast to remove all loose and deteriorated material, other surface contaminants such as tars, oils, paints, waterproofing materials, rust, barnacles, etc. which may interfere with the formation of a good bond.

Cleaned 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

Transfer the appropriate quantities of Part A and Part B from their container onto a flat clean board or sheet of rigid plastic. Begin to mix the components with putty or palette knife or a margin trowel. Vigorous kneading by (water-wet) gloved hands is required for 3 to 5 minutes to obtain adequate and complete mixing. For mixing larger quantities of material, a heavy duty Kol or similar mixer may be employed. The material components should always be mixed under dry conditions. In cold weather, the product should be stored or pre-conditioned in a warm room at 70-110° F for easier mixing and reduced cure time.

Installing.

For underwater application the technician should wear a diver's wet suit, well fitting rubber gloves, a life jacket and be secured with a life line. In a splash zone application the coating should extend to 1 foot below and above the tidemarks.

a) Unsupported Paste The thick mass of the mixed material is applied to the substrate above the waterline, distributed uniformly over the area to be coated with the gloved hand and worked gradually downwards below the waterline. The average film thickness after distribution of the material over the area to be coated should be 1/4 to 3/4 inch; the edges should be feathered. To establish good contact with wet surfaces the paste should be held against the area for 10 to 15 seconds. Wetted tools such as palette knives or trowels may be used to facilitate uniformity of the coating.

b) Supported Paste The mixed material may be applied to surfaces using a fabric support. In this application the mixed material is doctored onto canvas, glass cloth or other suitable fabric with a putty knife or squeegee to produce a film thickness of 1/4 to 1 inch. The wet lay-up is transferred to the surface to be coated and hand-pressed in place. Whenever possible, the in place lay-up is secured with temporary or permanent studs or bands to facilitate bonding to the substrate during cure.

c) Thick Coating If layers or patches thicker than 1" are required, it is strongly suggested that a test patch of the required thickness be placed and allowed to cure for a minimum of 48 hours. This is due to the potential to develop slight shrinkage cracks and the potential for exotherm particularly in warmer waters as the polymer cures under certain environments. The optimum method to get thickness greater than 1" is to build up maximum thickness layers about 24 hours apart.

ChemCo Systems, Inc.
2800 Bay Road
Redwood City, CA 94063
Ph 650-261-3790 Fax 650-261-3799
www.chemcosystems.com

Typical Properties (1)

Property		Test Method	Value
Mix Ratio, A:B,	by vol by wt		4:5 100: 113
Color:	Part A Part B Mixed	VISUAL	Straw/White Black Dark Gray
Weight per Gallon, lb:	Part A Part B Mixed	ASTM D 1475	14.2 12.9 13.6
Non-Sag Character (Inches)	Mixed	ASTM D 2730	3/4
Gel Time, min. (200g)		ASTM C 881	60
Thin Film Properties: Hard Dry Time, hours	 @ 73° F @ 60° F	ASTM D 1640	 3 8
Bond Strength, psi: (Cured to cured cement mortar, Specimen prepared and cured under water)		ASTM D 4541	250 (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.

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- 2 (Moderate 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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