

Tile & Stone Installation Systems

Tiling over gypsum

When tile is installed over gypsum-based floors and walls, following a few basic principles for surface preparation and product layering will help toward achieving a well-bonded, compatible system.

The chemistry of the challenge

One of the first things to remember is that gypsum and Portland-cement-based products are not compatible chemically.

When a Portland-cement-based product is in contact with a gypsum-based substrate while moisture conditions are present, the resulting chemical reaction forms “ettringite,” which is white, needle-like crystals that negatively impact the integrity of the bond between the two surfaces. The crystallized salts of ettringite increase in volume, filling the voids of the reactants in the Portland cement. As the salts grow and occupy more volume, they destroy the integrity of the Portland-cement binder. For details on the effects of ettringite, refer to the Ceramic Tile Institute of America (CTIOA) Report 2003-4-08, “The Installation of Ceramic Tiles on Gypsum Substrates: Problems and Remedies.”

The solution to installing over a gypsum-based substrate is to apply a suitable primer between the adhesive/mortar and the gypsum-based substrate. A properly applied monolithic layer of primer penetrates into the pores of the gypsum substrate to improve adhesion at the bond interface. Depending on condition and age of the gypsum substrate, this may require multiple coats of primer.

Surface-preparation requirements

To install any type of tile/stone, additional layers of gypsum-based patches or self-leveling products, the gypsum-based underlayments or patches must be:

- For interior, dry conditions only.
- In good condition, well-bonded, and stable.
- Clean, dry and free of dust, oil, grease, paint and any other substance that may reduce or prevent adhesion.
- Properly installed and fully cured according to the manufacturer's recommendations.

Note: The curing time of gypsum-based underlayments will vary based on thickness and environmental conditions (ambient temperature, air circulation and relative humidity). For example, in an HVAC-controlled environment, a 3/4"

(19 mm) gypsum underlayment will typically dry in 5 to 7 days, and a 1-1/4" (3,2 cm) gypsum underlayment will typically dry in 14 to 21 days.

Selecting the right primer

Application of any product over a gypsum based underlayment or patch will require the application of a primer. See recommended MAPEI primers below.

- *Primer T™*, diluted at a 2-to-1 ratio (2 parts of water per 1 part of *Primer T*). Apply two coats if required by visual inspection.
- *Primer L™*, tinted green for easy identification of coverage. Dilute at a 3-to-1 ratio (3 parts of water per 1 part of *Primer L*).
- *ECO Prim Grip™*, a ready-to-use, synthetic primer with bond-promoting silica aggregates that needs no dilution. This works best over new gypsum installations. Existing gypsum underlayments and/or patches must be sound, stable and well-adhered in order to be primed with *ECO Prim Grip*.

MAPEI's gypsum-based self-levelers and patches:

The following high-performance products are recommended to be applied over existing gypsum-based patches or self-leveling underlayments after they are primed.

- *Planitex™ UNS* – For patching and skimcoating up to 1/2" (12 mm)
- *Planitex SL* – Self-leveling and high-flow, for thicknesses of 1/8" to 1" (3 mm to 2,5 cm)
- *Planitex SLF* – Self-leveling and fiber-reinforced, for thicknesses of 1/8" to 1" (3 mm to 2,5 cm)

Note that gypsum-based self-leveling underlayments can be applied in deeper sections if extended with approved aggregates. Contact MAPEI's Technical Services Department for details.

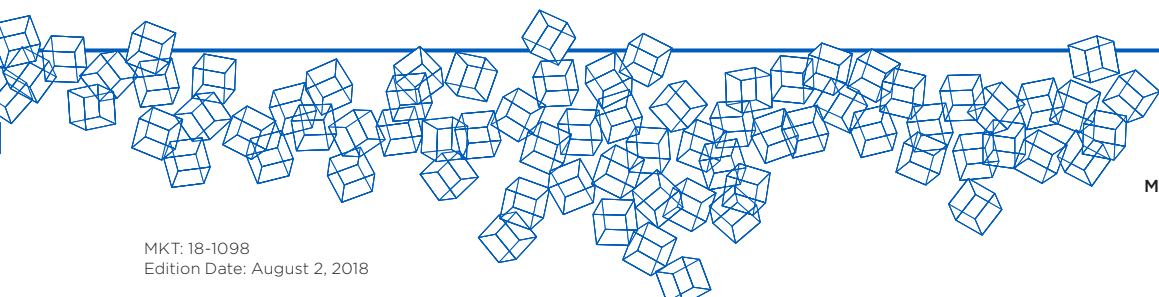
Installing other products over gypsum

When installing ceramic tile or stone over properly primed gypsum-based substrates, underlayments and patches, use any MAPEI tile mortars with a minimum ISO 13007 classification C2 or that meet ANSI A118.4. If an adhesive (mastic) is preferred, use one with ISO 13007 classification D1 or that meets ANSI A136.1, Type 1.

Waterproofing should be specified for all gypsum-based installations that will come in contact with water or moist conditions. Use any MAPEI waterproofing membrane that meets ANSI A118.10 criteria. The gypsum substrate must be primed before the application of MAPEI waterproofing membranes.

For information on tile/stone installations that involve hydronic radiant-heat systems over a MAPEI gypsum-based underlayment, refer to TCNA methods RH111 and RH122 or contact MAPEI's Technical Services Department.

Jobsite conditions vary and may present circumstances not covered in this document. For the most current product information, visit www.mapei.com or contact MAPEI's Technical Services Product Support Team.



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