

KEMKO® 028 LP PASTE

BONDER - LONG POT LIFE, STRUCTURAL EPOXY ADHESIVE NON-SAG PASTE

TECHNICAL DATA SHEET

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

KEMKO® 028 LP Paste is a 2 :1 ratio, two-component, long pot life, low exotherm, structural epoxy adhesive paste designed for structural and non-structural application on horizontal, vertical, and overhead concrete surfaces. Primary uses include the structural repair of cracks, external steel plate reinforcement bonding, seismic upgrade K-Bracing on historical brick buildings, filling rubble zone in brick buildings, and filling of voids and gaps in pre-cast concrete elements, and anchoring bolts, dowels, and rebar into concrete, masonry, or stone. Its excellent physical properties allow its use in applications requiring resistance to creep and stress relaxation, maintenance of mechanical properties at high ambient temperatures, and high load-bearing strength. It bonds dissimilar materials to hardened concrete, masonry, and stone. It is designed for bonding and grouting applications requiring short-set times at elevated temperatures. It also may be used as a surface seal in a pressure injection crack repair process. It bonds to dry and damp substrates; wet substrates must be free of standing water. No SiO₂ (silica sand fillers are used as a low-cost filler or to control viscosity) is used in the manufacturing of KEMKO® 028. It contains no VOC's (volatile organic compounds).

- Meets - ASTM C881, Type I, II, IV and V, Grade 3, Class C and AASTHO M235, Type I, II, IV and V, Grade 3, Class C
- Meets - ACI 548.15-20 Specification for Crack Repair by Epoxy Injection
- Meets - ACI 548.12-12 Specification for Bonding Hardened Concrete and Steel to Hardened Concrete

FEATURES

KEMKO® 028 LP convenient 2:1 ratio, short working time structural epoxy adhesive, 1/4 inch plus non-sag paste. The 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-load bearing strength. Exceptional substrate wetting and water displacement properties ensure excellent adhesion under adverse application conditions, e.g., cold, wet concrete.

- High chemical resistance.
- Bonds to dry and damp substrates.
- No sag at applied thickness of 1/4 inch, plus.
- Environmentally safe- No VOC solvents.

TYPICAL USES

- Bonding hardened concrete to hardened concrete.
- Segmental Bonding of Pre-Cast Elements, Bridges, Elevated Highways, Parking Structures, etc.
- Bonding dissimilar materials to hardened concrete.
- Suitable for bonding horizontal, vertical, and overhead bonding of anchor bolts, dowels, and rebar to concrete, masonry, and stone.
- Bonding external steel reinforcement to concrete, including plates and K-Bracing for lateral reinforcement
- Use as a paste epoxy sealer of cracks in concrete before epoxy injection resin is pumped.

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			2:1
Mix Ratio by Weight			100:35
Color	Part A Part B Mixed	Visual	White Black Blue Gray
Weight per Gallon	Part A Part B Mixed	ASTM D1475	12.3 lbs. (5.6 kg) 8.4 lbs. (83.8 kg) 11.0 lbs. (5.0 kg)
Viscosity Poise	Part A Part B Mixed	ASTM D2393	82 48 71
Non-Sag Thickness		ASTM C881	1/2 Inch (12.7 mm)
Gel Time, 1 Quart	50°F (10°C) 73°F (23°C) 105°F (41°C)	ASTM C881	4.4 Hours 1.4 Hours 0.5 Hours
Open Time	50°F (10°C) 73°F (23°C) 105°F (41°C)	AASHTO T237	5 Hours 4 Hours 0.7 Hours
Cure Time Hard Dry	50°F (10°C) 73°F (23°C) 105°F (41°C)	AASHTO T237	14 Days 7 Days 3 Days
Compressive Yield Strength		ASTM D695	10,000 psi (68.9 MPa)

Compressive Modulus	ASTM D695	350,000 psi (2413.2 MPa)
Flexural Strength	ASTM D790	10,500 psi (72.4 MPa)
Flexural Modulus	ASTM D790	450,000 psi (3,102.6 MPa)
Bond Strength Diagonal Tension, 2 Days, 60°F (15.6°C)	ASTM C882	1,000 psi (6.9 MPa)
Bond Strength Diagonal Tension, 4 Days, 60°F (15.6°C)	ASTM C882	1,500 psi (10.3 MPa)
Bond Pull-Off Strength to Concrete	ASTM C1583	400 psi (2.8 MPa)
Heat Deflection Temperature	ASTM D638	120°F (49°C)

LIMITATIONS

The recommended minimum substrate temperature during installation and for cure is 50°F (10°C).

- For installation and cure temperatures down to 40°F (4°C) or when a faster cure is needed, use KEMKO® 008 SP.
- The maximum in-service temperature should be 20°F (10°C) below the HDT in bonding applications subjected to substantial and sustained shear stresses that may cause creep.
- When bonding plastic (fresh) containing resinous admixtures, establish the suitability of the concrete mix before actual use.
- Do not add solvents or otherwise thin this product.

PACKAGING

Standard package sizes of Part A + Part B: 3, 15, and 150-gallon (11.36, 56.79 and 567.9 l.) kits. Cartridges available.

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 sunlight. Remixing of each component may be required upon prolonged storage.

COLOR SELECTION

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

CHEMICAL RESISTANCE

KEMKO® 028 LP 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' 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. 310.215.6R 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® 028 LP Paste 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 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 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 epoxy 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® 028 LP Paste yields 231 cubic inches, which can be extended with uniform size sand that has been washed, kiln dried, and bagged.

- Add up to two gallons of aggregate to one gallon of epoxy for a pourable aggregate extension, which yields 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.



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- 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 epoxy resin, HMIS Health Hazard Rating-2 (Moderate Hazard). Warning! Causes eye and skin irritation. May cause an 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, corrosive. Do not get in eyes, skin, or on clothing. Avoid breathing vapor. Keep container closed. Use only with adequate ventilation. 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.

BOLT, DOWEL, & REBAR STRUCTURAL EPOXY ADHESIVE EMBEDMENT

Estimate - Exact Number - No Wastage Included

Epoxy Needed per 100 Rebar Anchors in 0.25 Inch Larger Hole
(DO NOT EXCEED THIS HOLE SIZE)

Rebar #	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13
Rebar Diameter	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625
Hole Diameter	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875
Depth of Embedment	Gallons Required per 100 Rebar Anchors										
2 Inches	0.17	0.21	0.25	0.30	0.34	0.38	0.42	0.47	0.51	0.55	0.59
4 Inches	0.34	0.42	0.51	0.59	0.68	0.76	0.85	0.93	1.02	1.10	1.19
6 Inches	0.51	0.64	0.76	0.89	1.02	1.15	1.27	1.40	1.53	1.66	1.78
8 Inches	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04	2.21	2.38
10 Inches	0.85	1.06	1.27	1.49	1.70	1.91	2.12	2.34	2.55	2.76	2.97
12 Inches	1.02	1.27	1.53	1.78	2.04	2.29	2.55	2.80	3.06	3.31	3.57



BOLT, DOWEL, & REBAR STRUCTURAL EPOXY ADHESIVE EMBEDMENT

Estimate - Exact Number - No Wastage Included

**Epoxy Needed per 100 Rebar Anchors in 0.125 Inch Larger Hole
(DO NOT EXCEED THIS HOLE SIZE)**

Rebar #	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13
Rebar Diameter	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625
Hole Diameter	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750
Depth of Embedment	Gallons Required per 100 Rebar Anchors										
2 Inches	0.17	0.10	0.12	0.14	0.16	0.18	0.20	0.22	0.24	0.27	0.29
4 Inches	0.15	0.19	0.23	0.28	0.32	0.36	0.40	0.45	0.49	0.53	0.57
6 Inches	0.22	0.29	0.35	0.41	0.48	0.54	0.61	0.67	0.73	0.80	0.86
8 Inches	0.30	0.38	0.47	0.55	0.64	0.72	0.81	0.89	0.98	1.06	1.15
10 Inches	0.37	0.48	0.58	0.69	0.80	0.90	1.01	1.12	1.22	1.33	1.43
12 Inches	0.45	0.57	0.70	0.83	0.96	1.08	1.21	1.34	1.47	1.59	1.72



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.

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