



Planitop XS[®]

**One-Component, Fast-Setting,
Extended-Working-Time,
Vertical and Overhead
Repair Mortar**



DESCRIPTION

Planitop XS is an extended-working-time variation of *Planitop X*. Shrinkage-compensated, fiber-reinforced, polymer-modified and containing a proprietary corrosion inhibitor, *Planitop XS* features *Planitop X*'s outstanding workability and versatility. Ideal for a wide variety of vertical and overhead concrete repairs, *Planitop XS* can be applied from featheredge to 4" (10 cm) per lift. *Planitop XS* dries to a light gray color, blending well with most concrete surfaces.

FEATURES AND BENEFITS

- Easy to use, requiring only the addition of potable mixing water
- Formulated with extended working time (double the working time of *Planitop X*) and fast-curing, reducing downtime and expediting return to service
- Excellent compressive and flexural strength
- Outstanding sculptability after initial set
- The high density (with very low coulombs) provides greater resistance to chloride attack and carbonation.
- 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.
- Outstanding workability, easily blending into the concrete surface to help disguise the repaired area
- Light gray color resembles originally placed concrete.

INDUSTRY STANDARDS AND APPROVALS

- Meets or exceeds requirements for ASTM C928 Type R2 mortar
- LEED 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
- For small repairs (≤ 0.5 cu. ft. [0,001 m³]) with light foot traffic

LIMITATIONS

- Do not install over substrates containing asbestos.
- Other than *Planicrete AC*, do not add additives, cement or aggregates to *Planitop XS*.
- 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).



- When using *Planibond*[®] 3C as a bonding agent between new or existing concrete and *Planitop XS*, allow 24 hours before placement of *Planitop XS*.
- Use only unopened, undamaged bags of *Planitop XS*.
- Do not attempt to re-temper *Planitop XS* after it has been mixed.
- Do not use solvent-based curing compounds.
- *Planitop XS* is primarily used as a vertical/overhead repair mortar. However, it can be used for small horizontal repairs (≤ 0.5 cu. ft. [0,001 m³]) with light foot traffic.

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 attain an International Concrete Repair Institute (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 *Mapefer*[™] 1K or *Planibond 3C*.
- Ensure that the concrete substrate is saturated surface-dry (SSD) before installation of *Planitop XS*. The concrete surface should be free of any standing water.

MIXING

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

Mixing ratio with water: 1 U.S. gal. (3,79 L) of water per 50 lbs. (22,7 kg) of *Planitop XS*.

1. Into a clean container, pour 3 U.S. qts. (2,84 L) of cool, clean potable water.
2. Add 50 lbs. (22,7 kg) of *Planitop XS* to the water slowly and continuously, while mixing with a low-speed drill and box- or propeller-type mixing paddle. Add the remaining 1 U.S. qt. (0,95 L) of water, as needed.

3. Mix for 3 to 4 minutes to obtain a lump-free, homogenous consistency. *Planitop XS* has a working time of more than 20 minutes.

PRODUCT APPLICATION

Read all application instructions thoroughly before installation.

1. Application should take place as soon as *Planitop XS* is mixed. First, apply a scrub or bond coat of *Planitop XS* onto the SSD concrete surface. The scrub coat should be applied thinly (at 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 the material firmly around all pretreated reinforcement. Apply 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). Allow the *Planitop XS* to take an initial set (about 40 minutes at 73°F [23°C] and 50% relative humidity). Dampen the surface lightly with potable water and again install a scrub coat followed by a build coat. Allow the *Planitop XS* 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 XS* 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 with 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 XS* regarding any need for additional pinning or reinforcement.

CURING

1. During curing, protect *Planitop XS* 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 XS* in temperatures below or above this range, refer to ACI guidelines for cold- or hot-weather installations.
2. After finishing, cure larger repair areas by misting them for the first 4 to 6 hours after placement of *Planitop XS*, or use a water-based curing compound as referenced in ASTM C309. Do not use a solvent-based curing agent.

CLEANUP

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

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	1 U.S. gal. (3,79 L) of water per 50 lbs. (22,7 kg) of <i>Planitop X</i>
Working time	20 minutes
Initial set	> 40 minutes
Final set	< 60 minutes

Product Performance Properties*

Laboratory Tests	Results	
Tensile bond strength — ASTM C1583 (CSA CAN/A23.2-6B) (failure in concrete substrate)		
28 days	> 290 psi (2 MPa)	
Compressive strength — ASTM C109		
1 day	> 3,000 psi (20,7 MPa)	
7 days	> 4,000 psi (27,6 MPa)	
28 days	> 5,000 psi (34,5 MPa)	
Flexural strength — ASTM C348		
1 day	> 500 psi (3,45 MPa)	
28 days	> 800 psi (5,52 MPa)	
Tensile strength — ASTM C307		
28 days	> 450 psi (3,10 MPa)	
Modulus of elasticity (MOE) — ASTM C469		
28 days	3.23 x 10 ⁶ psi (22,3 GPa)	
Permeability to chlorides — ASTM C1202		
28 days	Very low — 100 to 1,000 coulombs	
Scaling resistance — ASTM C672		
28 days	0 loss, no scaling (50 cycles)	
Freeze/thaw resistance — ASTM C666		
28 days	> 98.5% (300 cycles)	
Slant/shear bond strength — ASTM C882 (modified)		
1 day	> 1,000 psi (6,90 MPa)	
28 days	> 1,500 psi (10,3 MPa)	
Volume change — Exceeds ASTM C928 requirements	ASTM C928 specification	<i>Planitop XS</i> typical value
28 days, dry-cured	< -0.15%	< - 0.06
28 days, wet-cured	< +0.15%	+ 0.04%

* 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 XS*. An increase in the water content will alter listed properties.

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: 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 m ³)

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

Planitop[®] XS



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

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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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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