

1 (April 6, 2015)

2 **Polyester Concrete**

3 **Polyester Resin Binder**

4 The resin shall be an unsaturated isophthalic polyester-styrene co-polymer.

5
6 Prior to adding the initiator, the resin shall conform to the following requirements:

7
8 Viscosity: 75 to 200 cps ASTM D 2196
9 (20 rpm at 77F, RVT No. 1 spindle)

10
11 Specific Gravity: 1.05 to 1.10 at 77F ASTM D 1475

12
13 Styrene Content: 45% to 50% by weight ASTM D2369
14 of polyester styrene resin

15
16 The hardened resin shall conform to the following requirements:

17
18 Elongation: 35% minimum ASTM D 638
19 w/ thickness 0.25" \pm 0.04"

20
21 Tensile Strength: 2,500 psi minimum ASTM D 638
22 w/ thickness 0.25" \pm 0.04"

23
24 Conditioning 18 hours/77F/50% + 5 hours/158F ASTM D 618

25
26 Silane Coupler: 1.0% minimum (by weight of polyester-styrene resin)

27
28 The silane coupler shall be an organosilane ester, gammamethacryloxypro-
29 pyltrimethoxysilane. The promoter/hardeners shall be compatible with suitable
30 methyl ethyl ketone peroxide (MEKP) and cumene hydroperoxide (CHP)
31 initiators. MEKP and CHP initiators shall be used as recommended by the
32 manufacturer.

33
34 Polyester resin binder will be accepted based on submittal to the Engineer of a
35 Manufacturer's Certificate of Compliance.

36
37 **High Molecular Weight Methacrylate (HMWM) Resin**

38 In addition to the viscosity and density properties, and the promoter/initiator system,
39 specified in Section 6-09.2, the HMWM resin for polyester concrete shall conform to
40 the following requirements:

41
42 Flash Point: 180F minimum ASTM D 3278

43
44 Tack-Free Time: 400 minutes maximum California Test 551

45
46 Prior to adding initiator, the HMWM resin shall have a maximum volatile content of
47 30 percent, when tested in conformance with ASTM D 2369.

48
49 HMWM resin will be accepted based on submittal to the Engineer of a
50 Manufacturer's Certificate of Compliance.
51

1 **Aggregate**
2 The aggregate shall be from a WSDOT approved pit site and shall be thoroughly
3 washed and kiln dried.
4
5 The aggregate shall conform to Section 9-03.1(5)B for either 1/2-inch or 3/8-inch
6 maximum nominal aggregate size.
7
8 The combined aggregate shall have a maximum of 45 percent crushed particles.
9 Fine aggregate shall conform to Section 9-03.13.
10
11 Aggregate absorption shall not exceed 1.0 percent. The moisture content of the
12 aggregate shall not exceed one half of the aggregate absorption at the time of
13 mixing with the polyester resin binder. The aggregate temperature shall be between
14 45F and 100F at the time of mixing.
15
16 **Sand for Abrasive Finish**
17 The sand for abrasive finish shall conform to Section 6-09.2, and the aggregate
18 moisture content requirements specified above.