KEMKO® 161 CSA Coat

Coating/Surfacing with Resistance to Concentrated Sulfuric Acid

Type:	Two-component, solvent-free, novolac epoxy coating, 0 VOCs.
Primary Use:	Impact and skid resistant coating/surfacing in strong chemical environments and containment areas requiring resistance to concentrated sulfuric acid.
Substrates:	Concrete (dry and damp), stone, masonry, wood and steel.
Minimum Temp:	Installation: 50° F Cure: 50° F (substrate temperature).
Thickness:	Coating, 8-10 mils per coat, two coats minimum. Surfacing, single or multiple coats @ 20-30 mils per coat + 6-8 mil top coat to encapsulate broadcast aggregate.
Finish:	Smooth, tile-like or variable texture with aggregate broadcast.
Colors:	Concrete gray (tan - gray) std., white, black and brick red optional.
Coverage:	Coating, 80-100 sq ft / gal (two coats), 50 sq ft/gal (3 coats); Surfacing w/top coat, 40-60 sq ft / gal
Shelf Life:	Three 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 (KEMKO Injection Process) licensee/applicators.

***Description*:** KEMKO® 161, CSA Coat is a two-component, rigid, novolac epoxy coating with excellent resistance to concentrated sulfuric acid, other strong acids and bases and many chemicals found in industrial environments. When seeded or blended with aggregate, it can be used on properly prepared concrete and steel substrates to provide a chemical resistant surface with excellent slip/skid resistance and wear characteristics.

Features: KEMKO 161 will bond to properly prepared dry and damp substrates and cures to a tough, blush-free, tile-like surface. In outdoor use, the coating is freeze-thaw resistant and will not embrittle but will acquire a chalky surface when exposed to sunlight. KEMKO 161 is a 100% solids product and contains no volatile organic solvents (VOC's). It has a convenient 2:1 (by vol.) mixing ratio and can be applied by brush, roller or with two-component spray equipment. KEMKO 161 is resistant to strong mineral acids and bases as well as organic acids such as acetic and lactic in moderate concentrations.

***Limitations*:** The recommended minimum substrate temperature during application and for cure is 50°F. Apply the material after the daily substrate temperature cycle has reached its peak. Substrates on or below grade must have a functioning vapor barrier to minimize the potential for blistering or delaminating of the applied coating. Broadcast aggregate must be resistant to the chemicals used in the exposure area and must be completely encapsulated by a topcoat. Exposure to 98% sulfuric acid will cause formation of a reddish surface film that can be removed by washing with water. Do not add solvents or otherwise thin this material.

***Packaging*:** Standard package sizes of Part A + Part B are 3, 15 and 150 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 long-term storage.

***Color Selection*:** The standard color is concrete gray (tan-gray). Brick red, white or black are optional colors and may require minimum quantities and/or slightly higher cost.

***Surface Preparation*:** Concrete surfaces may be dry or damp but must be sound and free of all bond-inhibiting substances. Prepare surfaces for coating 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 and optimally have a rough appearance similar to 80 grit sandpaper. Steel surfaces should be cleaned to 'white metal' according to SSPC SP 5.

***Mixing*:** KEMKO 161 is a two-component adhesive. The resin to hardener (Part A: Part B) mix ratio is 2:1, by volume. Premix the individual components before drawing from bulk packaging. Wear safety glasses and clean neoprene rubber gloves when handling the material. Use quantities that can be applied before the potlife of the mixed material expires. Transfer the appropriate quantities of Part A and Part B into a mixing container. 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*:** Apply with a stiff bristle brush, short nap roller, squeegee or airless, heat able, two-component spray equipment. When used as a coating, apply in two or more 8 - 10 mil coats rather than one thick coat. For optimum chemical resistance, 3 coats are recommended to reduce the potential for holidays. Subsequent coats may be applied as soon as the previous coat is touch-dry. When used as a surfacing, pour mixed material onto the substrate and spread to the desired coverage (20 - 30 mils/coat) with a V-notch trowel or squeegee. Allow the coating to become tacky to tack-free before applying the next coat. Avoid excessive cure times between coats of more than 48 hours. In cold weather, preconditioning the components to 70-85°F is suggested for ease of handling. Aggregate, if used, must be broadcast onto the KEMKO 161 within 15 minutes of applying the coating. The recommended aggregate size is #20x40 or #30x50 mesh. Typical broadcast rates are .75 - 1.5 lb/sq if. When resistance to strong chemicals is required, a 6 - 8 mil topcoat is recommended. For additional application information, see *ACI 503R, Chapter 7*, 'Applying Epoxy Compounds."

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		2 : 1 l00 : 39
Color:	Part A Part B Mixed	VISUAL	Concrete tan-gray Amber Concrete tan-gray
Weight per Gallon, lb:	Part A Part B Mixed	ASTM D 1475	10.3 8.3 9.7
Viscosity, p:	Part A Part B Mixed	ASTM D 2393	68 14 55
Gel Time, 200 g, minutes		ASTM D 2471	40
Thin Film Dry Time, hours:	touch dry hard dry	ASTM D 1640	6 16
Recoat Time, hours:	@ 60° F @ 73° F @ 90° F	CHEMCO	10 - 72 6 - 32 4 - 16
Tensile Strength, psi Elongation at Break, %		ASTM D 638 ASTM D 638	6500 2.0
Compressive Yield Strength, psi Compressive Modulus, psi		ASTM D 695 ASTM D 695	10,500 300,000
Heat Deflection Temp, °F		ASTM D 648	115
Hardness. Shore D		ASTM D 2240	85
Tabor Abraser, mg loss		ASTM D 4060	117 (2)
Bond Strength To Damp ASTM C 109 Cement Mortar, psi		ASTM D 4547	250 (3)

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

Typical Acid Resistance Properties (Weight change upon immersion)

Chemical	Temp, °F	Time, days	Weight Change, %
98% Sulfuric Acid	73	30	-0.8
25% Sulfuric Acid	73	7 30	+0.2 +0.5
10% Acetic Acid	73	7 30	+0.2 +0.9
50% Lactic Acid	73	7 30	+0.6 +2.5

***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*:** Tills 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. FOR INDUSTRIAL USE ONLY.
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. 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 TH1S 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.

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Publication Number: 6 EP KEM-161L, CSA Coat

Publication Date: Jan 2010