

Type:	Two-component, non-sag, epoxy resin I hardener paste.
Primary Use:	Bonding rigid construction materials to themselves or each other. Anchoring bolts, dowels and rebar into concrete, masonry or stone. Adhesive bonding of steel plates to concrete (external reinforcement).
Substrates:	Concrete, masonry, stone (dry, damp and wet), steel and sealed wood. Suitable for vertical surfaces; horizontal and overhead oriented holes.
Minimum Temp:	Installation- 40 F, Cure- 40 F (substrate temperature).
Special Feature:	Adjustable working life and viscosity by blending with compatible products.
ASTM C 881:	Meets the requirements for bonding agents in lead bearing applications.
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 009, SP Paste is a two-component, short potlife, structural, epoxy paste adhesive designed for application on vertical surfaces and in horizontal and overhead oriented holes. Primary uses include general bonding of rigid construction materials, e.g., hardened concrete, masonry, stone, steel and sealed wood to themselves or each other, steel plate bonding (external reinforcement), bending applications on vertical and overhead surfaces and anchoring bolts, dowels and rebar in horizontal and overhead oriented holes in concrete, masonry and stone. It also may be used as a KIP System surface seal in pressure injection grouting applications. KEMKO 009 bonds to dry, damp and wet (no free standing water) substrates and can be applied up to 1/2 inch thick without sag or flow. The components do not contain volatile organic compounds (VOC's).

**Features:** The excellent physical properties of the product allow its use in applications requiring resistance to creep and stress relaxation, maintenance of mechanical properties at high ambient temperatures and high lead bearing strength. Exceptional substrate wetting and water displacement properties ensure excellent adhesion under adverse application conditions, e.g., cold, wet concrete. The working life/cure time of KEMKO 009, SP Paste may be increased, if required, by preblending the Part B with the Part B of the long potlife paste product, KEMKO 028, LP Paste. The viscosity of KEMKO 009, SP Paste may be decreased by blending the mixed product with mixed companion liquid product, KEMKO 008, SP Bender. The long and short potlife and bender and paste forms of the product (KEMKO 001, 008, 009 and 028) employ a 2:1 (by vol.) mixing ratio that must be maintained at all times.

**Limitations:** The recommended minimum substrate temperature during installation and for cure is 40 deg F. (For installation and cure at high ambient and substrate temperatures or when a longer work life is needed, use KEMKO 028, LP Paste.) The maximum in-service temperature should not exceed 20 deg F below the HDT in bonding applications subjected to substantial and sustained shear stresses that may cause creep. Do not add solvents to this material. The viscosity may be decreased only by blending with the appropriate companion product- see above, Features.

**Packaging:** Standard package sizes of Part A + Part B are 1, 3, 15 and 150 gallon units.

**Shelf Life:** Three years 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.

**Chemical Resistance:** KEMKO 009, SP Paste 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, Inc., technical representative.

**Color Selection:** The standard color of the mixed components 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, damp or wet (no free standing water) 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,

**Mixing:** KEMKO 009 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. Transfer the appropriate quantities of Part A and Part B into a mixing container. Use quantities that can be applied before the potlife 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:** For general and steel plate bonding, apply mixed material with a trowel to the surfaces and spread to the specified bond line thickness on both surfaces to be mated. Establish contact between the surfaces using positive contact pressure. Maintain contact pressure until the adhesive has set. Remove excess material (squeeze-out) before the material sets. To grout bolts, dowels and rebar into horizontal and overhead holes, place the required amount of material in the hole (approx. 40% of hole volume) using a caulking gun with a nozzle of appropriate length.

## Typical Properties (1)

Property	Test Method	Value			
Mix Ratio, A:B,	by vol	2 : 1			
	by wt	100 : 35			
Color:	Part A	VISUAL	White		
	Part B		Black		
	Mixed		Concrete blue-gray		
Weight per Gallon, lb:	Part A	ASTM D 1475	12.3		
	Part B		8.6		
	Mixed		11.1		
			@50 F	@73 F	@105 F
Viscosity, poise:	Part A	ASTM D 2393	--	7100	--
	Part B		--	6400	--
	Mixed		--	6900	--
Non-Sag Thickness, inches		ASTM D 2730	1/2		
Gel Time, 1 quart, hours		ASTM C 881	0.5	0.3	0.1
Thin Film Properties:					
	Open Time, hours	AASHTO T-237	4	3	0.2
	Hard Dry Time, hours	ASTM D 1640	24	10	2
	Cure Time, days	AASHTO T-237	10	4	1
Compressive Yield Strength, psi		ASTM D 695	10,500		
Compressive Modulus, psi		ASTM D 695	350,000		
Flexural Strength, psi		ASTM D 790	10,500		
Flexural Modulus, psi		ASTM D 790	420,000		
Heat Deflection Temp., deg F		ASTM D 648	120		
Bond Strength, psi: 2 day cure @ 60 F		ASTM C 882	--		
14 day cure @ 60 F			1500 (2)		

(1) Cure schedule, 7 days at 73 ± 4 F and test temperature, 73 ± 4 F unless otherwise indicated.

(2) Compressive strength of cement mortar, 4500 psi.

Retract the nozzle tip as the hole fills. Insert the bar slowly while rotating to expel air. Secure the bar in the center of the hole.

**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 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.

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