



# Planitop® X

**One-Component, Fast-Setting, Fiber-Reinforced, Vertical and Overhead Repair Mortar**



## DESCRIPTION

*Planitop X* is a one-component, fiber-reinforced, shrinkage-compensated, high-early-strength, fast-setting, polymer-modified, high-build cementitious repair mortar with a corrosion inhibitor. It is suited for all interior/exterior vertical and overhead concrete repairs, including precast/prestressed, tilt-up, post-tensioned and cast-in-place concrete. *Planitop X* can be applied from featheredge to 4" (10 cm) per lift. *Planitop X* is engineered to provide high early strength with ease of application. *Planitop X* dries to a light gray color, matching most concrete surfaces.

## FEATURES AND BENEFITS

- Easy to use, requiring only the addition of potable mixing water
- Fast-setting, to reduce downtime and expedite return to service
- Excellent compressive and flexural strength
- Trowel-applied mortar, offering exceptional sculptability after initial set
- Strong bond to existing properly prepared concrete
- Shrinkage-compensated
- Adding *Planicrete*® AC results in improved compressive and bond strength as well as improved resistance to freeze/thaw cycling and de-icing salts. For details, consult the Technical Data Sheet (TDS) for *Planicrete AC* or MAPEI's Technical Services Department.

## INDUSTRY STANDARDS AND APPROVALS

- Meets or exceeds requirements for ASTM C928 R2 mortar

## 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

- For repairing all vertical and overhead concrete surfaces, such as tunnels, bridges, overpasses, retaining walls, beams, building facades, parking garages, ceilings and balconies
- For repairing defects in concrete surfaces, such as the filling of honeycombs, voids and cavities
- For reconstructing architectural features requiring a moldable and sculptable mortar

## LIMITATIONS

- Do not install over substrates containing asbestos.
- Due to the fast-setting characteristics of *Planitop X*, use it only for small repairs (0.5 cu. ft. [0,001 m³]). In all cases, any complete repair should be placed before the material begins setting, always maintaining a "wet edge of repair material." For larger repairs, utilize one of MAPEI's repair mortars or *Planitop XS* for an extended working time.
- Other than *Planicrete AC*, do not add additives, cement or aggregates to *Planitop X*.
- When using *Planibond*® 3C as a bonding agent between new or existing concrete and *Planitop X*, allow 24 hours before placement of *Planitop X*.



- *Planitop X* begins to set quickly; do not attempt to re-temper after it has been mixed.
- Use at temperatures between 41°F and 85°F (5°C and 29°C). For temperatures below or above this range, use cold- or hot-weather guidelines from the American Concrete Institute (ACI).
- Use only unopened, undamaged bags of *Planitop X*.
- Do not use solvent-based curing compounds.

## SUITABLE SUBSTRATES

- Properly prepared, structurally sound, fully cured concrete substrates (at least 28 days old)

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

## SURFACE PREPARATION

- Ensure that all substrates are structurally sound, stable, 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.
- Mechanically roughen the surface to achieve an ICRI concrete surface profile (CSP) of  $\geq$  #5, ensuring that at least 3/4" (19 mm) clearance exists behind corroded reinforcing steel. Mechanical roughening includes abrasive blasting, water-jetting and other engineer-approved mechanical means.
- Reference ICRI Technical Guideline #310.1R-2008 as well as ACI RAP Bulletins 6 and 7 for repair geometry, surface preparation and material application details.
- Clean the exposed metal in accordance with The Society for Protective Coatings (SSPC) guidelines and coat with *Mapofer™ 1K* or *Planibond 3C*.
- Ensure that the concrete substrate is saturated surface-dry (SSD) before installation of *Planitop X*. The concrete surface should be free of any standing water.
- Only use on surfaces properly prepared in accordance with International Concrete Repair Institute (ICRI) guidelines regarding proper surface preparation based on the intended installation, specifically maintaining at least 3/4" (19 mm) clearance behind corroded reinforcing steel. Reference the "Related Documents" section of this TDS for applicable ICRI and American Concrete Institute (ACI) guidelines.

## MIXING

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

Per 10 lbs. (4.54 kg) of *Planitop X*

1. Into a clean container, pour 0.8 U.S. qt. (0,76 L) of cool, clean potable water. Add 10 lbs. (4,54 kg) of *Planitop X* to the water slowly and continuously, while mixing with an electric drill and box- or propeller-type mixing paddle.

2. Mix for 3 to 4 minutes to obtain a lump-free, homogenous consistency. *Planitop X* has a working time of 5 to 6 minutes at 73°F (23°C).

Per 50 lbs. (22,7 kg) of *Planitop X*

1. Into a clean container, pour 3 U.S. qts. (2,84 L) of cool, clean potable water. Add 50 lbs. (22,7 kg) of *Planitop X* to the water slowly and continuously, while mixing with an electric drill and box- or propeller-type mixing paddle. Then, add the remaining 1 U.S. qt. (0,95 L) of water, as needed.
2. Mix for 3 to 4 minutes to obtain a lump-free, homogenous consistency. *Planitop X* has a working time of 5 to 6 minutes at 73°F (23°C).

## PRODUCT APPLICATION

Read all application instructions thoroughly before installation.

1. Application should take place as soon as *Planitop X* is mixed. First, apply a scrub or bond coat of *Planitop X* onto the SSD concrete surface. The scrub coat should be applied thinly (about 1/8" [3 mm]), and worked thoroughly into the surface profile to ensure full coverage of the area to be repaired. Use a trowel to immediately begin the build process, pressing additional material firmly around all pretreated reinforcement, up to a maximum thickness of 4" (10 cm). Overhead repairs may require multiple lifts of no more than 2" (5 cm) per lift.
2. If successive lifts are to be completed, leave the first lift rough and immediately score the surface (about 1/4" [6 mm] deep) with the margin trowel edge in a continual "X" or "H" pattern (crosshatching). Dampen the surface lightly with potable water and again install a scrub coat followed by a build coat. Allow the *Planitop X* to set again. Avoid building the material in multiple lifts that exceed 8" (20 cm).
3. Sculpting and molding of the repair area should begin as soon as the *Planitop X* initially sets. Use the margin trowel edge to shave off excess material. Using a dampened sponge, gently rub the repair area in a circular motion to remove surface imperfections and blend the repair into the original substrate. Do not overwet the sponge or repair area during the finishing process.
4. Always consult with the project engineer before placement of *Planitop X* regarding any need for additional pinning or reinforcement.

## CURING

1. During curing, protect *Planitop X* from high wind conditions, and keep substrate and ambient temperatures at between 41°F and 85°F (5°C and 29°C). For placement and curing of *Planitop X* in temperatures below or above this range, refer to ACI guidelines for cold- or hot-weather installations.
2. After finishing, mist-spray the surface with water for at least 4 to 6 hours or utilize a water-based curing compound as referenced in ASTM C309. Do not use a solvent-based curing compound.

## Product Performance Properties\*

Laboratory Tests	Results
Compressive strength – ASTM C109 (CAN/CSA-A5)	
3 hours	> 3,800 psi (26,2 MPa)
1 day	> 5,600 psi (38,6 MPa)
7 days	> 6,650 psi (45,9 MPa)
28 days	> 7,300 psi (50,3 MPa)
Flexural strength – ASTM C348 (CAN/CSA-A23.2-8C)	
1 day	> 1,000 psi (6,90 MPa)
7 days	> 1,200 psi (8,28 MPa)
28 days	> 1,450 psi (10 MPa)
Tensile bond strength – ASTM C1583 (CSA CAN/A23.2-6B) (failure in concrete substrate)	
28 days	> 290 psi (2 MPa)
Slant/shear bond strength – ASTM C882 (modified)	
1 day	> 1,400 psi (9,66 MPa)
28 days	> 1,880 psi (13,0 MPa)
Volume change – Meets ASTM C928 requirements	
28 days, dry-cured	< -0.15%
28 days, wet-cured	< +0.15%

\* All tests were performed at 73°F (23°C) and 50% relative humidity with a mixture of 1 U.S. gal. (3,79 L) of water per 50-lb. (22,7-kg) bag of Planitop X. An increase in the water content will alter listed properties.

## 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 and covered area
Physical state	Powder
Color	Light gray
Dry-solids content	100%

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

Mixing ratio	0.8 U.S. qt. (0,76 L) of water per 10 lbs. (4,54 kg) of Planitop X, or 1 U.S. gal. (3,79 L) of water per 50 lbs. (22,7 kg) of Planitop X
Working time	5 to 6 minutes
Initial set	> 6 minutes
Final set	< 25 minutes

## CSI Division Classifications

Cast-in-Place Concrete	03 30 00
Cementitious Decks and Underlayment	03 50 00
Concrete Restoration and Cleaning	03 90 00

## Packaging

Size
Bag: 10 lbs. (4,54 kg)
Bag: 50 lbs. (22,7 kg)
Pail: 50 lbs. (22,7 kg)

## Approximate Coverage\*\* per 50 lbs. (22,7 kg)

Yield (ASTM C138)
0.46 cu. ft. (0,013 m³)

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

# Planitop® X



## CLEANUP

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

## RELATED DOCUMENTS

MAPEI's Technical Bulletin "The Impact of Cold Weather on Repair Materials"	010810-TB*
Vertical and Overhead Spall Repair by Hand Application	ACI RAP Bulletin 6
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](http://www.mapei.com)

Refer to the SDS for specific data related to VOCs, health and safety, and handling of product.

## 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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