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MAPEI®

Planitop® 12 SR

Sulfate-Resistant, Vertical, Overhead and Horizontal Repair Mortar with Silica Fume

CORROSION™ INHIBITOR ENHANCED

DESCRIPTION

Planitop 12 SR is a sulfate-resistant, one-component, shrinkage-compensated, cementitious repair mortar. *Planitop 12 SR* is fiber-reinforced, contains both silica fume and a corrosion inhibitor, and is intended for the repair of vertical, overhead and horizontal concrete surfaces.

FEATURES AND BENEFITS

- Resistant to sulfate attack, which can deteriorate concrete and reduce concrete strength
- Fiber-reinforced, to provide greater tensile strength and control of cracking
- Higher resistance to abrasion than ordinary repair mortars can offer
- One-component system that requires only the addition of potable mixing water
- Can be applied using a trowel or a low-pressure spray pump
- Strong bond to old concrete surfaces, and good resistance to freeze/thaw conditions and de-icing salts
- Can be used between temperatures of 45°F and 95°F (7°C and 35°C)
- Modified with silica fume for higher strength and durability

WHERE TO USE

- Interior and exterior use
- For areas with soils containing high alkalinity, near seawater, or where sulfate groundwater is present, such as underground structures, retaining walls, foundations, on-grade slabs, coal-fired power plants, sewage treatment plants and fertilizer plants
- For vertical and overhead structural concrete repairs and restoration up to 2" (5 cm) thick. *Planitop 12 SR* is suited for precast, cast-in-place, post-tensioned and prestressed concrete repair.
- For renovating and resurfacing concrete structures such as tunnels, bridges, overpasses, retaining walls, beams, building facades, ceilings, balconies and more
- For treating blemishes and defects in concrete surfaces as well as filling honeycombs, voids, cavities and rigid joints
- For renovating concrete surfaces subject to extreme exposure, including ramps, industrial floors, sidewalks and canals

SUITABLE SUBSTRATES

- Properly prepared masonry and concrete at least 28 days old, stable and free of hydrostatic pressure and high moisture conditions

Consult MAPEI's Technical Services Department for installation recommendations regarding substrates and conditions not listed.

SURFACE PREPARATION

- Concrete surface must be clean, sound and free of loose particles, efflorescence, paints, tar, grease, asphaltic materials, bond breakers, curing compounds, wax, and any foreign substance or any conditions that may affect proper bonding of the product and result in cracking, discoloration or changes in overall product performance.
- Thoroughly clean the surface of substances that could affect bond strength of *Planitop 12 SR*, including dirt, paint, tar, asphalt, wax, oil, grease, latex compounds, form release agents, laitance, loose toppings, foreign substances and any other residues.

- Mechanically profile and prepare concrete surfaces by abrasive blasting, waterjetting or other engineer-approved methods. Reference International Concrete Repair Institute (ICRI) Technical Guideline #310.2R concrete surface profile (CSP) #7 to #9.
- Ensure that the concrete substrate and ambient temperatures are between 45°F and 95°F (7°C and 35°C) before application. Temperatures must be maintained within this range for at least 72 hours after the installation of *Planitop 12 SR*.
- Before application of *Planitop 12 SR*, ensure that the prepared surface is in a saturated surface-dry (SSD) condition and apply a scrubcoat of *Planitop 12 SR* to ensure a secure bond. Use reinforcement bars for added strength as needed.

MIXING

Before product use, take appropriate safety precautions. Refer to the Safety Data Sheet for details.

1. Into a clean mixing container, pour the required amount of cool, clean, potable water for the desired application method. Mixing ratios are as follows:

   Trowel:

   0.82 to 0.99 U.S. gal. (3.10 to 3.75 L) of water per 55 lbs. (24.9 kg) of *Planitop 12 SR*

   Spray:

   0.82 to 0.99 U.S. gal. (3.10 to 3.75 L) of water plus an additional 4 U.S. oz. (118 mL) of water per 55 lbs. (24.9 kg) of *Planitop 12 SR*
2. Slowly add *Planitop 12 SR* to water while mixing, using a low-speed mixer. Mix for about 3 to 4 minutes to a smooth, homogenous consistency. Add water only.
3. Mix only as much material as can be applied within 45 minutes.

PRODUCT APPLICATION

Read all installation instructions thoroughly before installation.

1. Apply with a trowel or a low-pressure spray pump, without formwork, on vertical and overhead surfaces. *Planitop 12 SR* also can be applied with an appropriate low-pressure screw/rotostator pump.
2. Clean any exposed steel reinforcement and coat with *Planibond® 3C* or *Mapefer™ 1K* to protect against corrosion. See the respective Technical Data Sheet (TDS) for details.
3. If applying successive lifts of *Planitop 12 SR*, wait for the final set of the previous lift (after 4 hours at 73°F [23°C]). To enhance the bond of additional lifts, leave the first lift rough and immediately score the surface (about 1/4" [6 mm] deep) with the edge of the trowel in a continual "X" or "H" pattern (a hand rake may also be used). The maximum application thickness per lift of *Planitop 12 SR*, without formwork, is 2" (5 cm) for vertical repairs. For overhead applications, apply in two lifts at 1" (2.5 cm) thick per lift. When placing *Planitop 12 SR* in vertical and overhead installations, use either adequate existing/new reinforcement or a pinning system to provide complete assurance of bond to the structure. Review this issue with the project engineer before beginning the repair process.

CURING

- During curing, protect *Planitop 12 SR* from excessive heat and draft conditions.
- Mist-spray the surface with water during the first 24 hours of wet curing. Alternatively, use damp burlap, a white polyethylene sheet or a suitable ASTM C309 water-based curing compound. Do not use a solvent-based curing compound.

CLEANUP

- Wash hands and tools promptly with water before material hardens. Cured material must be mechanically removed.

LIMITATIONS

- Do not install over substrates containing asbestos.
- Do not add additives, cement or aggregates to *Planitop 12 SR*.
- *Planitop 12 SR* should not be used for anchoring or pouring into formwork.
- Use MAPEI's *Planigrout® 712* or *Planigrout 740* for anchoring, and *Planitop 15* for pouring into formwork. See the respective TDSs for details.
- Do not apply over standing water.

Product Performance Properties*

Laboratory Tests	Results
Flammability	Flame spread: 0 Fuel contribution: 0 Smoke development: 0
Compressive strength – ASTM C109 (CAN/CSA-A5)	
1 day	> 2,900 psi (20 MPa)
3 days	> 5,945 psi (41 MPa)
7 days	> 7,975 psi (55 MPa)
28 days	> 10,450 psi (72.1 MPa)
Flexural strength – ASTM C348 (CAN/CSA-A23.2-8C)	
1 day	> 600 psi (4.14 MPa)
3 days	> 960 psi (6.62 MPa)
7 days	> 970 psi (6.69 MPa)
28 days	> 1,190 psi (8.21 MPa)
Slant/shear bond strength – ASTM C882 (modified)	
1 day	> 1,160 psi (8 MPa)
7 days	> 2,465 psi (17 MPa)
28 days	> 3,480 psi (24 MPa)
Modulus of elasticity – ASTM C469	
28 days	4.75 x 10^6 psi (32.8 GPa)
Volume change – ASTM C157 (modified)	
28 days, dry-cured	- 0.08% (typical result)
28 days, wet-cured	+ 0.06% (typical result)
Splitting tensile strength – ASTM C496	
28 days, with 4" x 8" (10 x 20 cm) cylinders	> 1,000 psi (6.90 MPa)
Freeze/thaw resistance – ASTM C666-A (CAN/CSA A23.2-9B)	
300 cycles	97% durability factor
Resistance to de-icing salts – ASTM C672 (CAN/CSA A23.2-16C)	0; no scaling (50 cycles)
Permeability to chlorides – ASTM C1202 (AASHTO T277)	100 to 1,000 coulombs (very low)
Sulfate resistance – ASTM C1012 (% expansion at 6 months)	≤ 0.05% expansion
VOCs (Rule #1168 of California's SCAQMD)	0 g per L

** All tests were performed at 73°F (23°C) and 50% relative humidity with a mixture of at least 0.99 U.S. gal. (3.75 L) of water per 55-lb. (24.9-kg) bag of* Planitop 12 SR*, which was wet-cured. An increase in water content will alter listed properties.*

Protect containers from freezing in transit and storage. Provide for heated storage on site and deliver all materials at least 24 hours before work begins.

Shelf Life and Product Characteristics

Shelf life	1 year in original, unopened bag when stored in a dry, heated and covered place
Physical state	Powder
Color	Gray

Approximate Coverage** per 55 lbs. (24.9 kg)

Yield
0.46 cu. ft. (0.013 m^3)

*** Coverage shown is for estimating purposes only. Actual jobsite coverage may vary according to substrate conditions and setting practices.*

Packaging

Size
Bag: 55 lbs. (24.9 kg)

Planitop® 12 SR

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Planitop 12 SR

Application Properties after mixing

Mixing ratio	Trowel: 0.82 to 0.99 U.S. gal. (3.10 to 3.75 L) per 55-lb. (24.9-kg) bag Spray: 0.82 to 0.99 U.S. gal. (3.10 to 3.75 L) plus an additional 4 U.S. oz. (118 mL) of water per 55-lb. (24.9-kg) bag
Color	Gray
Consistency of mix	Thixotropic paste mortar
Density	136 lbs. per cu. ft. (2.19 kg per L)
pH (fresh mortar)	12.6
Application temperature range	45°F to 95°F (7°C to 35°C)
Pot life	> 60 minutes
Initial set	3 hours
Final set	6.5 hours
Recoating time	After final set (6.5 hours)
Thickness per lift	1/4" to 2" (6 mm to 5 cm)

RELATED DOCUMENTS

Technical bulletin "The impact of cold weather on repair materials"*
"Spall Repair Using Low-Pressure Spraying" (ACI RAP Bulletin 3)
"Spall Repair of Horizontal Concrete Surfaces" (ACI RAP Bulletin 7)
Standard Specification for Curing Concrete (ACI 308.1)
"Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion" (ICRI Technical Guideline #310.1R-2008, formerly #03730)

** At www.mapei.com*

Refer to the SDS for specific data related to health and safety as well as product handling.

For information on MAPEI's commitment to sustainability and transparency, as well as how MAPEI products may contribute to green building standards and certification systems, contact sustainability_USA@mapei.com (USA) or sustainability-durabilite@mapei.com (Canada).

We proudly support the following industry organizations:

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