



# Ultraplan<sup>®</sup> M20 Plus

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



## DESCRIPTION

*Ultraplan M20 Plus* is an HCT™ (High-Hydrated Cement Technology) calcium-aluminate-based, quick-setting, self-leveling, self-drying material. It is specially formulated for the resurfacing and construction of interior horizontal surfaces as a high-compressive-strength underlayment with maximum resistance to wheel tracking and indentations experienced in softer underlayments. *Ultraplan M20 Plus* is suitable for use as a commercial wear topping in warehouse and alternate industrial applications where an exceptional flat and smooth concrete surface is desired.

## FEATURES AND BENEFITS

- Very high compression strength for maximum durability
- Fast-setting and abrasion-resistant
- For use as an underlayment or decorative topping

## INDUSTRY STANDARDS AND APPROVALS

<u>LEED v3 Points Contribution</u>	<u>LEED Points</u>
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 the leveling, smoothing and repairing of interior residential or commercial floors before the installation of flooring systems and coverings
- For fast-track resurfacing and construction of horizontal wear surfaces
- 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)

## LIMITATIONS

- Do not install over any flooring products, adhesives or substrates containing asbestos.
- For interior use only
- If *Ultraplan M20 Plus* will be installed as a topping or final wear layer, the substrate must be primed with *Planibond® EBA* along with a sand broadcast to rejection. *Ultraplan M20 Plus* may be stained using traditional methods, but due to the nature of polymer-modified cementitious materials, one should expect variations in color, stainability and general finish. MAPEI makes no representation with regard to variations in color or consistency of finish. Do not polish the surface of *Ultraplan M20 Plus*.
- Install *Ultraplan M20 Plus* in temperatures between 50°F and 90°F (10°C and 32°C). For temperatures above 90°F (32°C), follow American Concrete Institute (ACI) hot-weather application guidelines to ensure a successful installation.
- 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 rating (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), and 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 *Ultraplan M20 Plus* over sheet vinyl; self-stick vinyl tile; luxury vinyl tile/plank (LVT/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.

## SUITABLE SUBSTRATES

- All substrates must be primed with the appropriate MAPEI primer before applying *Ultraplan M20 Plus*. See MAPEI's "Primers for Self-Leveling Materials" product selection guide and the appropriate primer's Technical Data Sheet.
- Properly prepared, sound, dimensionally stable, fully cured concrete at least 28 days old and free from hydrostatic pressure
- Properly prepared, well-bonded and dimensionally stable ceramic tile, porcelain tile, quarry tile, natural stone, vinyl composition tile (VCT), cement, epoxy-based moisture barriers and epoxy terrazzo
- Properly installed cement backer units (CBUs)
- Durable, sound, stable and fully cured cement-based mortar beds
- Engineer-approved plywood or oriented strand board (OSB) subfloors in accordance with the most recent edition of the Tile Council of North America's F185 specification. 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 underlayment application.
- Existing nailed-down wood flooring (including plank wood subfloors, stripwood subfloors or nailed-down solid wood flooring) that has been covered over with at least one layer of 5/8" (16 mm) plywood, glued and screwed
- Gypsum-based underlayments (refer to MAPEI Technical Bulletin #010313-TB)

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 to an International Concrete Repair Institute (ICRI) concrete surface profile (CSP) of #3 (shotblasted).
- 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 underlayment from leaking into a floor below.

- Refer to Reference Guide RGF0214, "Surface-Preparation Requirements for Self-Leveling Underlayments," for details on proper surface preparation.

## MIXING

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

### General mixing

1. Measure and pour the required amount of cool, clean potable water per the mixing ratio shown below into a clean mixing vessel, using a mixing barrel or a 5-gallon (18,9 L) plastic pail. For best results, the water temperature should be about 70°F (21°C). The water-to-powder mixing ratio must remain consistent. Do not overwater.
2. Slowly add the powder into the pre-measured water. Use a high-speed drill and an oval paddle mixer to mix into to a homogenous, lump-free consistency, for 1.5 minutes. 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. *Ultraplan M20 Plus* can be mechanically mixed, using the appropriate mixing ratio shown below, with a continuous mixer and pump and at least 140 ft. (42,7 m) of hose, or with 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.
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.

## PRODUCT APPLICATION

Read all installation instructions thoroughly before installation.

1. Concrete substrates and ambient room temperatures should be maintained between 50°F and 90°F (10°C and 32°C) for 72 hours before, during and after application.
2. Before installation, close doors and windows, and turn off HVAC systems to prevent drafts during application and until the underlayment is cured. Protect areas from direct sunlight.
3. Quickly pour or pump onto the properly prepared and primed surface in a ribbon pattern. Set the width of the pour at a distance that is ideal for maintaining a wet edge throughout placement. If a 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 *Ultraplan M20 Plus*, spread the material with a gauge rake to assist in gauging out *Ultraplan M20 Plus* to the desired depth, from 1/8" to 2" (3 mm to 5 cm). After achieving the desired depth, smooth the surface with a smoother to obtain evenness.
5. For fills greater than 2" (5 cm), pre-place clean, washed, dry, nonreactive 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. Pour *Ultraplan*

## Product Performance Properties

Laboratory Tests	Results
Compressive strength – ASTM C349	
1 day	> 2,800 psi (19,3 MPa)
7 days	> 4,000 psi (27,6 MPa)
28 days	> 5,000 psi (34,5 MPa)
Flexural strength – ASTM C348 (CAN/CSA-A23.2-8C)	
28 days	> 1,280 psi (8,83 MPa)
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 packaging at 73°F (23°C) and 50% RH
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

Mixing ratio	5.5 to 5.8 U.S. qts. (5,20 to 5,49 L) of water per 50 lbs. (22,7 kg) of powder
Application temperature range	50°F to 90°F (10°C to 32°C)
Working time	Up to 15 minutes
Single-lift application range	1/8" to 2" (3 mm to 5 cm)
Minimum thickness over highest point in floor	1/8" (3 mm)
Drying time before installation of tile and stone floor coverings at 70°F (21°C)	3 hours
Drying time before installation of moisture sensitive floor coverings at 70°F (21°C)	16 hours after application is complete
Waiting time for secondary applications	24 hours

## 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
1/8" (3 mm)	48 sq. ft. (4,46 m <sup>2</sup> )
1/4" (6 mm)	24 sq. ft. (2,23 m <sup>2</sup> )
1/2" (12 mm)	12 sq. ft. (1,11 m <sup>2</sup> )
3/4" (19 mm)	9 sq. ft. (0,84 m <sup>2</sup> )
1" (2,5 cm)	6 sq. ft. (0,56 m <sup>2</sup> )
2" (5 cm)	3 sq. ft. (0,28 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.

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M20 Plus 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 self-leveling underlayment during mixing. Immediately pour an additional 1/4" (6 mm) of *Ultraplan M20 Plus* over the raked aggregate to provide a smooth, level surface.

Note: Use only clean, washed, dry, stable aggregate. Do not use limestone or other potentially reactive aggregates for extension. Second-coat applications of *Ultraplan M20 Plus* require priming the surface of the first pour using an appropriate MAPEI primer.

## CURING AND PROTECTION

- *Ultraplan M20 Plus* is self-curing; do not use a damp-curing method, or curing and sealing compounds.
- Cool-weather conditions may extend cure or set times.
- Warmer weather conditions may accelerate working and drying times.
- Protect *Ultraplan M20 Plus* from direct sunlight, excessive heat or drafty conditions 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 2 to 3 hours after installation, depending upon temperature and humidity conditions.
- Protect the installation from traffic, dirt and dust from other trades until *Ultraplan M20 Plus* is completely cured and the final flooring has been installed.
- Do not expose *Ultraplan M20 Plus* to rolling dynamic loads, such as forklifts or scissor lifts, for at least 48 hours after installation.

## CLEANUP

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

## RELATED DOCUMENTS

Reference Guide: Surface-Preparation Requirements for Self-Leveling Underlayments	RGF0214*
Reference Guide: Primers for Self-Leveling Materials	RG0609*

\* At [www.mapei.com](http://www.mapei.com)

## IMO CERTIFICATION

Coast Guard Approval Number: 164.106/46/0

- Meets the requirements specified in Part 2, Part 5 and Part 6 of Annex 1 of the IMO FTP code when used in conjunction with *Planibond EBA* and 20-40 mesh silica sand
- Approved for *Ultraplan M20 Plus* produced in San Bernardino, CA, only

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

## 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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For the most current BEST-BACKED™ product data and warranty information, visit [www.mapei.com](http://www.mapei.com).

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