Elastomeric
Polyurea Membrane

KEMKO® 181 Polyurea Membrane

Type:	Two-component, solvent-free, polyurea resin / hardener.
Primary Use:	Impact and abrasion resistant waterproof membrane for concrete slabs/decks. Corrosion resistant coating/lining for chemical containment. Elastomeric grout for non-structural cracks, saw cuts and joints in concrete.
Substrates:	Concrete, asphalt, steel and wood. Dry and damp surfaces.
Minimum Temp:	Installation: 40° F, Cure: 35° F (substrate temperature).
Thickness:	Typical membrane/coating/lining thickness is 15 - 60 mils.
Colors:	Concrete gray (blue-gray).
Coverage:	107 sq. ft. / gal. @ 15 mils; 27 sq. ft. / gal. @ 60 mils.
Shelf Life:	One-year 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® 181, Polyurea Membrane is a two-component, short work life/fast curing, elastomeric, polyurea membrane designed for interior and exterior use. It cures to a tough, chemical and abrasion resistant material suitable for waterproofing, corrosion protection and containment of many aqueous chemical solutions. KEMKO 181 may be applied on most construction substrates including concrete, asphalt, steel, and wood. Neat binder may be used for filling non-structural cracks, saw cuts and control joints in concrete. Cured KEMKO 181 has excellent resistance to vehicular impact and abrasion, most automotive and aircraft fluids and pavement deicing chemicals. Its short cure cycle, tolerance of surface dampness and elastomeric mechanical properties make it ideally suited for a wide variety of membrane, coating and lining applications. Each type of repair may have specific application and performance requirements. Evaluation of trial mixes particularly under low temperature, damp conditions prior to installation is recommended.

Features: Unlike other elastomeric polyurea binders, KEMKO 181 does net contain volatile solvents or plasticizers and therefore does not embrittle nor degrade when exposed to sunlight for long periods of time and is environmentally safe. KEMKO 181 is self-priming on most dry and damp substrates and is suitable for either manual or spray application. The product has a convenient 1:1 (by vol.) mixing ratio and a fast cure cycle for short downtimes.

Limitations: The recommended minimum substrate temperature in manual applications is 40 deg. F; in spray applications, 35 (deg. F. The minimum substrate temperature for cure is 35 deg. F. Concrete substrates on or below grade must have a functioning vapor barrier to minimize the potential for blistering/delaminating of the membrane. Before applying, determine that on-grade slabs are not subject to hydrostatic pressure that can cause blistering/delaminating of the membrane. Apply the material after the daily substrate temperature cycle has reached its peak. Prime coat dry and damp substrates when maximum bond to the substrate is required. Do not apply primer and/or membrane system on wet substrates. Environmental exposure (e.g., direct sunlight) will result in chalking, loss of gloss and color fade. Do not add solvents or otherwise thin this material.

Packaging: Standard package sizes of Part A + Part B are 2, 10 and 100 gallon units.

Shelf Life: One-year 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. Partially used containers of Part A must be flushed with nitrogen and resealed immediately after use to preserve shelf stability.

Chemical Resistance: Resistant to a wide range of commonly used deicing and vehicular chemicals. 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 is concrete gray (blue-gray). Custom colors are available and may require minimum quantities and/or slightly higher cost.

Surface Preparation: Concrete surfaces may be dry or damp but not wet and 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 Compounds Application," and ChemCo Systems, Inc.'s specific 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 181 is a two-component adhesive. The resin to hardener (Part A:Part B) mix ratio is 1:1, by volume. Premix the individual components before drawing from bulk packaging. Wear safety glasses and clean neoprene rubber gloves when handling the material. Transfer the appropriate quantity of Part A into a mixing container. Begin mixing using a Jiffy mixer blade attached to a low speed (350 - 750 rpm) electric or pneumatic drill. Add the appropriate quantity of Part B taking care to slowly pour the Part B into the vortex of the mixing Part A. The addition of Part B should take 30 - 45 seconds. Mix an additional t minute after completing Part B addition. Warning! The working time of the mixed product is 5 - 7 minutes due to Increasing viscosity prior to gel.

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Typical Properties (1)

Property		Test Method	Value	
Mix Ratio, A:B,	by vol		1:1	
	by wt		100:87	
Color:	Part A	VISUAL	Concrete blue-gray	
	Part B		Clear amber	
	Mixed		Concrete blue-gray	
Weight per Gallon, lb:	Part A	ASTM D 1475	9.2	
	Part B		8.2	
	Mixed		8.7	
Viscosity, cp:	Part A	ASTM D 2393	2750	
	Part B		200	
	Mixed		1475	
Gel Time, 60 g, minutes	@ 73 deg. F	ASTM C 881	12	
	@ 40 deg. F		14	
Thin Film	touch dry	ASTM D 1640	0.5	
Cure Time, hours:	hard dry		2.0	
Tensile Strength, psi		ASTM D 412	1250	
Elongation at Break, %			375	
Modulus @ 100% Elongation, psi			500	
Tear Resistance. Lbf / in		ASTM D 624	225	
Water Absorption, %		ASTM D 570	0.53	
Shore Hardness: A durometer		ASTM D 2240	90	
D durometer			40	
Bond Strength To ASTM C 109		ASTM D 4541	Un-Primed	Primed
Cement Mortar (2), psi	Dry		350	500
	Damp		225	325
Taber Abraser (3), mg. Loss		ASTM D 4060	43	

(1) Cure schedule, 7 days at 73° ± 4° F and test temperature, 73° ± 4° F.
(2) Compressive strength of cement mortar, > 4500 psi.
(3) CS-17 wheels, 1000 g load, 1000 cycles.

Installing: KEMKO® 181 is self-priming on most dry and damp substrates. Maximum bond strength to the substrate requires prime coating the substrate with a suitable primer (consult ChemCo Systems, Inc. for primer recommendations). For manual application, pour mixed material onto the prepared/primed substrate and spread to the desired coverage with a V-notched trowel or squeegee. For spray application, two-component meter, mix, and dispense equipment is recommended. The membrane may be recoated as soon as the previous coat is tack-free (approx. 30 minutes @ 73 deg. F). Aggregate, if used, must be broadcast into the membrane immediately after application. An epoxy/aggregate wearing course may be applied as soon as the membrane is tack-free. Typical applied thickness is 30 mils for pedestrian surfaces and 60 mils for vehicular surfaces. Membrane thickness may be reduced by approx. 50% when employing an epoxy/aggregate-wearing course.

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 polyurethane 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 amine 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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