

AQUAFIN Inc.
 505 Blue Ball Rd. #160
 Elkton, MD 21921
 p: 410-392-2300
 e: info@aquafin.net
 w: www.aquafin.net



Technical Datasheet

Pavemend DOTLine™

Pre-Extended (3/8"), Fiber Reinforced RAPID REPAIR CONCRETE

CSI Div. 03

- 03 01 30 Maintenance of Cast-in-Place Concrete
- 03 01 50 Maintenance of Cast Decks and Underlaysments
- 03 11 00 Concrete Forming
- 03 20 00 Concrete Reinforcing
- 03 30 00 Cast-In Place Concrete
- 03 31 00 Structural Concrete
- 03 31 23 High Performance Structural Concrete
- 03 35 00 Concrete Finishing

LEED Points

MR Credit 5.1, Regional Materials.....Up to 2 Points
 MR Credit 4.1 Recycled Content (see current Pavemend Recycled Content List)
 IEQ Credit 4.2, Low-Emitting Materials Paints and Coatings...1 Point
 Using this AQUAFIN product can help contribute to LEED certification projects in the categories shown above.

General Characteristics:

Pavemend DOTLine™ is fiber reinforced, rapid setting, self-consolidating, cementitious based structural repair concrete. It is a single component powder that is water activated. Pavemend DOTLine™ has 20 - 30 minutes of working time and will reach compressive strengths of more than 2,500 psi within 2 hours from mixing. Pavemend DOTLine™ can be applied in ambient temperature ranges of 40°F to 120°F.

Pavemend DOTLine™ finishes like traditional Portland based concrete and cleans up easily with water. Pavemend DOTLine™ rapid repair concrete offers high performance and ease of use in a cost effective, turn-key, pre-extended package.

Typical Applications:

Pavemend DOTLine™ is commonly used for horizontal and form & pour structural concrete repairs on transportation, rail, transit, public works, commercial, aviation, and military projects such as:

- Expressways, freeways, parkways, turnpikes, and similar highways
- Local concrete roads
- Bridge decks
- Airport runways and taxiways
- Parking garage decks
- Railway, subway, and loading dock platforms
- Sidewalks, pathways, and similar walkways

Advantages:

- Superior performance in freeze/thaw conditions
- Proven to be durable in high volume traffic areas
- Use for small, medium, and large volume placements
- Apply in temperatures as high as 120°F (49°C)
- Open to vehicle traffic as soon as 2 hours
- Open to pedestrian traffic as soon as 1 hour
- Pre-extended - apply in thicknesses from 1.25" (3.2 cm) to full depth
- Can also be used as a temporary repair for asphalt pavement

Physical and Technical Data (evaluation by AASHTO Product Evaluation & Audit Solutions)	
Compressive Strengths, psi (AASHTO T22/ASTM C 39):	710 @ 1 hour 4,260 @ 3 hours 5,870 @ 24 hours 8,200 @ 7 days 12,090 @ 28 days
Bond Strength, psi (ASTM C882):	2,896 @ 24 hours 3,663 @ 7 days
Direct Bond Strength, psi (ASTM C1583):	285 @ 28 days
Thermal Compatibility (ASTM C884):	Pass (no cracking or delamination)
Chloride Content, % (AASHTO T260) Acid-soluble chloride content: Water-soluble chloride content:	0.007% (0.246 lb/yd³) 0.005% (0.176 lb/yd³)
Rapid Chloride Permeability, coulombs (AASHTO T277/ASTM C1202):	1,150 coulombs
Surface Resistivity, kΩ-cm (AASHTO T358):	71.3 kΩ-cm
Freeze Thaw Resistance Durability Factor, % (AASHTO T161/ASTM C666 - procedure A):	94.6% @ 300 cycles
Freeze Thaw Resistance Length Change, % (AASHTO T161/ASTM C666 - procedure A):	+ 0.019% @ 300 cycles
Freeze Thaw Resistance Durability Factor, % (AASHTO T161/ASTM C666 - procedure B):	94.6% @ 300 cycles
Freeze Thaw Resistance Mass Loss / Gain, % (AASHTO T161/ASTM C666 - procedure B):	+0.4% @ 300 cycles
Freeze Thaw Resistance Length Change, % (AASHTO T161/ASTM C666 - procedure B):	+0.010% @ 300 cycles
Length Change, % of total length (AASHTO T160/ASTM C157):	< 0.015 @ 28 days air cure (do not wet cure Pavemend DOTLine™)
Notes: Results provided by licensed engineering test laboratory and represent typical results from production materials. Actual results may vary from third party testing results. In practical use, temperature, humidity and absorbance of the substrate may influence the above given values.	

Additional Physical Properties	
Set Times at 73 °F/22 °C Initial set: 20 - 30 minutes Final set: 30 - 45 minutes	Unit Weight (water and dry mix): approximately 145 lb/ft ³ (2323 kg/m ³)
Note: Dry mix includes 3/8" granite as aggregate.	

Pavemend DOTLine™ Coverage Chart	
Yield per approx. 53.5 lb (24.3 kg) Unit:	
Approx. Volume Yield in Cubic Ft:	0.40 ft ³ (0.011 m ³)
Approx. Sq. Ft. Coverage at 1.5" thick (3.8 cm):	3.2 ft ² (0.30 m ²)
Note: Actual coverage may vary due to surface profile.	

Substrate Preparation:

- Substrates must be of load bearing capacity, and free from all potential bond breakers such as sand, dirt, dust, grease, oil, sealers, coatings, marking paint, water repellants, curing compounds, laitance, loose or deteriorated concrete and any bond-inhibiting substances.
- Areas designated to receive repairs must remain structurally sound and stable during demolition and surface preparation work, and these conditions must continue throughout the course of the repair work. Any areas of concern or uncertainty should be discussed immediately with the site Superintendent and brought to the attention of the Engineer of record.
- Mechanically remove all loose and deteriorated concrete by suitable means such as chipping hammer, chisel, steel shotblast, high pressure water blast (hydroblast) at greater than 5,000 psi, or similar methods. Refer to ICRI Guideline 310.1R-2008.
- Areas to receive repairs must have saw cut straight edges with a minimum 1.25" (3.2 cm) depth.
- Mechanically prepare surfaces to achieve a surface profile equal to CSP (concrete surface profile) of 5 - 7 per ICRI Guideline No. 310.2R-2013. Steel shot blasting and high pressure water blasting (hydroblasting) at >5,000 psi are the preferred methods.
- Prime exposed steel reinforcement with REBAR PRIMER/BOND-CI. Refer to the current REBAR PRIMER/BOND-CI Technical Data Sheet for application instructions including steel reinforcement surface preparation and other important information.
- Clean properly prepared concrete surfaces with plenty of water. High pressure water blasting (hydroblasting) is the preferred method of cleaning. Pressure washing is also acceptable when hydroblasting methods are not possible.
- All surfaces to be repaired should be saturated surface dry (SSD) but have no standing water immediately before the application of Pavemend DOTLine™.

Jobsite Conditions & Preparation:

- Prepare application area, mixing area, equipment, tools, and crew so that everything is ready to go prior to mixing Pavemend DOTLine™.
- Mixing area(s) should be located close to each area that will receive repairs.
- Only proceed with application when ambient and surface temperatures are at least 40°F (4°C) and below 120°F (49°C).
- For hot weather applications [above 85°F (29°C)], protect mixing and application area from wind and direct sunlight. Provide artificial shade and wind breaks. Keep product containers cool and out of direct sunlight.
- For cool weather applications [below 50°F (10°C)], provide heat and shelter for cold surfaces in the application area and condition Pavemend DOTLine™ to 60°F (16°C) prior to mixing for best results. Contact Aquafin

Additional Physical and Technical Data (evaluation by independent 3rd party according to ASTM C928)	
Compressive Strengths, psi (MPa) (ASTM C 39):	> 2,500 @ 2 hours
Flexural Strength, psi (MPa) (ASTM C 78):	> 600 @ 24 hours > 900 @ 7 days > 1,200 @ 28 days
Splitting Tensile Strength, psi (ASTM C 496):	> 500 @ 28 days
Scaling Resistance, lbs/ft ² , (ASTM C 672):	0 @ 50 cycles
Modulus of Elasticity, psi (ASTM C 469):	5.41 X 10 ⁶ @ 28 days
Coefficient of Thermal Expansion, (TxDOT-TEX-428-A):	1.327EE ⁻⁵ @ 28 days
Notes: 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, (available upon request). All samples were air cured.	

Technical Department or your local Aquafin Representative for guidance when installing in temperatures below 50°F (10°C).

- Do not install Pavemend DOTLine™ when temperatures are expected to fall below 40°F (4°C) within 24 hours after placement.
- Do not apply Pavemend DOTLine™ to frozen concrete surfaces. When repairs are required in freezing conditions, ask your local Aquafin Representative about Pavemend SLQ™.

Mixing Instructions:

Read all instructions thoroughly prior to mixing and application. Important! Pavemend DOTLine™ must be mixed in a Rotating Drum Concrete Mixer!

- Mix at least 2 complete units of Pavemend DOTLine™ at a time. Do not mix partial bags.
 - Use an accurate measuring container and always carefully measure the water amounts.
- | | |
|------------------------|--------------------------------------|
| For Each: | Add: |
| 53.5 lb (24.3 kg) unit | 2 U.S. quarts (1.9 l) of clean water |
- In ambient temperatures, less than 50°F (10°C): use warm water [70°F (21°C) to 90°F (32°C)] for mixing.
 - In ambient temperatures greater than 85°F (29°C): use cool water [50°F (10°C) to 60°F (16°C)] for mixing.
 - Working time can be extended by adding Pavemend SET RETARDANT admixture to the mix water. (See Pavemend SET RETARDANT Technical Data Sheet for more information).
1. Pre-wet mixer with clean water.
 2. Drain water from mixer (away from repair area).
 3. Start mixer.
 4. Begin by adding 50% of the total required mix water to the concrete mixer based on the number of units in the batch. For example: If mixing a 2-unit batch, add 2 quarts (1.9 liters) of water (50% of the total required mix water) to the mixer.
 5. Add pre-determined units of Pavemend DOTLine™ to the mixer and mix for 1 minute.
 6. Add remaining 50% of mix water.
 7. Mix for an additional 6 minutes (7 minutes total).
 8. Immediately pour all contents from mixer into repair area.
 9. Repeat process for next batch of Pavemend DOTLine™.
 10. Place material immediately after mixing.

Application:

- Concrete substrates must be saturated surface dry (SSD), which means damp with no standing water immediately before application of Pavemend DOTLine™.
 - Minimum application thickness of Pavemend DOTLine™ is 1" (2.5 cm). There are no restrictions to the maximum depth of thickness.
 - For best results, Aquafin recommends monolithic placement of repair materials. If material must be layered, maintain a minimum thickness of 1" (25 mm) and rake/score top to facilitate a good mechanical bond for next layer. Material must also be layered before final set has been reached.
1. Place Pavemend DOTLine™ onto properly prepared concrete substrate in a continuous pour starting from one end of the repair area to the other end in each area to be repaired.
 2. Spread material quickly using traditional concrete tools such as square tipped shovels or trowels.
 3. Work fast to allow plenty of time for finishing.

Finish:

- Upon initial set, a broom finish can be applied.
- Upon final set, the material can be saw-cut, drilled, sanded and/or polished.
- Re-establish all previously existing joints within 1 hour of final set.

Protection:

- Protect application from rain until product has reached its final set.
- Protect from freezing for 24 hours after application.
- Protect from pedestrian traffic for at least 1 hour [based on 73°F (22°C)]. Add 30 minutes for every 10°F (6°C) drop in temperature.
- Protect from vehicle traffic for at least 2 hours [based on 73°F (22°C)]. Add 30 minutes for every 10°F (6°C) drop in temperature.

Curing:

- Pavemend DOTLine™ is self-curing and should be "air-cured".
- Water curing is not required or recommended.
- Do not use curing agents.
- Allow Pavemend DOTLine™ to cure for at least 6 hours [based on 73°F (22°C)] prior to applying coatings.

Clean-up:

- Clean out rotating drum mixer immediately after mixing the last batch.
- Clean all tools and other equipment with water prior to the material reaching final set. Cured material must be mechanically removed.

Limitations:

- Set times and curing times are approximate and will vary depending on ambient (air) temperature, mix water temperature, the temperature of Pavemend DOTLine™ dry powder in the packaging, surface temperature of host concrete, host concrete profile, and the application thickness.
- Do not apply when surface and ambient temperatures are above 120°F (49°C) or below 40°F (4°C).
- Do not add extra water to the mix. Exceeding the water: mix ratio will reduce the strength and performance of Pavemend DOTLine™.
- Do not re-temper or use additional water during the finishing process. The addition of excess water will negatively affect the materials final properties.
- Do not add sand, aggregate, cement, accelerators, or other ingredients to the mix.
- Do not add admixtures to the mix (other than Pavemend SET RETARDANT).
- Do not bridge moving cracks or joints.

- Concrete repair products are not designed to color-match existing concrete surfaces. In addition, jobsite conditions including temperature, humidity, and air movement can create color variations within the application of the same unit of Pavemend DOTLine™.
- Pavemend DOTLine™ will not adhere to concrete surfaces with resin coatings, polymer sealers, or to similar concrete surfaces with reduced porosity, or no porosity.

Packaging:

Bag: 53.5 lb (24.3 kg)

Storage & Shelf Life:

Store Pavemend DOTLine™ in unopened, original, undamaged packaging out of direct sunlight in a dry, cool location.

Bags: 1 year

Note:

Proper application is the sole responsibility of the user. Applicators are expected to follow ICRI and ACI guidelines as well as other applicable industry standards. Aquafin personnel or representatives are not site inspectors or construction project managers and therefore do not approve surface preparation, mixing, or application of Aquafin products. Site visits by Aquafin personnel or representatives are solely for the purpose of making technical recommendations, not for providing supervision or quality control.

General Information:

All details in particular to the suggestions for the processing and use of the product is based on our present knowledge and experiences at the time of printing. Depending on specific applications, in particular regarding substrates, processing and environmental conditions may affect final results.

Safety:

Refer to Safety Data Sheet (SDS). The use of a dust mask, safety goggles and gloves are 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. We do not guarantee compatibility of Aquafin products with other brands. For this reason, we strongly recommend application of a sample area at the jobsite to help determine suitability with other products. 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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