

**SECTION 935**  
**PACKAGED, DRY, THERMOSETTING POLYMER CONCRETE MATERIAL FOR**  
**CONCRETE REPAIR**

**935-1 Description.**

This Section covers packaged, dry, thermosetting, polymer concrete material for rapid repairs to hardened portland cement concrete pavement and structures. Only low odor materials such as styrene diluted polyester resin will be considered.

These materials may be used as alternates to the epoxy material in applications covered in Section 354.

**935-2 Materials.**

The materials to be considered as alternates shall meet the following Physical Requirements:

Type 1 Polymer Concrete: Moderate compressive strength for repairing fair to low quality concrete where moderate compressive strength is desired.

Type 2 Polymer Concrete: Low modulus with lower compressive strength and more flexibility for repairing low quality and or moving concrete (across working cracks).

Property	Type 1 Polymer Concrete	Type 2 Polymer Concrete
Compressive Strengths		
2 hours	1,500 psi [10.3 Mpa]	800 psi [5.5 Mpa]
24 hours	3,500 psi [24 Mpa]	1,500 psi [10.3 Mpa]
7 days	4,500 psi [31 Mpa]	2,000 psi [13.8 Mpa]
28 days	4,500 psi [31 Mpa]	2,000 psi [13.8 Mpa]
Working Time	12 to 20 minutes	12 to 20 minutes
	7 day compressive strength test values:	
PCC Bond Strength- ASTM C 882	3,500 psi [24 Mpa] minimum	2,000 psi [13.8 MPa] minimum
Compressive Strength- ASTM C 579	4,500 psi [31 MPa] minimum	2,000 psi [13.8 MPa] minimum
Flexural Strength- ASTM C 580	1,800 psi [12.4 MPa] minimum	800 psi [5.5 MPa] minimum
Shrinkage- ASTM C 531	0.03% maximum	0.03% maximum
Expansion- ASTM C 531	0.000012 in/in/°F [2.16 x 10 <sup>-5</sup> mm/(mm·°C)] maximum	0.000012 in/in/°F [2.16 x 10 <sup>-5</sup> mm/(mm·°C)] maximum
Tensile Strength- ASTM C 307	900 psi [6.2 Mpa] minimum	400 psi [2.7 MPa] minimum

The catalyst, resin and aggregate blend shall be provided by the manufacturer and approved by the Department.

If the area is being used for maintenance of traffic, the repair shall be capable of receiving traffic within two hours or as noted in the plans.

Constructability: The Contractor shall furnish to the Engineer for approval shop drawing as may be required to complete repairs in compliance with the design shown in the plans and the manufacturers recommended repair system.

**935-3 Sampling.**

A LOT is the packaged repair material normally placed on a pallet. A unit sample is a single container or package of material randomly selected from the LOT.

#### **935-4 Rejection.**

All broken containers will be rejected. Material that fails to meet any of the requirements of this specification will be rejected. Rejection and reasons for rejection will be reported to the producer or supplier in writing. Material in local storage in the hands of a vendor for more than six months after testing will be retested before use. Retested material will be rejected if it fails to conform to any of the requirements of this Specification.

#### **935-5 Certification.**

The Contractor shall furnish to the Engineer a certified test report, as specified in 6-1, for the materials furnished and described in this specification indicating the material meets all requirements specified. When the material is supplied for a specific application, the producer shall additionally certify that he has examined the particular application and recommends the product for that application. This examination shall include a consideration of any section sensitivity or sag tendency of the product.

#### **935-6 Marking.**

All containers shall be marked with the following information:

- (a) Lot identification number and material expiration date
- (b) Directions for use shall include but are not limited to the following:
  - (1) The type and kind of adhesive recommended (if any) to bond fresh repair material to the concrete or mortar being repaired.
  - (2) The recommended amount of resin, other liquid component, or both, to be mixed with the package contents.
  - (3) The recommended length of mixing time or sequence of mixing and resting times in minutes.
- (c) Date the material was packaged.
- (d) The yield in cubic feet [cubic meters] or yield in ft<sup>2</sup>/in [m<sup>2</sup>/mm] thickness when mixed with the recommended amount of liquid.
- (e) The net weight in each container. (The contents of any container shall not vary by more than 2% from the weight stated in markings. The average weight of filled containers in a LOT shall be not less than the weight stated in the markings.)

#### **935-7 Qualified Products List.**

Polymer concrete materials shall be on the Qualified Products List (QPL).

#### **935-8 Additional Testing.**

The Department reserves the right to conduct further field testing at the discretion of the Engineer.

#### **935-9 Mixing and Installation.**

The material(s) shall be mixed and installed in accordance with manufacturer's recommendations. Manufacturers will be required to provide field representation upon request.