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Technical Datasheet

Pavemend VR™

Vertical, Overhead & Precast RAPID REPAIR VERTICAL & OVERHEAD 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:

VR is a single component, water activated, cementitious, rapid setting, vertical and overhead structural repair mortar. It has 10 to 15 minutes of working time, plus an additional 10 to 15 minutes to shape and shave the repair to match the existing contours of the host concrete. VR can be applied in a single lift from 1/4" to over 4" without bonding agents and can be easily sculpted and shaped to match the existing concrete. VR can be applied in ambient temperature ranges of 40°F - 100°F and can be re-worked to a gel state prior to final set without additional water, providing ease of use and reduced material waste.

Typical Applications:

VR has been designed specifically for use in vertical and overhead applications such as spall repair and impact damage on beams, columns, pile and pile caps, tendon grouting, pressure bearing pre-cast pipe, curbs, steps, pre-stressed panels, tunnels, sewers, loading docks, silos, retaining walls, culverts, catch basins, decorative moldings, parapet walls, septic tanks, cold storage vaults and other pre-cast product repair applications.

Surface Preparation:

- Concrete surfaces must be structurally sound, free of any loose or deteriorated concrete, dirt, dust, grease, oil, sealers, curing compounds and all other bond-inhibiting materials.
- Mechanically prepare surfaces to achieve a surface profile equal to CSP 5-7 as per ICRI Guideline No. 310.2R-13
- Properly clean profiled area by water-blasting. All surfaces must be saturated surface dry (SSD) but with no standing water, immediately prior to application.
- Repair areas should have saw-cut straight edges with a minimum of 1/4" (6 mm) depth as per ICRI Guideline 310.1R - 2008 (avoid featheredging).

Mixing:

Critical Mix Temperature (CMT): VR undergoes an exothermic chemical reaction during blending. Heat, the by-product of the reaction, is the indication that the reaction is complete and that the product is ready to be poured. VR has a CMT of 90°F/32°C which MUST BE REACHED before placing to ensure performance. Mixing time to reach the CMT will vary with ambient air and mix water temperatures. Contact Aquafin Technical Department with questions regarding CMT and cold or hot weather placements. The use of an infrared thermometer is required for the mixing process to ensure that the CMT has been achieved.

Physical and Technical Data	
Compressive Strengths, psi (MPa) ASTM C 109	> 2,300 @ 2 hours > 3,000 @ 1 day - 24 hours > 4,000 @ 7 days > 7,000 @ 28 days
Flexural Strength, psi (MPa) ASTM C 78	> 600 @ 7 day > 650 @ 28 days
Splitting Tensile Strength, psi (MPa) ASTM C 496	> 300 @ 28 days
Direct Tension Strength, psi ASTM C 496	> 300 @ 7 day
Bond Strength, psi ASTM C 882	> 1,500 @ 1 day- 24 hours > 1,600 @ 7 days
Scaling Resistance, lbs/ft ² ASTM C 672	0 @ 50 cycles
Modulus of Elasticity, msi ASTM C 469	3.17 @ 28 days
Coefficient of Thermal Expansion, in/in/°F AASHTO TP 60	2.01 @ 28 days
Length Change, % of total length ASTM C 157	-0.001/-0.001 @ 28 days soak/dry
Results provided by licensed engineering test laboratory and represent typical results from production materials. Actual results may vary from third party testing results; however, Pavemend materials meet and/or exceed ASTM C928, and exceed established internal quality control standards. All samples were air cured.	

Additional Physical Properties

Set Times at 72°F/22°C Initial set: 15 - 20 minutes Final set: 25 - 35 minutes	Unit Weight (water, sand and aggregate): approximately 115 lb/ft ³ (1,842 kg/m ³)
Volume Yield per 17 lb (7.7 kg)	0.14 ft ³ (0.0004 m ³)
Theoretical Coverage per 17 lb (7.7 kg)	
1/8" (3.0 mm)	13.25 ft ² (1.2 m ²)
1/4" (6.0 mm)	6.6 ft ² (0.6 m ²)
1/2" (12.0 mm)	3.3 ft ² (0.3 m ²)
3/4" (19 mm)	1.6 ft ² (0.15 m ²)



Standard NEAT Procedures (Bucket Mixing with Drill & Paddle)

- To ensure product performance, do not divide/separate individual units into smaller portions. Mix entire contents at one time.
 - Do not hand mix. A drill (6 amp minimum) with a mixer blade turning at least 500 to 800 rpm is required. Drills with speeds greater than 800 rpms may entrain air in the mix.
 - Ideal water temperature is between 65°F/18°C and 75°F/24°C. If ambient temperatures are above 85°F/29°C, use cold water at approximately 55°F/13°C.
1. To begin: Tumble bucket on ground to loosen materials, then dry mix powders in the bucket for approx. 30 seconds with drill and paddle.
 2. Pour all required water into bucket, on top of VR powder. It is very important to rapidly incorporate all of the dry VR powders into water to achieve a uniform wet mixture within the first 30 seconds of mixing.:

For Each:	Add:
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17 lb (7.7 kg) bucket	1 U.S. quarts (.95 l) of water
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3. Mix material until CMT of 90°F/32°C is reached. Place material into repair area and spread with a trowel, straight edge or squeegee, filling voids and edges.

Application & Finish:

- Minimum product thickness 1/4" (6 mm). There are no restrictions to the depth of product thickness.
- When placing profiles greater than 4.00" (10 cm) layering is required to minimize sag.
- Scrub coats can be utilized when the host concrete is excessively dry or when very thin cosmetic applications are desired.
- All existing control joints must be honored and re-established if necessary 1 - 3 hours from final set.
- Finish the repair to the desired texture and/or to match the surrounding concrete. DO NOT use additional water during the finishing process.
- Self-curing.
- Clean all tools and equipment with water prior to the material reaching final set. Cured material must be mechanically removed.

Limitations:

- Not recommended for surface temperatures above 110°F/43°C or below 40°F/4°C.
- Will not bond to polymers.
- Cannot be pumped or mixed in grout mixer or rotating drum concrete mixers due to rapid set times.

Packaging & Shelf Life:

- **PACKAGING**
17 lb (7.7 kg) pail GSA P/N: C800
- **SHELF LIFE:**
2 years (when stored in original unopened pail).
- **STORAGE:**
Store pails indoors in a cool and dry location.

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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