

Planitop 3D [NA]

Fiber-Reinforced Mixture for 3D Printing



NORTH AMERICA [NA]

DESCRIPTION

Planitop® 3D [NA] is a fiber-reinforced cementitious mortar that is designed to be machine-applied using the three-dimensional printing process for concrete. *Planitop* 3D [NA] is a special blend of hydraulic binders, fiber and well-graded aggregates.

FEATURES AND BENEFITS

- Strong interlayer bonding
- Crack-resistant
- Suitable for interior and exterior applications
- Stronger than concrete
- Low slump but pumpable
- Fiber-reinforced

INDUSTRY STANDARDS AND REFERENCES

- Tested to ICC-ES AC509 requirements

WHERE TO USE

- Interior and exterior use
- 3D-printed structures

SURFACE PREPARATION

- Refer to MAPEI's Technical Services Department or your MAPEI sales representative.

MIXING

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

- Utilize 11% to 13% of potable water by weight of the powder for mixing. Mix to a homogenous consistency. Mixing times may vary depending on equipment. For optimal printing, the water content must be adjusted depending on ambient weather conditions and printer settings.

PRODUCT APPLICATION

- Conduct a test trial before application to ensure consistency, flowability and pumpability.

CURING

- Cure with wet burlap or a polyethylene sheet during the first 3 days of curing. Alternatively, apply a water-based curing compound conforming to ASTM C309.

CLEANUP

- Clean tools and equipment with water before *Planitop 3D* [NA] hardens. Hardened material must be mechanically removed.

LIMITATIONS

- Do not install over substrates containing asbestos.
- The minimum ambient and surface temperatures are from 50°F (10°C) and rising at the time of application up to 85°F (29°C).
- For best results, condition *Planitop 3D* [NA] from 65°F to 85°F (18°C to 29°C) at least 24 hours before use.
- *Planitop 3D* [NA] is recommended for application at thicknesses between 1.2" and 3.5" (3 to 9 cm).
- For temperatures outside the above-mentioned range, refer to the American Concrete Institute (ACI) for hot/cold-weather application guidelines.

Product Performance Properties

Laboratory Tests	Results
Specific gravity	2.20
pH	> 12.5
Dry-solids content	100%
Compressive strength – ASTM C109 (CAN/CSA-A5)	
1 day	> 1,000 psi (6.90 MPa)
7 days	> 4,000 psi (27.6 MPa)
28 days	> 6,000 psi (41.4 MPa)
Flexural strength – ASTM C348	
7 days	700 psi (4.83 MPa)
28 days	1,000 psi (6.90 MPa)
Splitting tensile strength – ASTM C496	
28 days	> 500 psi (3.45 MPa)
As Printed	Results (Typical)
Compressive strength – ASTM C39	
28 days (shell mix)	10,115 psi (69.8 MPa)
28 days (fill mix)	3,430 psi (23.7 MPa)
Length change – ASTM C157	
28 days (air cure)	-0.041%
Extrusion interval (bond strength) – ASTM E518	
28 days (5 minutes)	130 psi (0.90 MPa)
28 days (15 minutes)	95 psi (0.66 MPa)
VOC content	0 g per L

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	Concrete 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. Containers must be stored in dry conditions with a cover to protect from weather, direct sunlight and moisture conditions.

Application Properties

Consistency of mix	Thixotropic
Mixing ratio	11% to 13% of water by weight of powder
Application temperature range	50°F to 85°F (10°C to 29°C)
Initial set at 73°F (23°C)	Less than 6 hours

CSI Division Classification

Maintenance of Concrete	03 01 00

Packaging

Size
Bag: 50 lbs. (22.7 kg)
Super sack: 2,997 lbs. (1 359 kg)

Approximate Yield*

23.8 cu. ft. (0.674 m ²) per 2,997 lbs. (1 359 kg)

* Coverage varies depending on the amount of water utilized.

ADDITIONAL INFORMATION

Refer to the Safety Data Sheet (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).

WARNING

The test results shown in the TECHNICAL DATA table were obtained in compliance with test methods and curing cycles, if applicable, defined in the industry standards referenced on the Technical Data Sheet. Please note that the use of test procedures or methods other than those indicated in the table could lead to different values and that, in such cases, any liability of our company is excluded.

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement nor replace requirements per the TDS in effect at the time of the MAPEI product installation. For the most up-to-date TDS and warranty information, please visit our website at www.mapei.com. **ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED IN OR DERIVED FROM THIS TDS SHALL VOID ALL RELATED MAPEI WARRANTIES.**

Before using, the user must determine the suitability of our products for the intended use, and the user alone assumes all risks and liability. **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.**

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For the most current product data and BEST-BACKEDSM warranty information,
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