



Planitop[®] FD

Full-Depth Repair Mortar



DESCRIPTION

Planitop FD is a one-part, shrinkage-compensated, cementitious, self-compacting flowable mortar for a variety of structural repairs. *Planitop FD* contains a corrosion inhibitor and is suited for form-and-pour applications as well as flatwork repairs at depths from 1/2" to 4" (12 mm to 10 cm) neat. *Planitop FD* is pumpable and ideal for deep repairs that require ease of placement and a rapid return to service.

FEATURES AND BENEFITS

- Accelerated cure allows for a faster return to service on repair areas.
- Variable water ratio allows for consistencies ranging from slopeable to pumpable.
- Use for both flatwork repairs and traditional form-and-pour.
- Nonshrinking with corrosion inhibitor

INDUSTRY STANDARDS AND APPROVALS

LEED v3 Points Contribution

LEED Points

MR Credit 5, Regional Materials* Up to 2 points

* Using this product may help contribute to LEED certification of projects in the category shown above. Points are awarded based on contributions of all project materials.

WHERE TO USE

- Use for structural concrete repairs and restoration from 1/2" to 4" (12 mm to 10 cm) in thickness. *Planitop FD* can be placed in large quantities in horizontal, vertical and overhead applications (see "Product Application"

section). It is suited for precast, cast-in-place, post-tensioned and pre-stressed concrete form-and-pour as well as form-and-pump repairs.

- Use for the form-and-pour renovation of concrete structures such as galleries, tunnels, bridges, retaining walls, columns, building facades, ceilings and balconies.
- Use for the form-and-pour treatment of blemishes and defects in concrete surfaces and for filling honeycombs, voids, cavities and rigid joints.
- Use for the deep-fill renovation of horizontal concrete surfaces subject to traffic, such as parking pads, ramps, trench filling and industrial floors.

LIMITATIONS

- *Planitop FD* requires only the addition of water, and is premeasured for easy field use and control. Use additives only as specified for *Planitop FD*.
- When using in exterior environments subject to freeze/thaw conditions, use *Planicrete AC* diluted 1:1 with potable water. *Planicrete AC* will provide additional durability in these environments.
- *Planitop FD* can be applied using a form-and-pour or form-and-pump method.
- Applications from 1/2" to 4" (12 mm to 10 cm) may be applied using *Planitop FD* neat.
- *Planitop FD* can be extended up to 50% by weight for repairs beyond 4" (10 cm).
- *Planitop FD* adheres very well to old concrete surfaces. Before application of *Planitop FD*, mechanically roughen concrete surface and saturate surface-dry (SSD) to ensure a secure bond.



- *Planitop FD* is typically ready for applications of subsequent coatings in 24 to 72 hours. Cementitious materials can be placed as early as 24 hours, and epoxy coatings can be applied as early as 72 hours.
Note: Placements of high volumes of material as well as cool, damp and humid conditions will slow the rate of hydration and cause the topping to retain a higher moisture content for a longer period of time. In high-volume placements and in temperatures below 70°F (21°C), increase the time allowed before applying a covering.
- Because *Planitop FD* is not a construction grout, it is not designed for anchoring purposes. For anchoring, use MAPEI's *Planigrout*® 712 (see Technical Data Sheets for details).
- Use *Planitop FD* between 45°F and 95°F (7°C and 35°C). Refer to the American Concrete Institute (ACI) for cold-weather or hot-weather application guidelines.

SUITABLE SUBSTRATES

- Properly prepared masonry and concrete at least 28 days old, stable, sound and dry

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

SURFACE PREPARATION

- All substrates must be structurally sound, stable and solid.
- Thoroughly clean the surface of any substance that could interfere with the bond of the installation material, including dirt, paint, tar, asphalt, wax, oil, grease, latex compounds, form release agents, laitance, loose toppings, foreign substances and any other residues.
- Concrete surfaces must be mechanically profiled and prepared by shotblasting, sandblasting, water-jetting, scarifying or other engineer-approved methods to achieve a profile of +/- 1/8" (3 mm). Reference ICRI CSP Standards 7 to 9 for acceptable profile amplitude.
- Concrete substrate and ambient room temperatures must be between 45°F and 95°F (7°C and 35°C) before application. Temperatures must be maintained within this range for at least 24 hours after the installation of *Planitop FD*.
- Do not apply over wet surfaces.

MIXING

Choose all appropriate safety equipment before use. Refer to the Safety Data Sheet for details.

With water: Add 2.5 to 3.25 U.S. qts. (2,37 to 3,08 L) clean potable water per 50 lbs. (22,7 kg) of *Planitop FD*.

With *Planicrete AC*: Dilute *Planicrete AC* 1:1 with cool, clean potable water to create your mix fluid. Add between 2.5 to

3.12 U.S. qts. (2,37 to 2,95 L) of mix fluid per 50 lbs. (22,7 kg) of *Planitop FD*.

1. Into a clean mixing container, pour the required amount of mix fluid for the desired application method and product consistency.
2. Slowly add *Planitop FD* to mix fluid while mixing, using a low-speed mixer. Mix for 2 to 3 minutes to a smooth, homogenous consistency.
3. Alternatively, use a mortar mixer for mixing the material. Pre-dampen the mixer and remove excess water before proceeding.
4. Do not add more water than specified.
5. Do not mix more material than can be applied within a 30-minute period.
6. For applications beyond 4" (10 cm), extend up to 50% by weight (25 lbs. per 50-lb. bag [11,3 kg per 22,7-kg bag] of *Planitop FD*) with clean nonreactive aggregates such as 3/8" (10 mm) pea gravel. For installations involving preplaced aggregate, follow the standard practices defined by ACI 304.1R-92, "Guide for the Use of Preplaced Aggregate Concrete for Structural and Mass Concrete Applications."

PRODUCT APPLICATION

Placing as a form-and-pour application

1. *Planitop FD* can be applied via form-and-pour or form-and-pump into formwork on horizontal, vertical and overhead surfaces. The maximum thickness neat per lift is 4" (10 cm).
2. Water from the mixed *Planitop FD* must not be absorbed by the formwork, which should be pre-flooded and drained (the day before the repair) and pretreated with an appropriate environmentally friendly form-releasing agent.
3. When encountering exposed reinforcing steel bars, clean bars and coat them with MAPEI's *Mapofer*™ 1K or *Planibond*® 3C to protect against corrosion and to improve adhesion (see Technical Data Sheets for details).
4. Consider completing repair by applying on such MAPEI products as *Tilt Finish*™, *Concrete Renew*™ or *Mapelastix*® (which will significantly increase the durability of the repair).

Placing as a bonded, horizontal topping

1. If placing on a nonporous substrate: Use *Planibond EBA* as a bonding agent.
2. If placing as a large horizontal repair on porous, profiled concrete: SSD the substrate and apply a scrubcoat of *Planitop FD*. Scrub material into surface and apply *Planitop FD* while scrubcoat is still wet. Do not apply into dry scrubcoat. For additional bond strength, prepare the scrubcoat using *Planicrete AC* diluted 1:1 with water.

3. *Planitop FD* is suitable for use in unbonded horizontal toppings applications more than 1.5" (3,8 cm) deep in placement, reinforced with welded steel mesh.

CURING

- During curing, protect *Planitop FD* from excessive heat and draft conditions.
- For form-and-pour applications: For improved curing, leave formwork in place for three days after application.
- Forms must remain in place for at least 24 hours. If the forms are removed after only 24 hours, wet-cure the exposed repair for 24 hours. Alternatively, use damp burlap, a white polyethylene sheet or a water-based curing compound. Do not use solvent-based curing compounds.

Note: Remove any form-releasing agent and/or curing compound before covering the surface with a coating.

CLEANUP

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

Planitop® FD

Product Performance Properties – mixture with 3.25 U.S. qts. (3,08 L) of water

Laboratory Tests	Results
Compressive strength – ASTM C109 (CAN/CSA-A5)	
1 day	> 3,200 psi (22,1 MPa)
7 days	> 7,100 psi (49,0 MPa)
28 days	> 8,100 psi (55,9 MPa)
Flexural strength – ASTM C348 (CAN/CSA-A23.2-8C)	
1 day	> 570 psi (3,93 MPa)
7 days	> 640 psi (4,41 MPa)
28 days	> 1,500 psi (10,3 MPa)
Direct tensile strength – CRD C164	
28 days	> 280 psi (1,93 MPa), failure in concrete
Slant/shear bond strength – ASTM C882 (modified)	
7 days	> 1,550 psi (10,7 MPa)
28 days	> 1,700 psi (11,7 MPa)
Length change – ASTM C157 (modified)	
28 days, wet-cured	+0.03%
28 days, dry-cured	-0.08%

Product Performance Properties – mixture with 3.12 U.S. qts. (2,95 L) of Planicrete AC

Laboratory Tests	Results
Compressive strength – ASTM C109 (CAN/CSA-A5)	
1 day	> 2,700 psi (18,6 MPa)
7 days	> 6,600 psi (45,5 MPa)
28 days	> 7,500 psi (51,7 MPa)
Flexural strength – ASTM C348 (CAN/CSA-A23.2-8C)	
1 day	> 630 psi (4,34 MPa)
7 days	> 980 psi (6,76 MPa)
28 days	> 1,720 psi (11,9 MPa)
Direct tensile strength – CRD C164	
28 days	> 362 psi (2,50 MPa), failure in concrete
Slant/shear bond strength – ASTM C882 (modified)	
7 days	> 2,850 psi (19,7 MPa)
28 days	> 3,020 psi (20,8 MPa)
Length change – ASTM C157 (modified)	
28 days, wet-cured	+0.03%
28 days, dry-cured	-0.12%

Product Performance Properties – mixture with extension of 25 lbs. (11,3 kg) of 3/8" (10 mm) aggregate

Laboratory Tests	Results
Compressive strength – ASTM C39	
1 day	> 2,100 psi (14,5 MPa)
7 days	> 6,000 psi (41,4 MPa)
28 days	> 6,600 psi (45,5 MPa)
Flexural strength – ASTM C293	
7 days	> 730 psi (5,03 MPa)
28 days	> 1,500 psi (10,3 MPa)
Splitting tensile strength – ASTM C496	
7 days	> 630 psi (4,34 MPa)
28 days	> 640 psi (4,41 MPa)

Shelf Life and Product Characteristics (before mixing)

Shelf life	1 year when stored in original, unopened packaging at 73°F (23°C) in a dry area
Physical state	Powder
Color	Gray

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.

Application Properties (general)

Mixing ratio for water with 50 lbs. (22,7 kg) of product	2.5 to 3.25 U.S. qts. (2,37 to 3,08 L) of water; 10.5% to 13.5% water by weight
Mixing ratio for <i>Planicrete AC</i> with 50 lbs. (22,7 kg) of product	2.5 to 3.12 U.S. qts. (2,37 to 2,95 L) of <i>Planicrete AC</i> diluted 1:1 with water
Application temperature range	45°F to 95°F (7°C to 35°C)
Pot life at 73°F (23°C)	30 minutes
Consistency of mix	Flowable mortar
Initial set at 73°F (23°C)	60 minutes
Final set at 73°F (23°C)	120 minutes
Application of self-levelers permitted	After 24 hours*
Application of epoxy coatings permitted	After 72 hours*
Flammability	Flame spread: 0 Fuel contribution: 0 Smoke development: 0

* In high-volume placements and in temperatures below 70°F (21°C), increase the time allowed before applying a covering.

CSI Division Classification

Maintenance of Concrete	03 01 00
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Packaging

Size
Bag: 50 lbs. (22,7 kg)

Approximate Coverage**

Amount of Product	Coverage
50 lbs. (22,7 kg)	5.1 sq. ft. (0,48 m ²) at 1" (2,5 cm) thickness

Amount of Product	Yield
50 lbs. (22,7 kg)	0.43 cu. ft. (0,0122 m ³)
50 lbs. (22,7 kg) mixed and extended with 25 lbs. (11,3 kg) of 3/8" (10 mm) aggregate	0.55 cu. ft. (0,0156 m ³)

** Coverage shown is for estimating purposes only. Actual jobsite coverage may vary according to substrate conditions, type of equipment, thickness applied and application methods used.

Planitop® FD



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

STATEMENT OF RESPONSIBILITY

Before using, user shall determine the suitability of the product for its intended use and user alone assumes all risks and liability whatsoever in connection therewith.

ANY CLAIM SHALL BE DEEMED WAIVED UNLESS MADE IN WRITING TO US WITHIN FIFTEEN (15) DAYS FROM DATE IT WAS, OR REASONABLY SHOULD HAVE BEEN, DISCOVERED.

We proudly support the following industry organizations:



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Technical Services

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Customer Service

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Services in Mexico

0-1-800-MX-MAPEI (0-1-800-696-2734)

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For the most current **BEST-BACKED™** product data and warranty information, visit www.mapei.com.

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