

Gypsum-Based Floors and Walls: Which MAPEI Products Can Be Applied?



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How can I properly bond to gypsum?

When installing over gypsum-based substrates, following a few basic principles for surface preparation and product layering will help to ensure a well-bonded, compatible system.

One of the first things to remember is that gypsum and concrete are not compatible chemically. If concrete makes contact with a gypsum-based product, the resulting chemical reaction is known as "ettringite," which destroys the integrity of the bond between the two surfaces.

Does this mean that cement-based products cannot be used over gypsum? MAPEI's solution is to require a layer of primer, such as MAPEI's *ECO Prim Grip™*, *Primer L™* or *Primer T™*, between these surfaces to prevent them from coming into contact. It is crucial that a monolithic layer of primer is allowed to penetrate deep into the pores of the gypsum. It may be necessary to apply multiple coats.

Note: Ettringite is formed when gypsum comes in contact with a cement-based product. The crystallized ettringite salts increase in volume, filling the voids of the reactants in the latex Portland cement. As the salts grow and expand, they destroy the integrity of the mortar at the chemical level. For more information 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."

Surface preparation requirements

- Gypsum-based underlayments or patches must be:
 - For interior, dry conditions.
 - Intact, well-bonded, stable and free of existing cracks.
 - Clean, dry and free of dust, oil, grease, paint and any other substance that may reduce or prevent adhesion.
- Gypsum-based underlayments or patches must be thoroughly primed with:
 - *ECO Prim Grip*, a ready-to-use, synthetic primer with bond-promoting silica aggregates
 - *Primer T*, diluted to a 2 : 1 to 3 : 1 ratio (2 to 3 parts of water per 1 part of *Primer T*)
 - or *Primer L*, diluted to a 3 : 1 ratio (3 parts of water per 1 part of *Primer L*).

MAPEI high-performance, gypsum-based self-leveling underlayments and patches

- *Planitex™ SL 35* can be installed from depths of 1/4" to 3" (6 mm to 7,5 cm) for patching, skimming, smoothing and leveling of dry, interior, commercial-grade gypsum or wood subfloors with a minimum thickness over wood of 3/4" (19 mm).
- *Planitex UNS* (available only in the U.S.), a gypsum-based patching compound, is ideal for repairing holes, voids and "birdbath" depressions up to 1/2" (12 mm) deep in gypsum-based surfaces and wood underlayments.
- In an HVAC-controlled environment, generally a 3/4" (19 mm) gypsum underlayment will dry in 5 to 7 days while a 1-1/4" (3,2 cm) level pour will dry in 14 to 21 days.

Hydronic radiant-heat systems and MAPEI gypsum-based self-leveling underlayments

- Use either *Planitex SL 35* or *Planitex SL* gypsum-based self-leveling underlayment.
- The minimum-to-maximum thickness of the floor leveler must be within the required range according to the specifications and requirements of the radiant-heat system manufacturer.
- A primer is required before the application of a MAPEI gypsum-based self-leveling underlayment.
- Consult MAPEI's Technical Services Department regarding the minimum curing time of the underlayment installation before the radiant-heat system is activated.
- Refer to the most current Tile Council of North America (TCNA) CAD details for #RH111 (On-Ground) and #RH111A (Above-Ground), "Poured Gypsum Underlayment Encapsulating Hydronic Tubing / Bonded Membrane / Ceramic Tile."

Note: Drying time is dependent on temperature, humidity and the thickness of the application. Use an appropriate meter, set to the gypsum scale. Typically, the floor is considered ready for the installation of floor covering when the calibrated meter reads 5% or less. Readings should be taken on multiple locations to get an accurate picture of the gypsum underlayment.

Note: For gypsum-based substrates that will be receiving floor coverings, consult ASTM F2419 "Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring."

MAPEI gypsum-based wall-patching compounds

- The patching compound must be for interior, dry conditions and must be intact, well-bonded, hard, durable and secure.
- The patching compound must be clean, dry and free of dust, oil, grease, paint and any other substance that may reduce or prevent adhesion.
The entire surface area of the gypsum-based patch must be thoroughly primed with *ECO Prim Grip*; *Primer T*, diluted to a 2 : 1 to 3 : 1 ratio (2 to 3 parts of water per 1 part of *Primer T*); or *Primer L*, diluted 3 : 1 (3 parts of water per 1 part of *Primer L*) before the installation of the tile or stone.

Note:

1. For floors, any MAPEI tile mortars or adhesives that carry ISO 13007 classification C2 and meet ANSI Standard A118.4 can be used over gypsum-based underlayments and floor patches that have been properly prepared with *ECO Prim Grip*, *Primer L* or *Primer T*.
2. For walls, any MAPEI tile mortars or adhesives that carry ISO 13007 classification C1 or D1 and meet the ANSI A118.4 or A136.1 standard can be used over substrates properly prepared with *ECO Prim Grip*, *Primer L* or *Primer T*.

MAPEI gypsum-based products in wet environments

- Waterproofing should be specified for all gypsum-based installations that will come in contact with water or moist conditions.
- *Primer T*, diluted to a 2 : 1 to 3 : 1 ratio (2 to 3 parts of water per 1 part of *Primer T*) or *Primer L*, diluted 3 : 1 (3 parts of water per 1 part of *Primer L*) is required before the application of a cement-based waterproofing membrane, such as MAPEI's *Mapelastic™ 315*.
- If no fine powder residue ("dust") is left on the substrate, a liquid-rubber waterproofing membrane – MAPEI's *Mapelastic AquaDefense* or *Mapelastic 400* (available only in the U.S.) – can be directly applied to the gypsum. If powdering occurs, prime with *Primer T*, diluted to a 2 : 1 to 3 : 1 ratio (2 to 3 parts of water per 1 part of *Primer T*) or *Primer L*, diluted 3 : 1 (3 parts of water per 1 part of *Primer L*) before application of *Mapelastic AquaDefense* or *Mapelastic 400* (available only in the U.S.)

Note: For floors and walls exposed to wet environments, consult the most current TCNA Handbook for Environmental Classifications Res 1-6 and Com 1-6. These classifications quantify the degree of moisture and water vapor that the tile or stone installation may be exposed to.

Jobsite conditions vary and may present installation issues not covered in this technical bulletin. Please contact MAPEI's Technical Services Department for further assistance.

For MAPEI products referenced in this technical bulletin, consult the most current technical data at www.mapei.com.

