



Planitop[®] X

Fast-setting horizontal, vertical and overhead one-component repair mortar



DESCRIPTION

Planitop X is a one-component, shrinkage-compensated, fast-setting, polymer-modified, high-build cementitious repair mortar with a corrosion inhibitor. It is suited for all interior/exterior vertical, overhead and horizontal concrete applications, including precast/prestressed, tilt-up, post-tensioned and cast-in-place concrete. *Planitop X* can be applied in thicknesses of featheredge to 4" (0 to 10 cm) per lift. *Planitop X* is engineered with MAPEI's Easy Glide Technology™ for ease of application and is light gray to match existing concrete surfaces.

USES

- Renovation of such cast-in-place, precast, tilt-up and post-tensioned concrete structures as galleries, tunnels, bridges, overpasses, retaining walls, beams, building facades, parking garages, ceilings and balconies
- Treatment of blemishes and defects in concrete surfaces, such as the filling of honeycombs, voids, cavities and rigid joints
- Repair of surfaces exposed to high abrasion: canals, industrial floors, curbs, ramps, roads and sidewalks

ADVANTAGES

- Easy to use: Requires only the addition of potable mixing water
- Fast-setting: Reduces downtime and return-to-service issues
- Excellent compressive and flexural strengths

- Sculptable after initial set
- Higher resistance to abrasion than ordinary mortars
- Tenacious adhesion to existing properly prepared concrete
- Shrinkage-compensated to reduce cracking problems
- Excellent resistance to freeze/thaw cycling and de-icing salts
- Easy workability: Can be blended into the surrounding area to help disguise the patch
- Light gray: Has a color resembling that of originally placed concrete

TECHNICAL NOTES

- Do not use *Planitop X* on dense or smooth concrete surfaces. Such surfaces must be properly prepared in accordance with ICRI (International Concrete Repair Institute) guidelines covering proper surface preparation based on the intended installation (surface profile of at least 1/4" [6 mm]).
- Do not use *Planitop X* for anchoring purposes where a fluid, expansive material is required (see Technical Data Sheet for *Planigrout*® 740 or *Planigrout* 750).
- Do not pour *Planitop X* into formwork (see Technical Data Sheet for *Planitop* 15).
- Aside from *Planicrete*® AC, do not add additives, cement or aggregates to *Planitop X*.
- Do not add water after *Planitop X* has been mixed.

Planitop® X



- Do not use *Planitop X* at temperatures below 41°F (5°C).
- Do not use damaged or opened bags.
- Concrete substrates typically must be cured for at least 28 days and be free of hydrostatic and moisture conditions. Some applications where an engineered product serves as the substrate may allow for earlier application of *Planitop X*; perform a mockup to determine suitability.
- In extreme situations where product is exposed to moisture through continuous freeze/thaw cycles, substitute *Planicrete AC* for the water as indicated in the "Technical Data" section.

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

INSTRUCTIONS

1. Surface Preparation

- 1.1 Remove any deteriorated, carbonated or otherwise distressed concrete, as well as previously applied repair mortar, to provide a sound substrate.
- 1.2 All substrates should be structurally sound, stable, solid, clean and free of dust, oil, grease, paint, tar, wax, sealers, curing compounds, form release agents, primers, laitance, loose particles, and any foreign substance or debris that could reduce or impair adhesion.
- 1.3 Mechanically roughen the surface (surface profile of at least 1/8" [3 mm]) by sandblasting, water-jetting, shotblasting, scarifying or other engineer-approved mechanical means.
- 1.4 Neutralize any trace of concentrated alkalis or acids as required.
- 1.5 Clean the exposed metal in accordance with SSPC (Steel Structures Painting Council) guidelines and prime with *Planibond® 3C*.
- 1.6 Concrete substrate should be SSD (saturated surface-dry) before installation of *Planitop X*. The concrete surface should be free of any standing water. Do not apply the mortar on a substrate covered with a film of water.

2. Mixing

- 2.1 Into a clean container, pour as much potable water as needed for the desired consistency for the intended installation – about 1 to 1.125 U.S. gals. (3,79 to 4,26 L) of water per 50 lbs. (22,7 kg) of powder.
- 2.2 Add the *Planitop X* to the water slowly and continuously, mixing with an electric drill (of at least 7.8 amps at 350 to 650 rpm) with a box or propeller-type mixing paddle.

- 2.3 Mix for 2 to 3 minutes to obtain a lump-free, homogenous consistency. *Planitop X* has a pot life of 5 to 6 minutes at 73°F (23°C).

3. Application

- 3.1 Application should take place as soon as the *Planitop X* is mixed. First, apply a tight or scrub coat (undiluted) of the *Planitop X* onto the SSD (saturated surface-dry) concrete surface. The tight or scrub coat should be applied thinly (at about 1/8" or 3 mm), pressed firmly into the surface profile with full coverage of the area to be repaired. Use a trowel to immediately begin the build process, pressing the material firmly around all pretreated reinforcing, up to a maximum thickness of 4" (10 cm).
- 3.2 If successive lifts are to be completed, leave the first lift rough and immediately score the surface (about 1/4" or 6 mm deep) with the edge of the trowel in a continual "X" or "H" pattern (a hand rake may be used). Allow the *Planitop X* to take an initial set (for about 9 minutes at 73°F [23°C] and 50% relative humidity). Dampen the surface lightly with potable water and again install a tight or scrub coat followed by a build coat. Avoid building the material in multiple lifts that exceed 8" (20 cm) due to heat generated in the hydration process, which could lead to stress cracks.
- 3.3 Finishing and/or shaving of the repair area should begin as soon as the *Planitop X* takes an initial set. Use the edge of a trowel to shave off excess material. Using a soft- to medium-density sponge, lightly dampened with potable water, gently rub the repair area in a circular motion to remove surface imperfections and blend the repair with the original substrate configuration. Do not overwet the sponge or repair area during the finishing process.

Note: When placing *Planitop X* in vertical and overhead installations, use either adequate existing/new reinforcement or a pinning system to provide complete assurance of attachment/bond to the structure. Review this issue with the project engineer before beginning the repair process.

4. Curing

Curing should begin as soon as possible after application of *Planitop X*. Protect surfaces against accelerated water evaporation, which can lead to cracking. Using a fine mist tip, spray water on the surface for the first 24 hours of the curing process and use damp burlap or white polyethylene sheets.

An alternative curing method is to use MAPEI's *Planicure® 65* white-pigmented, liquid-curing membrane.

TECHNICAL DATA

Planitop X (before mixing)

Physical state	Powder
Color	Light gray
Dry-solids content	100%
Flammability	Not applicable
Shelf life	1 year in original packaging stored in dry, covered and heated place
Health and safety	Consult the Material Safety Data Sheet (MSDS) for safe-handling instructions.

Planitop X (mixed with water) (all data at 73°F [23°C] and 50% relative humidity)

Mixing ratio with water	1 to 1.125 U.S. gals. (3,79 to 4,26 L) of water per 50-lb. (22,7-kg) bag, or by volume about 4.5 : 1 (<i>Planitop X</i> : water)
Working time	5 to 6 minutes
Initial set	9 minutes
Final set	21 minutes
Linear movement	Meets ASTM C928
Wet density	0.0021 g/l
Yield – ASTM C138	0.46 cu. ft. (0,013 m³) per 50-lb. (22,7-kg) bag
Pullout – CSA CAN/A23.2-6B (failure in concrete substrate)	
7 days	> 320 psi (2,21 MPa)
28 days	> 370 psi (2,55 MPa)
Rapid chloride permeability – ASTM C1202	1,572 coulombs, low permeability
Scaling resistance – ASTM C672	0 rating, no scaling
Modulus of elasticity (MOE) with water – ASTM C469	2.95×10^6 psi / 2.04×10^4 MPa

Planitop X (mixed with Planicrete AC) (all data at 73°F [23°C] and 50% relative humidity)

Mixing ratio with <i>Planicrete AC</i>	3.4 to 3.7 U.S. qts. (3,22 to 3,55 L) of <i>Planicrete AC</i> per 50-lb. (22,7-kg) bag, or by volume approximately 4.5 to 5 : 1 (<i>Planitop X</i> : <i>Planicrete AC</i>)
Working time	8 minutes
Initial set	15 minutes
Final set	32 minutes
Modulus of elasticity (MOE) with <i>Planicrete AC</i> – ASTM C469	2.98×10^6 psi / 2.06×10^4 MPa
Freeze/thaw resistance – ASTM C666 Proc. A, 300 cycles	No deterioration with a durability factor of > 98.5%

	<u>Planitop X: water</u>	<u>Planitop X: Planicrete® AC</u>
Compressive strength – ASTM C109		
3 hours	> 3,800 psi (26,2 MPa)	
24 hours	> 5,600 psi (38,6 MPa)	> 3,500 psi (24,1 MPa)
7 days	> 6,650 psi (45,9 MPa)	> 4,300 psi (29,7 MPa)
28 days	> 7,300 psi (50,3 MPa)	> 5,500 psi (37,9 MPa)
Compressive strength – ASTM C39		
28 days	> 6,100 psi (42,1 MPa)	> 6,400 psi (44,1 MPa)
Flexural strength – ASTM C348		
24 hours	> 1,000 psi (6,90 MPa)	> 1,200 psi (8,28 MPa)
7 days	> 1,200 psi (8,28 MPa)	> 1,500 psi (10,3 MPa)
28 days	> 1,450 psi (10 MPa)	> 1,900 psi (13,1 MPa)

PACKAGING

Bags: 10 lbs. (4,54 kg); 50 lbs. (22,7 kg)
Pail: 50 lbs. (22,7 kg)

5. Cleaning

Fresh *Planitop X* is easily removed from tools and equipment with water. Cured *Planitop X* must be mechanically removed.

6. Protection

6.1 See also the "Curing" section. If a coating system is to be used over the *Planitop X*, any existing curing membrane should first be mechanically removed.

6.2 Follow ACI guidelines when placing and curing *Planitop X*.

6.3 In hot weather, avoid installations in the direct sun and use cold mixing water.

6.4 In cold weather, use water that is conditioned to about 70°F (21°C).

6.5 Store *Planitop X* in its original packaging in a dry, covered and heated area.

Planitop® X



NOTICE

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.

MAPEI

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Additional Information

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product data, visit
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