

MasterEmaco® S 211SP

Fiber-reinforced, silica-fume-enhanced structural wet- or dry-process shotcrete

FORMERLY SHOTPATCH® 21F

PACKAGING

55 lb (25 kg) polyethylene-lined bags
3,300 lb (1,500 kg) bulk bags

YIELD

Approximately 0.46 ft³ (0.013 m³), which will cover approximately 5.8 ft² (0.54 m²) at a 1" (25 mm) depth excluding rebound and waste.

STORAGE

Store in unopened containers in a cool, clean, dry area

SHELF LIFE

55 LB BAG: 1 year when properly stored
3,300 LB BULK BAG: 3 months when properly stored

VOC CONTENT

0 g/L less water and exempt solvents

DESCRIPTION

MasterEmaco S 211SP is a one-component, fiber-reinforced repair mortar that contains an integral corrosion inhibitor. It can be applied by either the wet or dry shotcrete process.

PRODUCT HIGHLIGHTS

- Fiber reinforced for plastic shrinkage control and reduced rebound
- Versatile, can be applied using dry or wet shotcrete process
- Very low chloride permeability and an integral corrosion inhibitor protects reinforcing steel
- Workable and easy to cut and finish when applied using wet process
- Prepackaged quality for bag-to-bag uniformity
- NSF/ANSI Std 61 certified for drinking water systems

APPLICATIONS

- Interior and exterior
- Horizontal, vertical, and overhead surfaces
- Structural repair and retrofit of
 - Bridges, tunnels, and parking garages
 - Piers, docks, and dams
 - Reservoirs and tanks
 - Water management facilities
 - Canals and aqueducts

SUBSTRATES

- Concrete

HOW TO APPLY

SURFACE PREPARATION

1. Substrate must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of ¼" (6 mm).
3. The surface to be repaired must be clean, free of laitance and saturated surface-dry (SSD) following ICRI Guideline no. 310.2 to permit proper bond.

REINFORCING STEEL

1. Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R.
2. For additional protection from future corrosion, coat the prepared reinforcing steel with MasterProtect P 8100 AP.

MIXING

WET PROCESS

1. Add 0.68–0.77 gallons (2.57–2.91 L) of potable water per 55 lb (25 kg) bag of MasterEmaco S 211SP.
2. Mechanically mix using an appropriately sized forced-action mortar mixer. Pour approximately 90% of the water into the mixing container, then charge the mixer with the material. Add the remaining mix water as required.
3. Mix for 3–5 minutes to reach a homogeneous consistency.

Technical Data

Composition

MasterEmaco S 211 SP is a one-component silica-fume-enhanced fiber-reinforced mortar containing an integral corrosion inhibitor.

Compliances

- Cement meets ASTM C 150 standards
- Sand gradation meets ASTM C 33 and ACI 506 standards
- NSF/ANSI Std 61 certified for drinking water systems

Typical Properties

PROPERTY	VALUE
Unit weight, lb/ft ³ (kg/m ³)	129 (2,067)
Set times, hrs:min at 70° F (21° C) (ASTM C 266)	
Initial set	2:45
Final set	6:00

Test Data

PROPERTY	RESULTS			TEST METHOD
	1 Day Psi (MPa)	7 Day Psi (MPa)	28 Day Psi (MPa)	
Compressive strength	2,500 (17.2)	6,000 (41.4)	7,000 (48.3)	ASTM C 109
Splitting tensile strength	200 (1.4)	300 (2.1)	400 (2.8)	ASTM C 496
Flexural strength	700 (4.8)	1,200 (8.3)	1,800 (12.4)	ASTM C 348
Direct tensile bond strength	50 (0.3)	130 (0.9)	180 (1.2)	ACI 503R, Appendix A
Slant shear bond strength	1,200 (8.3)	2,500 (17.2)	3,000 (20.7)	ASTM C 882, modified ¹
Compressive strength				ASTM C 42
	3 day psi (MPa)	28 day psi (MPa)		
Dry process	6,000 (41.4)	10,000 (69.0)		
Wet process	5,500 (38.0)	9,500 (66.0)		
Drying shrinkage, % , at 28 days	0.08			ASTM C 157, modified ²
Modulus of elasticity, psi (GPa) , at 28 days	4.6 x 10 ⁶ (31.7)			ASTM C 469
Rapid chloride permeability, coulombs, at 28 days	685			ASTM C 1202 / AASHTO T-277
Freeze/thaw resistance, % RDM, at 300 cycles	95			ASTM C 666, Procedure A
Abrasion resistance				ASTM C 779A
	Duration, min	Depth of wear, in (mm)		
	30	0.021 (0.53)		
	60	0.036 (0.91)		

¹No epoxy bonding agent used.

²ICRI Guideline #03733, 1 by 1 by 10" (25 by 25 by 250 mm) prism, air cured.

Results were obtained when material was mixed with 0.8 gallons (3.0 L) of water per bag and cured at 70° F (21° C). Expect reasonable variations, depending upon application methods, test methods, and curing conditions.

APPLICATION

1. Apply in accordance with ACI 506R.
2. Apply while taking proper consideration for rebound and compaction around reinforcing steel. The successful application depends primarily on the skill of the nozzleman.
3. When applying multiple lifts, scratch the preliminary lift before initial set. Apply the succeeding lift after the preliminary lift has reached final set. If the succeeding lift will not be immediately placed, keep the surface continually moist.
4. Cut off or level the application as required, matching the original concrete elevation.
5. In rapid-drying conditions (e.g., hot, dry, and windy weather) use MasterKure ER 50 evaporation reducer.
6. Finish the final surface as required.

CURING

Wet cure for a minimum of seven days or cure with an approved curing compound compliant with ASTM C 309 or preferably ASTM C 1315.

CLEAN UP

Clean tools and equipment with clean water immediately after use. Cured material must be removed mechanically.

FOR BEST PERFORMANCE

- Precondition these materials to approximately 70° F (21° C) for 24 hours before using.
- Water content should not exceed 0.9 gallons per 55 lb bag during application.
- Minimum application thickness is $\frac{3}{8}$ " (10 mm).
- Maximum application thickness is 6" (152 mm) per lift.
- Do not mix partial bags.
- Minimum ambient and surface temperatures should be 45° F (7° C) and rising at the time of application.
- For professional use only; not for sale to or use by the general public.
- Make certain the most current versions of product data sheet and SDS are being used; visit www.master-builders-solutions.basf.us to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

HEALTH, SAFETY AND ENVIRONMENTAL

Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting www.master-builders-solutions.basf.us, e-mailing your request to basfbscst@basf.com or calling 1(800)433-9517. Use only as directed.

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