

KEMKO® 189 Polyurea SWL

GROUT - SHORT WORK LIFE, POLYUREA JOINT FILLER SEALANT

and MORTAR BINDER

PRODUCT IS ONLY AVAILABLE TO KEMKO® APPLICATORS IN U.S., CANADA, AND INTERNATIONAL CUSTOMERS

TECHNICAL DATA SHEET

KEMKO® 189 Polyurea Sealant and Binder is a two-component, sag resistant, elastomeric polyurea sealant or binder designed for interior and exterior use. KEMKO® 189 is for filling non-structural cracks, saw cut slots, and control joints in concrete slabs. As a sealant (without aggregate), it meets ASTM C920 Type M (multicomponent sealant), Grade P (pourable or self-leveling sealant), Class 100/50 (adhesion/cyclic movement - withstand increases of 100% and decreases of 50% of the joint width), and use T1 (pedestrian and vehicular traffic). Per ACI 504 Guide to Sealing Joints in Concrete control joints are tooled or saw cut at a minimum depth of one quarter of thickness of the concrete slab are typically filled to full depth for load bearing applications. It is slightly overpoured to allow the elastomer to be trimmed flush with the concrete surface with a razor knife prior to full cure. KEMKO® 189 as a binder, is blended with aggregates and creates polyurea mortars, which can be used for rebuilding damaged joint nosing, repairing spalled concrete, and deteriorated concrete. KEMKO® 189 as a sealant or mortar has excellent resistance to vehicular tire impact and abrasion. It is resistant to most vehicular and aircraft fluids, as well as pavement deicing chemicals and free-thaw cycling. Its short curing time does not affect the elastomeric mechanical properties making it suitable for a wide variety of resinous mortar and concrete repairs. Each type of repair may have specific application and performance requirements. Evaluating a trial mix is suggested, especially under low temperatures and damp conditions. It is recommended to do this prior to actual installation. It contains no VOC's (volatile organic compounds).

- Meets ASTM C920 Standard Specification for Elastomeric Joint Sealants (Type M, Grade P, Class 100/50, Use T1)
- Meets ACI 302.1R Guide for Concrete Floor and Slab Construction

FEATURES

Unlike other elastomerics, KEMKO® 189 does not embrittle or degrade when exposed to direct sunlight for long periods of time, and is environmentally safe.

- Meets ASTM C920, Type M, Grade P, Class 100/50, Use T1
- Complies with ACI 302.1R Guide for Concrete Floor and Slab Construction.
- 1:1 (by vol.) mixing ratio.
- Freeze-thaw resistant.
- Contains no VOC's (volatile organic compounds).

TYPICAL USES

- Fast cure cycle for short downtimes.
- Formulated for balanced elasticity and toughness.
- Can be place with or without closed cell backer rods.
- As a mortar binder, mix with select aggregate for repair of concrete joint nosing and spall repair.

LIMITATIONS

The minimum substrate temperature for application suggested by ChemCo Systems is -25°F (-32°C). Temperature extremes will affect viscosity and other handling and cure properties. It is advised that applicators contact ChemCo Systems 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. 1.5 inch (38.1 mm) per lift. Do not add solvents or otherwise thin this material.

TECHNICAL DATA

7 days 73°F (23°C) unless otherwise indicated. Compressive strength of cement mortar 4,500 psi (13.0 MPa).

PHYSICAL PROPERTIES		TEST METHOD	VALUE
Mix Ratio by Volume			1:1
Mix Ratio by Weight			100:90
Color	Part A Part B Mixed	Visual	Charcoal Gray Reddish Amber Charcoal Gray
Weight per Gallon	Part A Part B Mixed	ASTM D1475	9.2 lbs. (4.2 kg) 8.2 lbs. (3.7 kg) 8.7 lbs. (3.9 kg)
Viscosity CP	Part A Part B Mixed	ASTM D2393	1,300 100 700
Gel Time, 100 gr.		ASTM C881	12 Minutes
Thin Film, Touch Dry		ASTM D1640	15 Minutes
Cure Time, Hard Dry		ASTM C881	0.9 Hours
Bond Pull-Off Strength to Concrete		ASTM C1583	300 psi (2.1 MPa)
Tensile Strength		ASTM D412	1,150 psi (7.9 MPa)
Tensile Modulus		ASTM D412	825 psi (5.9 MPa)
Tensile Elongation		ASTM D412	175%
Water Absorption		ASTM D570	1.0%
Tear Resistance, lb./in		ASTM D624	215
Hardness, Shore A		ASTM D2240	95
Hardness, Shore D		ASTM D2240	40
Taber Abrasions, Loss		ASTM C4060	43 mg



ESTIMATOR - CONTROL JOINTS AND SAW CUT SLOTS

APPROXIMATE YIELD per GALLON (No Wastage)

Width Per Inch	Width Per Inch	Linear Feet per Gallon	Width Per Inch	Width Per Inch	Linear Feet per Gallon
1/8	1/8	1200	1/2	1/8	300
1/8	1/4	600	1/2	1/4	150
1/8	1/2	300	1/2	1/2	75
1/8	3/4	200	1/2	3/4	50
1/8	1	150	1/2	1	37
1/4	1/8	600	1	1/8	150
1/4	1/4	300	1	1/4	75
1/4	1/2	150	1	1/2	37
1/4	3/4	100	1	3/4	25
1/4	1	75	1	1	19

PACKAGING

Standard package sizes of Part A + Part B: 2, 10, and 100 gallon (7.6, 37.9 and 378.5 l.) kits.

SHELF LIFE AND SHIPPING

Three years minimum in unopened, original containers when stored between 50°F (10°C) and 90°F (32°C) in a dry place away from direct sunlight. Remixing of each component may be required upon prolonged storage. Avoid freezing temperatures.

COLOR SELECTION

The standard color of the mixed components is charcoal gray. Custom colors are available and may require minimum quantities and/or slightly higher cost.

CHEMICAL RESISTANCE

KEMKO® 189 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 technical representative.

SURFACE PREPARATION

Substrate surfaces must be dry or damp, sound and free of all bond-inhibiting substances. Prepare surfaces in accordance with International Concrete Repair Institute, ICRI Guideline No. 310.2R

Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair, Concrete Surface Profile, CSP 2 to CSP 4. The concrete surfaces should have a minimum strength of 250 psi (1.72 MPa) in direct tension per ASTM C1583 Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method). Steel surfaces should be cleaned to "white metal" according to SSPC-SP 5/NACE No. 1 White Metal Blast Cleaning is a standard used for white metal blast cleaning put forth by the SSPC (Society for Protective Coatings) and NACE (National Association of Chemical Engineers) international standard.

MIXING

KEMKO® 189 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 quantities of Part A and Part B into a mixing container. Use quantities that can be applied before the pot life of the material expires. Blend thoroughly using a Jiffy mixer blade attached to a low speed (350-750 rpm) electric or pneumatic drill. Proper mixing will take 2-3 minutes.

INSTALLING

Pour mixed material onto the prepared substrate and spread to the specified coverage with a V-notch trowel, squeegee, or paint roller. For large areas, spray application of the material is recommended. When mating two solid surfaces, apply a bonding agent to both surfaces. Allow all coated substrate surfaces to rest for 5-10 minutes before pouring



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fresh concrete or mating with another surface. In plastic to hardened concrete bonding applications, the bond line should be at least 15 mils. Lightweight concrete may require a second coat of adhesive. In other bonding applications, bond line thickness is less critical but should be at least 4 mils above the peaks of the surface profile. For additional application information, see ACI 503R, Chapter 7, Applying Epoxy Compounds.

AGGREGATE EXTENSION

One gallon of neat KEMKO® 189 yields 231 cubic inches, which can be extended with uniform size sand that has been washed, kiln dried, and bag. **THE AGGREGATE MUST BE DRY.**

- Add up to one gallon of aggregate to each component and thoroughly premix each component before mixing the two components together. Place immediately after mixing, the extension will yield approximately 500 cubic inches. Use 20 – 60 US Sieve Mesh, aggregate should be round or tending toward round for best flowability.
- For troweling or patching use a flooring mortar tri-blended, with the larger aggregate being angular in shape.
- Broadcast 100 US Sieve Mesh aggregate that has been washed, dried, and bagged on patches or mortar repairs to minimize tracking of uncured material if accidentally stepped on.

Note: ChemCo Systems can recommend pre-coated aggregate when it is required for safety reasons.

SAFETY

This bulletin does not accompany the product when sold. For hazard warnings, safe handling, and first aid instructions. CAREFULLY READ THE 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 epoxy hardener, HMIS Health Hazard Rating-2 (Moderate Hazard). Contains alkaline amines. Warning! Causes eye and skin irritation. May cause allergic skin and respiratory reaction. Combustible liquid, 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.

CLEAN-UP / DISPOSAL

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.

TECHNICAL SUPPORT

Additional information, technical assistance, and management services are also available from a ChemCo Systems' Technical Consultant at sales@chemcosystems.com or 650-261-3790.

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. This product is available only through KIP™ System (KEMKO® Injection Process) applicators.



Limited Warranty: Please read all information in the General Guidelines, Technical Data Sheets, Guide Specifications and Safety Data Sheets (SDS) before applying material. These products are for professional use only and preferably applied by professionals who have prior experience with ChemCo Systems materials or have undergone training in application of ChemCo Systems materials. Published technical data and instructions are subject to change without notice. Contact your local ChemCo Systems representative or visit our website for current technical data, instructions, and project specific recommendations.

ChemCo Systems warrants its products to be free of manufacturing defects and that they will meet ChemCo Systems' current published physical properties. Seller's and manufacturer's sole responsibility shall be to replace that portion of the product which proves to be defective. There are no other warranties by ChemCo Systems of any nature whatsoever expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. ChemCo Systems shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. ChemCo Systems shall not be responsible for use of this product in a manner to infringe on any patent held by others. In addition, no warranty or guarantee is being issued with respect to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear or improper application by the applicator. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature and/or physical movement of the substrate or structural defects are also excluded from the limited warranty. ChemCo Systems reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator.

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