KEMKO® 157 DA Binder

Epoxy Binder for Decorative Aggregate Surfacings

Type:	Two-component, solvent-free, epoxy resin / hardener.
Primary Use:	Clear primer and binder for decorative aggregate surfacings. Binder for non-conductive floors in combination with 3M Colorquartz® aggregate
Substrates:	Concrete, masonry, stone (dry and damp), steel and wood.
Minimum Temp:	Installation: 45° F (substrate temperature).
Thickness:	Depends on aggregate size; typically 3/8 to 1-1/2 inch.
Colors:	Clear (unpigmented).
Coverage:	Primer- 160-200 sq ft/gal (8-10 mils). Binder- Varies with thickness, aggregate and binder content. Check trial mix for yield.
Shelf Life:	Three years 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® 157, DA Binder is a two-component, light-colored, low viscosity epoxy binder and primer designed specifically for binding decorative aggregate surfacings in residential, commercial and institutional environments. Surfacings made with KEMKO 157 are suitable for both interior and exterior applications (see below, Limitations) and are most frequently installed on patios, pool decks, walkways, stair risers, driveways and pre-fabricated, decorative building panels. Kemko 157 is a non-conductive binder that can be used in conjunction with certain aggregates to provide insulating floors for power substations (a typical example is a light rail substation).

Features: The binder's resistance to wear and impact, environmental extremes and common chemicals make it ideally suited for a variety of decorative surfacing applications. Decorative aggregate surfacings made with KEMKO 157 are slip-resistant and readily drain away water from the surface. The product has a convenient 2:1 (by vol.) mixing ratio and low viscosity for high aggregate loading and complete wetting of the aggregate particles. KEMKO 157 may be applied on dry and damp substrates. The components do not contain volatile solvents (VOC's).

Limitations: The recommended minimum and maximum substrate temperatures during application are 45 and 90 °F, respectively. As is customary for most construction epoxy adhesives, exposure to ultra-violet (UV) light will result in gradual loss of gloss followed by whitening in more severe exposures (e.g., direct sunlight). Long-term maintenance of gloss and clarity is best attained by periodic application of a UV-resistant, clear topcoat. Suggested topcoats include UV-resistant acrylic or polyurethane emulsion concrete/terrazzo sealers. Determine the suitability of any topcoat before use. 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 prolonged storage.

Color Selection: KEMKO 157 is clear in color. Coating of the aggregate particles with binder creates a decorative appearance by imparting a permanent "wet" look to the aggregate.

Chemical Resistance: KEMKO 157 is resistant to most common residential, commercial and institutional chemicals. It has limited resistance to hydrocarbon solvents, to maintain uniform appearance; clean chemical spills immediately by flushing with water or by detergent washing and water rinsing. Chemical cleaners should be used only after determining suitability. Maintenance of mechanical properties and decorative appearance 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.

Surface Preparation: Substrate surfaces may be dry or damp (no free standing water), sound and free of all bond-inhibiting substances. Prepare surfaces for bonding in accordance with *ASTM C 811*, "Surface Preparation of Concrete for Application of Chemical-Resistant Resin Monolithic Surfacings" 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: Aggregate must be clean, dry and sound. Maximum decorative effects are achieved with the use of a single fraction of generally uniform size. Mixing of sizes is not recommended. The use of clear or white aggregate is usually avoided as UV light caused discoloration of the binder is more easily detected. The recommended minimum aggregate size is 1/8 x 1/16 inch (#6 x 12 mesh). Use of smaller particles produces surfacings with less distinct decorative effects. In-pedestrian and vehicular traffic bearing applications, rounded particles with a maximum particle size of 1/4 inch or less are preferred. When chips or angular particles are employed, the maximum particle size should be 1/8 inch or less. Non-traffic bearing surfacings and decorative panels may employ larger sizes for increased visual effect. Marble chips are particularly effective in this application. Chip sizings in inches are: Venetian- 3/4 x 3/8, #2- /8 x 1/4, #1 - 1/4 x 1/8 and #0 - 1/8 x 1/16.

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TYPICAL PROPERTIES (1)

PROPERTY		TEST METHOD	VALUE
Mix Ratio, A:B,	by vol		2:1
	by wt		100:42
Color:	Part A	VISUAL	Clear, light amber
	Part B		Clear
	Mixed		Clear
Weight per Gallon, lb:	Part A	ASTM D 1475	9.5
	Part B		7.9
	Mixed		8.9
Viscosity, cp:	Part A	ASTM D 2393	1675
	Part B		55
	Mixed		1150
Gel Time, 1 quart, minutes		ASTM D 2471	38
Tensile Strength, psi		ASTM D 638	7200
Elongation at Break, %		ASTM D 638	3.5
Bond Strength to ASTM C 109		ASTM D 4541	
Cement Mortar, psi:	Dry substrate		500 (2)
	Damp substrate		500 (2)

(1) Cure schedule, 7 days at 73° ± 4° F and test temperature, 73° ± 4° F.
(2) Compressive strength of cement mortar, >4500 psi.

Mixing: KEMKO® 157 is a two-component system. The resin to hardener (Part A:Part B) mix ratio is 2:1, by volume. Read material safety data (MSDS) information before handling the product. Wear safety glasses and rubber gloves when handling the materials. Premix the individual components before drawing from bulk packaging. Transfer appropriate quantities of Part A and Part B into a mixing container. Use quantities that can be applied before the potlife of the mixed 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. Transfer mixed binder to a concrete or plaster mixer. Add aggregate at a rate of approx. 180 lb of 3/8 x 1/8 inch aggregate per gallon of mixed binder. Larger aggregate will allow for a higher aggregate loading (up to approx. 220 lb); smaller aggregate will require a lower loading (down to approx. 150 lb). Binder amounts must be sufficient to thoroughly coat each aggregate particle with a slight excess to assure bond between the particles and to the primed substrate. Mix for an additional 1 - 2 minutes after addition of all the aggregate.

Installing: Most applications require prime coating the substrate with neat binder at a thickness is 8 - 10 mils (160 - 200 sq ft/gal). Primer quantities will vary according to the substrate profile and the applied primer thickness. Apply the prime coat with a brush, roller or squeegee. Apply the binder + aggregate mix before the primer begins to cure. Dump the mix onto the primed substrate, screed or rake level and finish with a clean trowel or float. At a cure temperature of 73 deg F, the surfacing may be opened to light foot traffic after 48 hours cure time; 7 days cure time recommended before exposure to heavy foot or light vehicular traffic. In most cases, a UV-resistant topcoat may be applied after 48 hours of cure time. For additional installation information, see *ACI 503R, Chapter 7*, "Applying Epoxy Compounds." For specific recommendations and installation procedures, contact ChemCo Systems, Inc. Non-conductive floors can alternately be installed by rolling a 20 mil base coat of K-157, following by seeding to excess with Colorquartz, vacuum, another 20 mil coat and seed, vacuum, then a top seal coat for a finished thickness of ~1/8-3/16".

Clean up: Excess mixed product is best removed from the work area and tools before it hardens. Use of rags and solvents such as acetone or heavy-duty detergents facilitate cleaning. Cured product may be removed from 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.
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- 2 (Moderate Hazard). Contains alkaline amines. Warning! Causes severe eye and skin irritation. 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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