

EXPECTED IMPLEMENTATION JULY 2018

930 MATERIALS FOR CONCRETE REPAIR.

(REV 9-13-17) (FA 11-13-17) (7-18)

SUBARTICLE 930-5.3 is deleted and the following substituted:

930-5.3 Physical Properties: The repair material shall meet or exceed the physical properties stated in Table 2 as determined by the specified test methods.

Table 2 - Physical Properties of Repair Materials for Vertical Surfaces*			
Requirement	Test Method	High Performance	Ultra-high Performance
Minimum Compressive Strength, psi			
24 hours	ASTM C39** or ASTM C109**	1,000	2,000
7 days		N/A	5,000
28 days		5,000	Greater than or equal to strength at 7 days
Maximum Length Change, %			
Allowable expansion at 28 days when water cured compared to length at one day	ASTM C157**	0.12	0.12
Allowable shrinkage at 28 days when air cured compared to length at one day		-0.08	-0.08
Maximum Slump (Concrete), inches	ASTM C143	3****	3****
Maximum Flow (Mortar), %	ASTM C1437	100****	100****
Time of Setting (Initial), minutes	ASTM C191** or ASTM C403**	10 to 180****	10 to 180****
Coefficient of Thermal Expansion, in/in/°F	ASTM C531*** or AASHTO T336****	5.0 x 10 ⁻⁶ to 9.0 x 10 ⁻⁶	
Minimum Bond Strength by Slant Shear, psi,			
24 hours	FM 5-587	450	750
7 days		750.	750
Minimum Flexural Strength (at 7 days), psi	ASTM C580	500	700
Maximum Absorption (Mortar at 7 days), %	ASTM C413	4	4
Minimum Surface Resistivity (Concrete at 28 days), KOhm-cm	AASHTO T358	N/A	22
Maximum Allowable Total Chlorides lbs/yd ³	FM 5-516	0.40	

* Use cement based materials modified with polymers and silica fume for extremely aggressive environments

** Make and cure the test specimens in accordance with ASTM C157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.

*** As applicable

**** For pump and pour applications, the maximum flow, slump and time of setting can be adjusted according to the manufacturer's recommendation.

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SUBARTICLE 930-7.3 is deleted and the following substituted:

930-7.3 Physical Properties: The repair material shall meet or exceed the physical properties stated in Table 4 as determined by the specified standard test methods. If extended, materials shall meet the minimum requirements of Table 4.

Table 4 - Physical Properties of Special Fillers

Requirement	Test Method	Cathodic Protection	Non-Cathodic Protection
Minimum Compressive Strength, psi			
24 hours	ASTM C39* or ASTM C109*	1,500	2,000
28 days		5,000	5,000
Maximum Length Change, %			
Allowable expansion at 28 days when water cured compared to length at one day	ASTM C157**	0.12	0.12
Allowable shrinkage at 28 days when air cured compared to length at one day		-0.12	-0.12
Allowable difference between increase in water and decrease in air		0.20	0.20
Slump (Concrete), inches	ASTM C143	7-9	7-9
Minimum Flow (Mortar), %	ASTM C1437	100	100
Time of Setting (Initial), minutes	ASTM C191* or ASTM C403*	200 to 400	200 to 400
Minimum Bond Strength by Slant Shear (at 7 days), psi	FM 5-587	450	450
Minimum Flexural Strength (at 7 days), psi	ASTM C580	700	700
Minimum Tensile Strength (at 7 days), psi	ASTM C307	200	200
Surface Resistivity (at 28 days), KOhm-cm	AASHTO T358	15 or less	22 or greater
Maximum Allowable Total Chlorides lbs/yd ³	FM 5-516	0.40	
* as applicable			
** Make and cure the test specimens in accordance with ASTM C157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.			