


**Vertical, Overhead & Precast
REPAIR MORTAR**

Pavemend VR™ is a cementitious, rapid setting, *one step* vertical and overhead structural repair mortar with parging mortar consistency. It is a single component powder that is water activated. **Pavemend VR™** has 25 to 30 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.** Pavemend VR™ will exceed **2,500 psi in 3 hours from final set** and 6,000 psi at 28 days. **Pavemend VR™ can be applied in a single lifts from 1/16" to over 4 inches without bonding agents or special application techniques and can be easily sculpted and shaved to match contours of host concrete.** Pavemend VR™ can be applied in ambient temperature ranges from 40 to 100 degrees Fahrenheit and **can be re-animated repeatedly to a gel state prior to final set without additional water for reduced material waste and ease of use.**

RECOMMENDED USES: Pavemend 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.

FEATURE	BENEFITS
1 Rapid Strength Development	Rapid Return to Service
2 Non-shrink	Dimensionally Stable
3 Mild Modulus of Elasticity	Exceptional Volume Stability Over Wide Temperature Ranges Reducing Stress at Bond Interface
4 Low Coefficient of Thermal Expansion / Contraction	Dimensionally Stable in Wide Temperature Ranges for Long Term Durability of Repair
5 Self Priming	No Secondary Bonding Agents
6 Self Curing	No Moist Curing, Tenting or Blanketing
7 Water Clean-Up	No Hazardous Chemicals Required for Cleaning Tools
8 Can be Layered	Will Not Produce Cold Joints
9 Wide Temperature Applications	Can Be Applied in Extreme Temperatures Without Effecting Long Term Performance Characteristics
10 Neutral pH Between 7.5 - 8.5	Will Not Cause Burns When Handled

LIMITATIONS

- Not recommended for surface temperatures above **120°F/49°C** or below **40°F/10°C**.
- Not for submerged applications.
- Will not bond to polymers.
- Pumping not recommended.


UNIT WEIGHT (NEAT)

 115 lb/ft³ (1842 kg/m³)

SETTING TIME

Set Times at 72°F/22°C at 1" (2.54 cm) material depth
 Initial set: 15 - 20 minutes
 Final set: 25 -35 minutes

VOLUME YIELD

0.14ft³ (0.004 m³) per 17 lb (7.7 kg) 2 gallon unit
 0.43ft³ (0.012 m³) per 51 lb (23 kg) 5 gallon unit

PACKAGING

17 lb (7.7 kg) 2 gallon (7.6 L) bucket
 51 lb (23.1 kg) 5 gallon (18.9 L) bucket (special order)

SHELF LIFE

3 years (when stored in original unopened bucket)

STORAGE

Buckets are environmentally sealed and require no special storage requirements

COVERAGE (Approximate / 2 gallon bucket)

1/16" (1.5mm)	26.9 ft ²
1/8" (3.0 mm)	13.4 ft ²
1/4" (6.0 mm)	6.7 ft ²
1/2" (12.0 mm)	3.7 ft ²
3/4" (19 mm)	2.2 ft ²

TECHNICAL DATA

3/16/07

Results shown below have been derived from internal CERATECH testing. Actual results may vary. CERATECH's materials meet and/or exceed established internal quality control standards, which will be provided upon request . All samples were air cured.

Property	Results 2" cubes	Test Method
Compressive Strengths, psi (MPa)		
3 hours	2753 (19.0)	ASTM C 109
1 day - 24 hours	4298 (29.7)	ASTM C 109
7 days	5539 (38.2)	ASTM C 109
28 days	8960 (61.8)	ASTM C 109
Flexural Strength, psi (MPa)		
7 days	578 (4.0)	ASTM C 78
28 days	792 (5.5)	ASTM C 78
Splitting Tensile Strength, psi (MPa)		
7 days	307 (2.1)	ASTM C 496
28 days	590 (4.0)	ASTM C 496
Direct Tension Strength, psi (MPa)		
7 days	319 (2.2)	ASTM C 496
28 days	TBD	ASTM C 496
Bond Strength, psi (MPa)		
1 day - 24 hours	2067 (14.3)	ASTM C 882
7 days	TBD	ASTM C 882
Scaling Resistance, lbs/ft² (kg/m²)		
25 cycles	0	ASTM C 672
Modulus of Elasticity, psi (GPa)		
28 days	3.16 (2.1)	ASTM C 469
Coefficient of Thermal Expansion, in/in/°F		
28 days	TBD	AASHTO TP 60
Length Change, % of total length		
28 days soak / 28 days dry	TBD	ASTM C 157

TBD - To be determined


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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.

MIXING INSTRUCTIONS

Standard NEAT Procedures (Bucket Mixing with Drill & Paddle)

- Loosen material by tumbling bucket & dry mixing **before** adding water.
- To ensure product performance, **DO NOT divide or separate individual units into smaller portions. MIX ENTIRE CONTENTS AT ONE TIME.**
- 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.
- **DO NOT HAND MIX**
- To begin the mixing process, add the proper amount of water:

For Each	Add
17lb (7.7 kg) - 2 gal. (7.6 L) bucket	1 U.S. quart (.95L) of water
51lb (23 kg) - 5 gal. (19.8 L) bucket	3 U.S. quarts (2.8L) of water

- The desired water temperature is between **65°F/18°C** and **75°F/24°C**.
- **After adding the water, it is very important to rapidly incorporate all of the dry Pavemend VR™ powders to achieve a uniform wet mixture within the first 30 seconds of mixing.**
- In ambient temperatures under 72°F/22°C, CERATECH highly recommends the use of a thermal gun or temperature probe to verify that a **Critical Mix Temperature of 80°F/27°C has been reached.** Place material into repair area when this temperature has been achieved.
- In ambient temperatures over 72°F/22°C and without using a thermal measuring gun or temperature probe, mix material for 4 1/2 minutes in ambient temperatures of 72°F/22°C to 80°F/27°C, mix for 3 1/2 minutes in ambient temperatures of 80°F/27°C to 90°F/32°C, mix for 3 minutes in ambient temperatures above 90°F/32°C and place.

Mixing Notes:

1. Pavemend VR™ undergoes an exothermic chemical reaction during blending. Heat, the by-product of the reaction, is the best indication that the reaction is complete and that the product is ready to be poured. **Pavemend VR™ has a Critical Mix Temperature of 80°F/27°C which MUST BE REACHED before pouring to obtain optimum performance.** (In cold weather, it may be impossible to reach the **Critical Mix Temperature**, therefore a 20°F rise in material temperature is mandatory to ensure that the necessary chemical reactions have taken place to deliver the desired performance characteristics); Mixing time to reach the **Critical Mix Temperature** will vary with ambient air and mix water temperatures, however, **never mix Pavemend VR™ for less than 3 minutes.** It is recommended that a thermal gun or temperature probe be used to ensure that the **Critical Mix Temperature** has been achieved.

APPLICATION & FINISH

- Working times are influenced by surface temperature and repair profile.
- Minimum profile thickness is 0.06" (1.5mm).
- Maximum profile thickness is not limited. 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.

SAFETY

- See **Material Safety Data Sheet (MSDS).**
- 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.
- The use of a dust mask, safety goggles and gloves is recommended.
- Keep out of the reach of children.



WARRANTY:

CERATECH, Inc. ("CERATECH") warrants that its products are free from defects in materials and workmanship. If any CERATECH product fails to conform to this warranty, CERATECH will replace the product at no cost to the buyer or refund the purchase price, at CERATECH's election. Any warranty claim must be made within one (1) year from the date of the shipment of the product to the buyer. In no event shall CERATECH be liable to the buyer for any consequential or incidental damages of any nature. CERATECH MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, WRITTEN OR ORAL AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF ITS PRODUCTS AND EXCLUDES THE SAME. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

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