

**Maine Department of Transportation
Product Acceptance Criteria**

For Fast Setting Concrete Patching Materials for Portland Cement Concrete

Meeting Department of Transportation Standard Specifications November 2014 Edition Sections:
508 – Waterproofing Membrane, 518 – Structural Concrete Repair, 5343- Precast Structural Concrete,
535 – Precast, Pre-stressed Concrete Superstructure, & 712 – Miscellaneous Highway Material

Material Criteria

Material may be one of three categories:

Cementitious Product is a dry, cementitious mortar or concrete material.

Polymer Product is a composite material formed by polymerization of a monomer and aggregate mixture in which the polymerized monomer acts as the sole binder for the aggregate. Polymer concrete uses a polymer binder in place of Portland cement.

Polymer-Modified Concrete is Portland cement concrete with polymer solutions added to the mix to achieve certain properties. Like Portland cement concrete, the primary curing mechanism for polymer-modified concrete is hydration of the cement binder.

In order to be classified as fast setting, the product must reach a traffic loadable condition (1200 psi compression) in less than three hours.

Only products whose test results have been published by the National Transportation Product Evaluation Program (NTPEP) will be considered for inclusion on the Qualified Products List (QPL). This testing program will accept products once in each calendar year. The deadlines for product submission will be posted on the NTPEP website: www.ntpep.org

It should be noted that the NTPEP program provides for uniformity and equivalence testing to allow for periodic re-certification of products previously evaluated by NTPEP. After initial NTPEP testing, products listed on the QPL should be submitted to NTPEP for re-certification every five years. Failure to do so may precipitate a product's removal from the QPL.

The Maine Department of Transportation will review submitted information to assure conformance with the material requirements shown in Table 1. Following a review of submitted information, the Department may request a sample of the product for testing in the Department's laboratory or for trial use in the field.

Qualification Criteria

All patching material shall be non-reactive with all primers, bridge deck waterproofing membranes, and thin lift polymer overlay systems.

Concrete substrates shall be cured in accordance with applicable contract requirements; areas where rapid setting patching materials have been placed shall be cured for a minimum of 72 hours, or as recommended by the product manufacturer. (see section 508.04). Manufacturers shall notify the Department at the time of product submission if longer cure times (than 72 hours) are required. Compressive strength at 28 days should be at least that of the substrate concrete.

Required Testing

Please consult the latest edition of NTPEP's "Rapid Set Concrete Patch Materials" work plan for the latest testing requirements.

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**Table 1 –Performance Requirements for
Cementitious & Polymer-Modified Concrete Materials**

2 hour compressive strength	ASTM C39	1200 psi
1 day compressive strength	ASTM C 39	3000 psi
7 day compressive strength	ASTM C 39	4000 psi
Bond Strength by Slant Shear, 1 Day	ASTM C 882	1000 psi
Bond Strength by Slant Shear, 7 Day	ASTM C 882	1500 psi
Rapid Freezing & Thawing Durability Factor (DF)	ASTM C 666, Procedure A	DF >90 @ 300 cycles
Rapid Freezing & Thawing Durability Factor (DF)	ASTM C 666, Procedure B	DF >80 @ 300 cycles
Allowable Length Change	ASTM C 157	Allowable increase after 28 days in water +0.15
		Allowable decrease after 28 days in air -0.15

Table 2 –Performance Requirements for Polymer Concrete Materials

Gel Time	ASTM C 881	30 minutes min.
7 day compressive strength	ASTM C 579	>5000 psi
Bond Strength by Slant Shear, 1 Day	ASTM C 882	1000 psi
Bond Strength by Slant Shear, 7 Day	ASTM C 882	1500 psi
Tensile Bond Strength, 7 days	ASTM C 1583	200 psi
Tensile Bond Strength, 28 days	ASTM C 1583	300 psi

The Department reserves the right to revise these requirements and withdraw product pre-qualification at any time for any reason and without notice.

A letter of re-certification for each product is required every five years for a product to remain on the Qualified Products List. Failure to comply with this requirement will result in removal from the QPL.

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