



# PlaniLevel 450™

**Quick-Setting, High-Compressive-Strength, Self-Leveling Underlayment**



## DESCRIPTION

*PlaniLevel 450* is a calcium-aluminate-based, quick-setting, self-drying, self-leveling underlayment and repair mix for interior, concrete, engineer-approved floors. *PlaniLevel 450* has high compressive strength and is abrasion-resistant, able to withstand light foot traffic after 2 to 3 hours and vehicular rubber-wheel traffic after 3 days.

## FEATURES AND BENEFITS

- High flow for easy placement
- High compressive strength for durability and performance
- Quick-setting for early floor-covering installation

## WHERE TO USE

- For leveling, smoothing and repairing floors before the installation of floor coverings
- Interior residential (rental apartments, condominiums and homes)
- Interior commercial (office buildings, hotel rooms/hallways, restaurants and cafeterias)
- Interior heavy commercial (hotel lobbies, convention centers, airports, shopping malls, grocery stores and department stores)
- Interior institutional (hospitals, schools, universities, libraries and government buildings)

## SUITABLE SUBSTRATES

- All substrates must be primed with the appropriate MAPEI primer before self-levelers are applied.

- Properly prepared, sound, dimensionally stable, fully cured concrete at least 28 days old and free from hydrostatic pressure
- Properly installed cement backer units (CBUs)
- Properly installed and dry cement-based underlayments and patching compounds
- Durable, sound, stable and fully cured cement-based mortar beds
- Engineer-approved plywood or oriented strand board (OSB) subfloors in accordance with F185 specification in the most recent Tile Council of North America (TCNA) handbook. When MAPEI underlayments are applied to plywood flooring, installation requirements (finished flooring, load, use and/or deflection) may require the utilization of MAPEI's *Mapelath*™ or diamond mesh (meeting the requirements of ASTM C847) on top of the primed surface before the application of the underlayment.
- Existing nailed-down wood flooring (including plank wood subfloors, stripwood subfloors and nailed-down solid wood flooring) that has been covered over with at least one layer of 5/8" (16 mm) plywood, glued and screwed

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

## SURFACE PREPARATION

- All substrates must be properly prepared, primed and structurally sound, stable, solid and dry.
- Concrete surfaces must be mechanically profiled and prepared by shotblasting, sandblasting, water-jetting, scarifying, diamond grinding or other engineer-approved methods. Reference International Concrete Repair



Institute (ICRI) concrete surface profile (CSP) standards of #3 for acceptable profile height.

- On concrete substrates, fill in deep areas, holes and cracks with an appropriate MAPEI patching compound or screed; fluid self-leveler may leak through to a floor below or other unwanted cavities.
- On plywood substrates, fill joints with an acrylic-based caulking compound to prevent *PlaniLevel 450* from leaking onto a level below.

Refer to the MAPEI reference guide “Surface-Preparation Requirements for Self-Leveling Underlayments” for details on proper surface preparation.

## MIXING

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

### General mixing

1. Pour 5.75 to 6 U.S. qts. (5.44 to 5.68 L) of clean, potable water into a clean mixing vessel – using a mixing barrel or a plastic pail measuring 5 U.S. gals. (18.9 L). For best results, the water temperature should be about 73°F (23°C). The water-to-powder mixing ratio must remain consistent. Do not overwater.
2. Begin mixing while adding 50 lbs. (22.7 kg) of *PlaniLevel 450* powder into the premeasured water. Use a high-speed drill (at 800 to 1,000 rpm) and an oval paddle mixer to mix for 2 to 3 minutes, until achieving a homogenous, lump-free consistency.
3. Do not overmix. Overmixing or moving the mixer up and down during the mixing process could trap air, shorten the pot life or cause pinholing during the application and curing process.

### Pump mixing

1. *PlaniLevel 450* can be mechanically mixed at a ratio of 5.75 to 6 U.S. qts. (5.44 to 5.68 L) of water per 50 lbs. (22.7 kg) of powder. Use a continuous mixer and pump (and at least 140 ft. [42.7 m] of hose) or a batch mixer and pump (and at least 110 ft. [33.5 m] of hose). Periodic cleaning of pumping equipment may be required per the manufacturer’s instructions. Be sure to pressure-test the rotor and stator before mixing.
2. To ensure a suitable mix and flow, test the mixed material from the pump hose’s end in a small test area before general application.

Note: Cool-weather conditions may require a longer mixing time or additional hose length to ensure the best product performance.

## PRODUCT APPLICATION

Read all installation instructions thoroughly before installation.

1. Concrete substrate and ambient room temperatures should be maintained at between 50°F and 90°F (10°C and 32°C) for 3 days before, during and 3 days after

application.

2. Before, during and 24 hours after installation, keep all doors and windows closed, and keep HVAC systems off to prevent drafts during application and until the underlayment is cured. Protect installation areas from direct sunlight.
3. Set the width of the pour at a distance that is ideal for maintaining a wet edge throughout placement. Quickly pour or pump *PlaniLevel 450* onto the properly prepared and primed surface in a ribbon pattern. If a flowable wet edge cannot be maintained, reduce the width of the pour. For best results, work as a team to provide a continuous flow of wet material, to avoid trapping air or creating a cold joint. Apply enough material to adequately cover all high spots.
4. Shortly after placing *PlaniLevel 450*, spread the material with a gauge rake to assist in gauging out *PlaniLevel 450* to the desired depth. Then smooth the surface with a smoother to obtain evenness.
5. A second-coat application of *PlaniLevel 450* for additional build thickness requires that the surface of the first pour is primed with MAPEI’s *Primer L™* or *Primer T™* at the appropriate dilution ratio.

## CURING AND PROTECTION

- *PlaniLevel 450* is self-curing; do not use a damp-curing method, or curing and sealing compounds.
- Protect *PlaniLevel 450* from excessive heat and drafts during curing. Turn off all forced ventilation and radiant-heating systems, and protect the installation for up to 24 hours after completion.
- Avoid walking on the installed surface for at least 3 hours after installation, depending upon temperature and humidity conditions.
- Protect the installation from traffic, dirt and dust from other trades until *PlaniLevel 450* is completely cured and the final flooring has been installed.
- Do not expose *PlaniLevel 450* to rolling dynamic loads, such as forklifts or scissor lifts, for at least 3 days after installation.

## CLEANUP

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

## LIMITATIONS

- Do not install over any flooring products, adhesives or substrates containing asbestos.
- For interior use only
- Do not use at thicknesses greater than 1-1/2" (3.8 cm).
- Do not use as a final wear surface. *PlaniLevel 450* must be covered with a finished floor system.

## Product Performance Properties

Laboratory Tests	Results
Compressive strength – ASTM C349	
1 day	> 2,000 psi (13.8 MPa)
28 days	> 4,150 psi (28.6 MPa)
Flexural strength – ASTM C348 (CAN/CSA-A23.2-8C)	
28 days	> 1,070 psi (7.38 MPa)
VOCs (Section 01350 of California's CDPH)	0 g per L
Cured density	128 lbs. per cu. ft. (2.06 kg per L)
pH	11

## Shelf Life and Product Characteristics before mixing

Shelf life	1 year when stored in original, unopened plastic bag at 73°F (23°C) and 50% relative humidity
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 at 73°F (23°C) and 50% relative humidity

Mixing ratio	5.75 to 6 U.S. qts. (5.44 to 5.68 L) of water per 50 lbs. (22.7 kg) of powder
Mixing time	2 to 3 minutes
Application temperature range	50°F to 90°F (10°C to 32°C)
Working time*	Up to 20 minutes
Single-lift application range	1/16" to 1-1/2" (1.5 mm to 3.8 cm)
Waiting time for secondary applications	24 hours
Drying time before installation of non-moisture-sensitive floor coverings at 1-1/2" (3.8 cm) thickness	3 to 4 hours
Drying time before installation of moisture-sensitive floor coverings at 1-1/2" (3.8 cm) thickness	16 to 24 hours

\* Working time varies based on jobsite conditions.

## CSI Division Classification

Cast Underlayment	03 54 00
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## Packaging

Size
Plastic bag: 50 lbs. (22.7 kg)

## Approximate Coverage\*\* per 50 lbs. (22.7 kg)

Thickness	Coverage
1/16" (1.5 mm)	104 sq. ft. (9.66 m <sup>2</sup> )
1/8" (3 mm)	52 sq. ft. (4.83 m <sup>2</sup> )
1/4" (6 mm)	26 sq. ft. (2.42 m <sup>2</sup> )
1/2" (12 mm)	13 sq. ft. (1.21 m <sup>2</sup> )

\*\* 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.

# Planilevel 450



- Install *Planilevel 450* only between 50°F and 90°F (10°C and 32°C). For temperatures above 90°F (32°C), follow the American Concrete Institute (ACI) hot-weather application guidelines to ensure a successful installation.
- Cool-weather conditions may extend curing or setting times. Warm-weather conditions may accelerate flow, setting and curing times.
- Do not install over moving control joints (with active cracks) or over expansion joints.
- Do not install if the substrate has a moisture vapor emission rate (MVER) exceeding 5 lbs. per 1,000 sq. ft. (2.27 kg per 92.9 m<sup>2</sup>) per 24 hours using a calcium chloride test (reference ASTM F1869), or a relative humidity (RH) reading greater than 80% (ASTM F2170). Use a MAPEI epoxy moisture barrier to treat concrete slabs with elevated moisture conditions. Consult MAPEI's Technical Services Department for product recommendations.
- Do not install *Planilevel 450* over sheet vinyl; self-stick vinyl tile; luxury vinyl tile (LVT); luxury vinyl plank (LVP); glue-down wood flooring; particleboard; hardboard (Masonite); Luan panels; waterproofing, crack-isolation or sound-control membranes; gypsum-based patching materials; or any other nondimensionally stable materials.
- Do not install if the maximum allowable deflection of the supporting surface exceeds L/360 (or L/720 for installations involving natural stone or their agglomerates) when exposed to live or dead loads.
- Do not mix with any other self-leveling underlayment.

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

## 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 or 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](http://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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**MAPEI Headquarters of North America**  
1144 East Newport Center Drive  
Deerfield Beach, Florida 33442  
1-888-US-MAPEI (1-888-876-2734) /  
(954) 246-8888

**Technical Services**  
1-888-365-0614 (U.S. and Puerto Rico)  
1-800-361-9309 (Canada)  
**Customer Service**  
1-800-42-MAPEI (1-800-426-2734)

**Services in Mexico**  
0-1-800-MX-MAPEI (0-1-800-696-2734)  
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