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Technical Datasheet

KEMROK VR™

CHEMICAL RESISTANT REPAIR MORTAR

CSI Div. 03

03 31 23 High Performance Structural Concrete

LEED Points

MR Credit 5.1, Regional Materials.....Up to 2 Points
 IEQ Credit 4.2, Low-Emitting Materials Paints and Coatings...1 Point
 Using this AQUAFIN product can help contribute to LEED certification of projects in the categories shown above.

General Characteristics:

KEMROK VR is a rapid setting pozzolan cement mortar. It is a single component powder that is water activated. KEMROK VR has 20 - 30 minutes working time.

KEMROK VR can be applied in an ambient temperature range of 40° - 120°F (4.4°C - 48.9°C). KEMROK VR can be trowel applied in multiple lifts of 1/4" - 1/2" (6.35 mm - 12.7 mm) or spray applied (contact Field Engineering for equipment recommendations) in lifts from 1/4" to 3" (6.35 mm - 76.2 mm). KEMROK VR's crystalline structure and unique chemistry provides exceptional resistance to environments with exposure to Chlorides, Sulfates, Sulfuric acids and more.

RECOMMENDED USES: KEMROK VR has been specifically engineered for use in vertical industrial applications such as spall repair and impact damage on beams, columns, pile and pile caps, pressure bearing pre-cast pipe, curbs, steps, pre-stressed panels, tunnels, sewers, loading docks, silos, retaining walls, culverts, catch basins, parapet walls, septic tanks, chemical containments and pre-cast product repair applications where the potential for sulfuric acid exposure is likely. KEMROK VR has been designed to protect both new and existing manholes, wet wells, lift stations and other waste water related structures.

KEMROK VR can be hand applied with trowel or used with spray gun equipment.

Material Specification:

Results provided by licensed engineering test laboratory and represent typical results from production materials. Actual results may vary from third party testing results; however, Aquafin's materials meet and/or exceed ASTM C928, and exceed established internal quality control standards, (available upon request). All samples were air cured.

Site Preparation:

- Substrates must be of load bearing capacity, and free from all potential bond breakers such as dirt, dust, grease, oil, sealers, curing compounds, laitance, loose or deteriorated concrete and any bond-inhibiting foreign substances.
- Mechanically prepare surfaces to achieve a surface profile equal to CSP 5 - 7. Concrete Surface Profile as per ICRI Guideline No. 310.2-1997 (Formerly Guideline No. 03732)
- All surfaces to be repaired should be saturated surface dry (SSD) but have no standing water. Hot surfaces should be cooled and shaded while cold

Physical and Technical Data	
Compressive Strengths, psi (MPa) ASTM C 39	> 3,000 psi (20.6 MPa) @ 24 hrs > 4,000 psi (27.58 MPa) @ 7 d > 5,000 psi (34.47 MPa) @ 28 d
Flexural Strength, psi (MPa) ASTM C 78	> 500 psi (3.44 MPa) @ 24 hrs
Splitting Tensile Strength, psi (MPa) ASTM C 496	> 400 psi (2.75 MPa) @ 24 hrs
Bond Strength, psi (Mpa) ASTM C 882	> 1,100 psi (7.58 MPa) @ 24 hrs
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Additional Physical Properties

Set Times at 72°F/22°C Initial set: 20 - 30 minutes Final set: 45 minutes	Unit Weight: approximately 136 lb/ft³ (2,178 kg/m³)
Yield per 49.5 lb Unit	0.41 ft³ (0.015 m³)

surfaces should be heated and sheltered. Mechanically remove all loose materials by suitable means such as chipping hammer, chisel, sandblast, high pressure water blast (>5000 psi), or similar methods.

Mixing Instructions:

Standard Mixing Procedures (Heavy Duty Drill & Paddle)

1. Place KEMROK VR in a suitable, smooth bottom plastic mixing container.
2. Dry mix material for 30 seconds.
3. Add in 2 qts (1.89 L) of water per 49.5 lb. (22.45 kg) bag of KEMROK VR.
4. Mix for 3 1/2 minutes.
5. Place material.

Standard Mixing Procedures (Mechanical Mixers)

1. Pre-wet cement mixer with water then drain all water from mixer (away from repair area).
2. Start mixer - KEMROK VR requires a total of 2 qts (1.89 L) of water per 49.5 lb. (22.45 kg) unit. Initially, add 50% of total mix water to concrete mixer.
3. Add pre-determined units of KEMROK VR.
4. Add in remaining mix water.
5. Mix for 5 minutes total.
6. Pour all contents into hod (for hand trowelling) or spray apparatus hopper.
7. Clean mixer or repeat process for next batch.

Application & Finish:

Suggested Spray Gun and Hand Trowelled Application Procedures.

- Cementitious substrates must be dampened with clean potable water prior to and during installation. Make sure there is no standing water.
- Mix KEMROK VR in accordance with the manufacturers recommendations.
- For Trowel Applications, install a thin tight coat then immediately double back to achieve a thickness of 0.5" to 1.0" (12.7 mm - 25.4 mm).
- For Spray Gun Applications, using low pressure spray equipment, apply on vertical or horizontal surfaces up to 1.0" (12.7 mm) thick. (Contact AQUAFIN Field Engineering for information on suitable pumps, nozzles and applicators.)
- For thicker builds, allow initial lift to reach final set, then scarify in a horizontal direction before placing next lift. (Repeat as necessary to reach final profile thickness.
- KEMROK VR may be floated using a sponge, rubber, magnesium or wood float designed for this purpose. Avoid placing water on the surface of the KEMROK VR during the floating process as this could lead to surface cracking. Dampen the float with water and not the surface of the KEMROK VR. Finish texture and color can vary depending on the type of float and method used.
- Avoid installations in the direct sun as this can decrease working time and cause rapid drying and/or cracking. Plan the work so that a wet edge can be maintained during installation.
- Follow Industry recommendations regarding the use of Joints and Sealants.
- Working times are influenced by ambient & surface temperatures. For optimum performance, maintain mortar, host concrete to within a range of 40°F (4.4°C) and 90°F (32°C) prior to, during and for 48 hours after placement of mortar. Working times are influenced by surface temperature and repair profile. Working time can be extended by adding *Set Retarder Admixture* to mix water. (See *Set Retardant TDS* for more information).
- At low temperatures below 50°F (10°C) mortar setting time is extended.
- At high temperatures above 86°F (30°C) mortar setting time is reduced, affecting placement. Aquafin recommends that repairs at high temperatures be protected from direct sun and heat or be placed early in the morning. Keep materials cool and use cold water for mixing.
- Self-curing.
- Clean all tools and equipment with water prior to the material reaching final set.

Limitations:

- Do not exceed 1.0" (25.4 mm) thickness per lift.
- Not recommended for placement in temps below 40°F (4.4°C) and above 120°F (49°C).
- Will not bond to polymers or resin coatings.
- Do not exceed maximum mix water requirement.

Packaging & Shelf Life:

- **PACKAGING**
49.5 lb. (22.45 kg) Bag
GSA P/N: C1250
- **SHELF LIFE:**
1 year
- **STORAGE:**
Bags must be kept dry

Note:

Installer is responsible for proper product application. Site visits by Aquafin personnel or representatives are solely for the purpose of making technical recommendations, not for providing supervision or quality control.

Safety:

Refer to Safety Data Sheet (SDS). The use of a dust mask, safety goggles and gloves is recommended. This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use. Dispose of water and materials in accordance with Federal, State and Local regulations. Keep out of the reach of children.

LIMITED WARRANTY: AQUAFIN, INC. warrants this product for a period of one year from the date of installation to be manufactured free of defects and to be consistent with its technical properties as stated in our current Technical Data Sheet. This product must be used as directed and within its stated shelf life. AQUAFIN INC. will replace or at our discretion refund the purchase price of any product, excluding cost of labor, which is proven to be defective. Our product recommendations are based on industry standards and testing procedures. It is the buyer's obligation to test the suitability of the product for an intended use prior to using it. We assume no warranties written, expressed or implied as to any specific methods of application or use of the product. AQUAFIN INC. MAKES NO WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. AQUAFIN, INC. shall not be liable for damages of any sort including remote or consequential damages, down time, or delay. Any claim for a defective product must be filed within 30 days of discovery of a problem, and must be submitted with written proof of purchase.

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