KEMROK CONCRETE™

Pre-extended, Packaged Chemical Resistant REPAIR CONCRETE

Updated 6.8.10

1 General Characteristics

KEMROK™ is an extremely versatile, cementitious, rapid setting, semi-leveling structural repair concrete. It is a single component powder that is water activated.

KEMROK™ has 30 minutes of working time and will reach compressive strengths of more than 4,500 psi within 3 hours from the addition of water.

KEMROK™ can be applied in ambient temperature ranges from 30 to 120 degrees Fahrenheit.

KEMROK™ finishes like traditional Portland based concrete and cleans up easily with water.

RECOMMENDED USES:

KEMROK™ has been designed for horizontal and near horizontal applications providing for ***repair*** of Industrial concrete infrastructure, secondary containment, sulfuric acid exposure and form and pour projects. **KEMROK™** has been engineered for low permeability and is resistant to chemical attack by sulfuric compounds and related acids.

2 Additional Physical Properties

UNIT WEIGHT (with water, sand & aggregate)
152 lb/ft^3 (2434 kg/m^3)

SETTING TIME
Set Times at 72°F/22°C at 2" (5 cm) material depth
Initial set: 30 - 35 minutes
Final set: 35 - 45 minutes

VOLUME YIELD (#8 - 3/8" fractured stone- included)
Concrete (binder + sand + coarse agg. + H^2O) =
0.40ft^3 (.011m^3)

3 Specifications

Results provided by licensed engineering test laboratory and represent typical results from production materials. Actual results may vary from third party testing results; however, CERATECH's materials meet and/or exceed established internal quality control standards, (available upon request) . All samples were air cured.

Property	Results	Test Method
Compressive Strengths, **psi** (MPa)		
3 hours	**4540** (31.3)	**ASTM C 39**
1 day - 24 hours	**7477** (33.8)	**ASTM C 39**
7 days	**7415** (51.6)	**ASTM C 39**
28 days	**12049** (83.1)	**ASTM C 39**
Flexural Strength, **psi** (MPa)		
7 days	**1050** (7.2)	**ASTM C 78**
28 days	**1110** (7.7)	**ASTM C 78**
Splitting Tensile Strength, **psi** (MPa)		
28 days	**600** (4.1)	**ASTM C 496**
28 days	**720** (5.0)	**ASTM C 496**
Bond Strength, **psi** (MPa)		
7 days	**4365** (30.1)	**ASTM C 882**
28 days	**6310** (43.5)	**ASTM C 882**
Rapid Freeze Thaw Resistance (Durability Factor - Retained percentage of Dynamic Modulus)		
300 cycles	**100%**	**ASTM C 666A**
Scaling Resistance, **lbs/ft^2** (kg/m^2)		
50 cycles	**0**	**ASTM C 672**
Modulus of Elasticity, **msi** (GPa)		
28 days	**4.7** (31.8)	**ASTM C 469**
Coefficient of Thermal Expansion, **in/in/°F**		
28 days	**1.37**	**AASHTO TP 60**
Length Change, **% of total length**		
28 days soak / 28 days dry	**-0.052 / -0.057**	**ASTM C 157**
Abrasion Resistance, **mm of wear**		
28 days	**0.17**	**ASTM C 944 (2005)**
Chemical Resistance, **68% Sulfuric Acid Immersion**		
7 days (% change in mass)	**5.3 (Portland Cement = 33.8)**	

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4 Site Preparation

Surfaces should be prepared in accordance with ICRI 03730, "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion." and / or ACI 546R-96 "Concrete Repair Guide". Concrete surfaces should be prepared by appropriate mechanical methods to obtain an exposed aggregate surface with a minimum surface profile of +/- 1/16" (1.5 mm) in accordance with ICRI 03732. Pre-existing coatings or surface treatments should be completely removed. Dry, clean, stable surfaces are required. Remove all standing water. Reinforcing steel should have no loose scale. **Surfaces of host concrete must be damp.**

5 Mixing Instructions

Standard Mixing Procedures (Rotating Drum Concrete Mixer)

- Pre-wet cement mixer with water then drain all water from mixer (away from repair area)
- Start mixer - Add Water - **KEMROK**™ requires a total of 2 quarts of water per 53.5 lb.unit. Initially, add-in only 1 quart of water. (**KEMROK**™ is a water to binder sensitive cement. NEVER use less than 2 quarts of water nor MORE THAN 2 1/8 quarts of water per 53.5 lb. unit of **KEMROK**™.)
- Add pre-determined units of **KEMROK**™ Mix for 1 minute
- Add - in remaining quart of water per 53.5 lb. unit of **KEMROK**™
- Mix for 6 additional minutes or 7 minutes total
- Pour all contents into repair area
- Clean mixer or repeat process for next batch

Notes:

1. In ambient temperatures, < 50˚F / 10˚C, use warm water between 70˚F/22˚C and 90°F/32°C
2. In ambient temperatures > 85˚F/ 29˚C, use cooler water between 50˚F/ 10˚C and 70°F/22°C
3. Working times will vary when mix water temperature's are outside of these recommendations
4. **Minimum recommended batch size is 2 units (Use 4 quarts of water for 2 bag batches)**

6 Packaging & Shelf Life

PACKAGING

53.5lb (24.3 kg) Plastic Bag

SHELF LIFE
1 year

STORAGE
Bags must be kept dry

7 Limitations

- Not recommended for placement in temps below 30˚F/-1˚C and above 120˚F/49˚C.
- Will not bond to polymers.
- Pumpable with proper precautions

8 Application & Finish

- Working times are influenced by surface temperature and repair profile. **Working time can be extended by adding CERATECH's Set Retarder Admixture to mix water. (See Set Retardant product data sheet for more information)**
- Working times are influenced by surface temperature and repair profile.
- Minimum profile thickness is 1.13". There are no restrictions to the maximum depth of the repair profile.
- For best results, CERATECH recommends monolithic placement of repair materials. Maintain a minimum thickness of 1.00 inch if repair material must be layered. Material must also be layered before final set has been reached.
- Upon initial set, a broom finish can be applied. Upon final set, the material can be saw-cut, drilled, sanded and/or polished
- Do not re-temper. The addition of water to the surface of the repair will negatively affect the materials final properties.
- General loading in 4 hours for wheeled traffic and 2 hours for foot traffic after addition of water.
- All previously existing joints must be re-established within 4 hours of final set.
- Self-curing, (Protect with blankets or equivalent in ambient temperatures below freezing (32˚F / 0˚F).
- Clean all tools and equipment with water prior to the material reaching final set.

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