KEMKO® 194 UW Paste (1:1)

Short Potlife, High Strength Epoxy Paste Adhesive for Underwater Application

TYPE:	Two-component, solvent free, epoxy resin / hardener paste.
PRIMARY USE:	Repair and protection of concrete and steel marine structures.
SUBSTRATES:	Concrete, stone, steel, wood and FRP above and below the waterline in both salt and freshwater applications.
MIN. TEMPERATURE:	Installation, 35°F.
SPECIAL FEATURE:	Cures in cold conditions. Abrasive consistency for ease of water displacement in underwater use.

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) applicators.

***DESCRIPTION*:** KEMKO® 194, UW Paste is a two-component, short potlife, epoxy paste adhesive designed for underwater application on vertical and horizontal surfaces. Primary uses include the protection and repair of concrete and steel marine structures. Bonds to FRP jackets in sealing applications for underwater pier and pile repairs. KEMKO 194, UW Paste may also be used as surface seal in the KIP System injection process. The components do not contain volatile organic compounds (VOC's).

***FEATURES*:** The exceptional substrate wetting and water displacement properties ensure excellent adhesion under adverse application conditions. Product cures in cold water conditions. The component volume mix ratio is 1:1.

***LIMITATIONS*:** The recommended minimum substrate temperature during installation and for cure is 35°F. Please note: for installations where the substrate or water temperature is 40°F or below, it is strongly recommended that a small scale demonstration test be performed as the adhesive cures very slowly. Do not add solvents or otherwise thin this material. For proper bonding the elapsed, allowable time between surface preparation and product application may be as little as 30 minutes, especially with very warm water and substrates. Product is not recommended for use on a frozen substrate.

***PACKAGING*:** Standard package sizes of Part A + Part B are 2, 10 and 100 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*:** 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 light tan. Custom colors are available and may require minimum quantities and/or slightly higher cost.

***SURFACE PREPARATION*:** Concrete surfaces may be dry, damp or wet, but must be sound and free of all bond-inhibiting substances. Prepare 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 use remove all lose or deteriorated concrete, paints, rust, marine life and all other bond inhibiting substances from surfaces by water blasting or needle scaling. Prepared underwater surfaces may, depending on local conditions, require re-cleaning after a short period of time (as little as 30 minutes) to allow proper bonding. Properly prepared underwater surfaces should have a minimum strength in tension of at least 200 psi in direct tension.

***MIXING*:** KEMKO 194, UW Paste is a two-component adhesive. Premix the individual components before drawing from bulk packaging. Wear safety glasses and rubber gloves when handling the material. Transfer appropriate quantities that can be applied before the potlife of the material expires. Blend thoroughly with a Jiffy mixer attached to a low speed (350 - 750 rpm) electric drill. Proper mixing will take 2 - 3 minutes. Cold weather mixing can be optimized if the materials are stored at room temperature prior to use.

***INSTALLING*:**

Above the water line - Use normal techniques applicable to paste materials. Apply material after the daily substrate temperature cycle has reached its maximum. When the substrate is wet, use sufficient tool pressure to displace the surface water with the paste material.

Below the waterline - Apply the mixed material with trowel or gloved hand using slow deliberate circular motion and sufficient pressure to displace water adhered to the substrate surface. It is suggested that divers tie off to an anchor point to facilitate sufficient trowel pressure. Note that in warm water environments, the working time of the mixed adhesive will be short—mix only quantity that can be used within the gel times.

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.

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TYPICAL PROPERTIES (1)

PROPERTY	TEST METHOD	VALUE
MIX RATIO, A:B		
BY VOLUME		1 : 1
BY WEIGHT		100 : 115
COLOR: PART A/PART B/MIXED	VISUAL	WHITE/TAN/TAN
WEIGHT/GAL, LB	ASTM D 1475	
PART A		10.4
PART B		11.9
MIXED		11.2
NON-SAG THICKNESS, INCH	ASTM 2730	3/8
GEL TIME, 200G, MINUTE	ASTM C 881	
@ 90° F		6
@ 73° F		12
@ 40° F		85
COMPRESSIVE YIELD STRENGTH, PSI	ASTM D 695	8,000
COMPRESSIVE MODULUS, PSI		300,000
HEAT DEFLECTION TEMPERATURE, °F	ASTM D 648	120
BOND STRENGTH, PSI	ASTM D 4541	> 250 (2)
		> 200 (3)

(1) CURE SCHEDULE: 7 DAYS @ 73° +/- 4° F. TEST TEMPERATURE, 73° +/-4° F.
(2) TO PROPERLY PREPARED, WATER SATURATED, SURFACE DRY CONCRETE.
(3) TO PROPERLY PREPARED, WATER SATURATED CONCRETE UNDER WATER.

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. Warning! Causes severe eye and skin irritation. May cause allergic skin and respiratory reaction, 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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