

KEMKO® 189 Polyurea SWL

Fast set Elastomer for
Control Joints and
Spall Repair

Type:	Two-component, solvent-free, polyurea resin / hardener.
Primary Use:	Fast set grout/binder for control joints, repair mortars, concretes. Freezer and Cold Room Repairs. Compliant with ACI 302.1R guidelines. Abrasion resistant binder for spall repair mortars and concretes. Sealing of non-structural cracks, saw cuts and control joints in concrete.
Substrates:	Concrete and steel. Dry/damp surfaces. Primer required for wet surfaces.
Minimum Temp:	Installation: -25° F. Consult ChemCo if colder temps are encountered.
Thickness:	Joints to 2" deep; broad lifts to 1 ½".
Colors:	Charcoal gray is standard. Black, white and light gray and custom colors also available.
Coverage:	Varies with aggregate selection and loading. Check trial mix for yield.
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® 189, Polyurea Binder is a two-component, elastomeric, polyurea binder designed for interior and exterior use. Neat binder is used for filling non-structural cracks, sawcuts and control joints in concrete. Typically, control joints are filled to full depth with mixed polyurea with a slight overage to allow the partially cured elastomer to be trimmed flush to the surface with a knife-edge. Blended with suitable aggregate, KEMKO 189 mortars, concretes and flow-able grouts may be used for rebuilding damaged joint nosing and repairing spalled and deteriorated concrete. Cured KEMKO 189 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 resinous mortar and concrete repairs. 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 189 does not embrittle nor degrade when exposed to sunlight for long periods of time and is environmentally safe. The product has a convenient 1:1 (by vol.) mixing ratio and a fast cure cycle for short downtimes. KEMKO 189 is formulated for balanced elasticity and toughness and is freeze-thaw resistant. The components do not contain volatile solvents (VOC's). Complies with ACI 302.1R guidelines for floors and slabs.

Limitations: The minimum substrate temperature for application suggested by ChemCo is -25 deg F. Temperature extremes will affect viscosity and the other handling and cure properties. We advise that applicators contact ChemCo concerning extreme temperature installations. Apply the material after the daily substrate temperature cycle has reached its peak. The recommended maximum installed thickness of mortar and concrete mixes is approx. 1½ inch per lift. 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 charcoal gray (dark-gray). Custom colors are available and may require minimum quantities and/or slightly higher cost.

Surface Preparation: Substrate surfaces may be dry or damp (KEMKO® 141, Primer, Polyurea Binder required if 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.

Aggregate Selection:

Mortars - The preferred aggregate for most applications is high silica sand (>85% SiO₂), washed, kiln-dried, graded and bagged. The sand particles should be round to sub angular in shape. A good gradation for low void content is a 2:1 blend of #12 mesh and #30 mesh. If using a single sand fraction, a #16 or 20 mesh is recommended.

Concretes - A 1:1 blend of 3/8 in. gravel and #16 or 20 mesh sand is recommended. The maximum particle size of the aggregate selected should not exceed 1/3 of the installed thickness.

Mixing: KEMKO 189 is a two-component elastomer system. 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 1 - 2 minutes after completing Part B addition. Use the mixed components within the gel time listed for the temperature of application on the reverse of this page.



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		1 : 1
	by wt		100 : 90
Color:	Part A	VISUAL	Charcoal gray
	Part B		Reddish amber
	Mixed		Charcoal 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	1300
	Part B		100
	Mixed		700
Gel Time, 100 g, minutes		ASTM D 2471	12
Thin Film Cure Time,	touch dry	ASTM D 1640	0.25
	hours:hard dry		0.9
Tensile Strength, psi		ASTM D 412	1150
Elongation at Break, %		ASTM D 412	175
Modulus at 100% Elongation			825
Tear Resistance, lbf/in		ASTM D 624	215
Water Absorption, %		ASTM D 570	1.0
Shore Hardness:	A durometer	ASTM D 2240	95
	D durometer		40
Bond Strength To Prime Coated, ASTM C 109	dry	ASTM D 4541	Cement mortar failure (2)
	damp		300
Cement Mortar, psi:			
Taber Abraser, mg loss		ASTM D 4060	43 (3)

- (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: Prepare the joint by removing any contaminant such as curing compound, waxes or oils. Provide a slightly rough texture if grinding or re-cutting the joint. If the surface is wet, prime the substrate with mixed KEMKO 141, Primer, Polyurea Binder. The recommended primer thickness is 8 - 10 mils (160 - 200 sq ft/gal). Apply the KEMKO 189 neat binder, mortar; concrete or flowable grout to the primed substrate after the primer is set but still tacky (1 - 1.5 hours @ 70° F). Frequently two pours (with the first pour filling the joint to approx. 80%) will aid the application by allowing settling and trapped air to escape. Generally a slight overfill is sliced by razor within 30-50 minutes after the last pour. Mortars and concretes must be worked quickly (12 minutes at 73° F) by rodding, tamping, screeding or troweling into place. Use a screed bar or trowel to strike-off the mix level with the surrounding substrate. Clean application tools frequently.

Yield as Joint Filler/Sealant: The following material estimates do not take into consideration material lost in mixing and application and excess material for overfilling the joint or slot.

Joint Dimensions, inches		Approx. Coverage
<u>Width</u>	<u>Depth</u>	<u>Lineal feet/gallon</u>
1/2	1/4	154
1/2	3/8	102
3/4	3/8	68
1/4	1/2	51
1	3/4	25

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.

DISCLAIMER: NO EXPRESS WARRANTY IS MADE WITH RESPECT TO THE RESULTS OF ANY USE OF THIS PRODUCT. NO IMPLIED WARRANTIES INCLUDING AND NOT LIMITED TO AN IMPLIED WARRANTY OF MERCHANTABILITY OR AN IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE ARE MADE WITH RESPECT TO THIS PRODUCT. NO LIABILITIES FOR PERSONAL INJURY, LOSS OR DAMAGE RESULTING FROM THE USE OF THIS PRODUCT IS ASSUMED. CHEMCO SYSTEMS, INC., RESERVES THE RIGHT TO ALTER OR DISCONTINUE THE PRODUCT DESCRIBED HEREIN AT ANY TIME AND WITHOUT PRIOR NOTICE.