



PLANILEVEL 420
High-Compressive-Strength, Self-Leveling Underlayment

SECTION 03 54 00
CAST UNDERLAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products for maintenance of concrete, including the following:
 - 1. Self-leveling cementitious underlayments.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Verification Samples: For each finish product specified, two samples, minimum size 6" (150 mm) square representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years' experience manufacturing similar products.
- B. Installer Qualifications: Minimum 2 years' experience installing similar products.

1.6 PRE-INSTALLATION MEETINGS

- A. Convene at least two weeks prior to starting work of this section.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Handling: Handle materials to avoid damage.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.



1.9 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Product Performance:
 - Compressive Strength – ASTM C349
 - 1 day > 1,250 psi (8.62 MPa)
 - 7 days > 2,700 psi (18.6 MPa)
 - 28 days > 4,200 psi (29.0 MPa)
 - Flexural Strength – ASTM C348
 - 28 days > 1,050 psi (7.24 MPa)
 - Color
 - Gray
- B. Acceptable Manufacturer:
 - MAPEI North America
 - 1144 E. Newport Center Dr.; Deerfield Beach, FL 33442
 - Toll-Free for CRS Technical Services: Tel. 888-365-0614
 - Email: CRS@mapei.com
 - Web: www.mapei.com
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
- D. Substitutions: Not permitted.

2.2 SELF-LEVELING CEMENTITIOUS UNDERLAYMENTS.

- A. High-Strength, Calcium-Aluminate-Based Self-Leveling Concrete Underlayment: Packaged, dry mix for leveling concrete.
 - 1. Product: Subject to compliance with requirements, provide MAPEI Corporation; Planilevel 420.
 - 2. Compressive Strength: Not less than 4,200 psi (29 MPa) within twenty-eight days when tested according to ASTM C349.

2.3 MISCELLANEOUS MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I, II or III unless otherwise indicated.
- B. Water: Potable.

2.4 MIXES

- A. General: Mix products in clean containers according to manufacturer's written instructions.
 - 1. Do not add water, thinners or additives unless recommended by manufacturer.
 - 2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovels or trowels as units of measure.
- B. Do not mix more materials than can be used within time limits recommended by



manufacturer. Discard materials that have begun to set.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Properly prepared concrete at least 28 days old, stable, sound, dry and free of hydrostatic pressure.
- B. Properly installed cement backer units (CBUs).
- C. Durable, sound, stable and fully cured cement-based mortar beds.
- D. Engineer-approved plywood or oriented-strand board (OSB) subfloors in accordance with the 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 Mapelath or diamond mesh (meeting the requirements of ASTM C847) on top of the primed surface before the application of the underlayment.
- E. Existing nailed-down wood flooring (including plank wood subfloors, strip-wood 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.
- F. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. All substrates must be properly prepared, primed, structurally sound, stable, solid and dry.
- B. Concrete surfaces must be mechanically profiled to an International Concrete Repair Institute (ICRI) concrete surface profile (CSP) of #3.
- C. On concrete substrates, fill in deep areas, holes and cracks with an appropriate MAPEI patching compound or screed; fluid self-leveler may leak through a floor below or other unwanted cavities.
- D. On plywood substrates, fill joints with an acrylic-based caulking compound to prevent PlaniLevel 420 from leaking onto a floor below.

Refer to the MAPEI reference guide "Surface-preparation requirements for self-leveling underlayments" for details.

3.3 MIXING

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

General mixing:

- A. Pour 5 to 5.2 U.S. qts. (4.73 to 4.92 L) of clean, potable water into a clean mixing vessel – 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). Do not overwater.
- B. Begin mixing while adding 50 lbs. (22.7 kg) of PlaniLevel 420 powder to the water. Mix for 2 to 3 minutes with a high-speed drill and an oval paddle mixer until the mix reaches a lump-free, homogeneous consistency.



- C. Do not overmix. Overmixing and moving the paddle 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:

- A. 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. The mixer and pump must be in good working condition. Periodic cleaning of pumping equipment is required per manufacturer's instructions. Be sure to pressure-test the rotor and stator before mixing.
- B. Use a mesh screen "sock" at the end of the hose to catch any foreign material that could enter the hopper of the mixer.
- C. To ensure a suitable mix and flow, test the mixed material from the pump hose's end in a small area before general application.

3.4 INSTALLATION

Read all installation instructions thoroughly before installation.

- A. Before, during and 24 hours after installation, close all doors and windows and turn off HVAC systems to prevent drafts. Protect areas from direct sunlight.
- B. Make sure that the substrate and ambient room temperatures are between 50°F and 90°F (10°C and 32°C) before application. Refer to ACI cold-weather application guidelines in cool conditions, and refer to ACI hot-weather application guidelines for temperatures above 85°F (29°C).
- C. Set the width of the pour at a distance that is ideal for maintaining a flowable wet edge throughout placement. Quickly pour or pump PlaniLevel 420 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.
- D. Shortly after placing PlaniLevel 420, spread the material with a gauge rake. After achieving the desired depth, use a smoother to obtain an even surface. To avoid air entrapment, do not overwork the material.
- E. For deeper fills – 1" to 5" (2.5 to 12.5 cm) – pre-place clean, non-reactive aggregate or pea gravel measuring 1/8" to 3/8" (3 to 10 mm) in diameter over the primed surface at no more than half of the total pour depth. Use only clean, stable aggregates; do not use limestone or other potentially reactive aggregates for extension.
- F. Pour PlaniLevel 420 over the placed aggregate, and rake aggressively to ensure full contact and bond with the substrate. Alternately, up to 30% by weight in aggregate can be added directly to PlaniLevel 420 during mixing. Immediately pour an additional 1/4" (6 mm) of PlaniLevel™ 420 over the raked aggregate to provide a smooth, level surface.
- G. A second coat of PlaniLevel 420 for additional build thickness requires that the first is primed with MAPEI's Primer L or Primer T at the appropriate dilution ratio or with MAPEI's ECO Prim Grip neat.

3.5 CURING AND PROTECTION

- A. PlaniLevel 420 is self-curing; do not use a damp-curing method or curing-and-sealing compounds.
- B. Protect PlaniLevel 420 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.

END OF SECTION