4 to 1 Mud Bed Mix

Sand and Cement Mortar Mix

DESCRIPTION

4 to 1™ is a preblended mixture of finely graded sand and Portland cement used for thick-bed mortar installations. *4 to 1* flattens and levels an existing substrate before the installation of tile and stone.

FEATURES AND BENEFITS

- Screed and level from 3/8" to 3" (10 mm to 7.5 cm)
- Ideal for floating shower bases
- Mix with water or *Planicrete*® *AC*

WHERE TO USE

- Floating shower bases
- Can be directly bonded or used as a detached floating mortar bed over a cleavage membrane or waterproofing membrane
- For use in both residential and commercial applications in dry and wet areas
- Mixes with water. For increased performance and reduced porosity, mix with MAPEI's *Planicrete AC* latex admixture.

LIMITATIONS

- *4 to 1* can be mixed with water for most interior conditions. For better performance or for exterior or heavy-duty wet areas, mix *4 to 1* with *Planicrete AC* instead of with water. For details, see the Technical Data Sheet for *Planicrete AC*.
- See ANSI A108.1 industry standard for details on mortar bed installations.
- For direct-bond applications, the concrete surface should have a concrete surface profile (CSP) of at least #3. The surface must be primed with a slurry bond coat mixture (see the "Mixing" section below for details).

- Wood-frame structures must be designed to handle the loads of floating mortar beds and tile assemblies. If the suitability of the structure is unclear, consult a structural engineer or design consultant.
- For covering large areas, contact MAPEI's Technical Services Department for recommendations.

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

SUITABLE SUBSTRATES

- Cured concrete floors
- Adequately designed wood frame floor systems (see handbook of the Tile Council of North America [TCNA] or Terrazzo, Tile & Marble Association of Canada [TTMAC] for details)

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

SURFACE PREPARATION

- All substrates must be structurally sound, stable, clean and free of any substance or condition that may reduce or prevent proper adhesion.
- For direct-bond applications, the surface must be clean and porous with a concrete surface profile (CSP) of at least #3.
- See the "Surface preparation requirements" reference guide in the Tile & Stone Installation Systems section of MAPEI's Website.

MIXING

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

1. *4 to 1* can be mixed by hand in a clean wheelbarrow or mortar box, or by machine in a mortar mixer.
2. Mix each 55-lb. (24.9-kg) bag with 3 U.S. qts. to 1 U.S. gal. (2.84 to 3.79 L) of clean cool water, or with 3 to 3.5 U.S. qts. (2.84 to 3.31 L) of MAPEI's *Planicrete AC* diluted in a 3-to-1 ratio of water to *Planicrete AC*.
3. For hand mixing, gradually add water or *Planicrete AC* to the *4 to 1* while mixing with a mortar hoe in a wheelbarrow or mortar box.
4. For machine mixing, add water or *Planicrete AC* first to mixer.
5. Mix to a dry or semi-dry consistency that can be formed, by hand, into a ball without crumbling apart.

   Note: Adding too much water or *Planicrete AC* will reduce the overall performance and invite shrinkage cracks over time.

6. When bonding *4 to 1*, apply a slurry bond coat by using one of the following mixes:
   - Portland cement mixed with water or *Planicrete AC* (at a 1-to-1 ratio)
   - MAPEI polymer-modified mortar mixed with water

PRODUCT APPLICATION

Read all installation instructions thoroughly before installation.

Direct-bond mortar bed (installed directly over concrete)

1. Broom or scrub a slurry bond coat into the concrete substrate. It is critical that the slurry be completely wet (rather than partially dry) when applying *4 to 1*. It is best to “prime as you go” to ensure a constantly wet primer on the floor. Set the screed guides using float strips or mortar screeds to the necessary floor tolerances.
2. On sloping floors, slope where necessary to the drains. Screed guides should be tooled to a square-edge right angle.
3. While the slurry is still wet, spread a thin layer of *4 to 1* onto the floor surface between strips using a straight edge. Work *4 to 1* with a wood or magnesium float into the slurry bond coat. Immediately follow with more *4 to 1* to the desired height, compacting and closing up the surface.
4. Finish the surface true and flat to the necessary tolerances, typically 1/4" in 10 feet (6 mm in 3.05 m) for tile and stone.

Floating or unbonded mortar bed

1. Floating screeds are typically used when it is necessary to isolate a tile assembly from problematic floor conditions using a cleavage membrane or slip sheet. The TCNA and TTMAC have a variety of application details covering tile installations over mortar beds incorporating the use of a cleavage membrane. See the latest TCNA or TTMAC handbook for more information on floating mortar beds.
2. Apply a cleavage membrane or slip sheet (6 mils of polyethylene or 15 lbs. [6.80 kg] of roofing felt) to the substrate.
3. Lay out rolled or self-furred sheets of 2" x 2" (5 x 5 cm), 16-gauge, galvanized wire mesh throughout installation. Overlap the mesh by 2" (5 cm) and connect the sheets using wire ties.
4. Apply *4 to 1* into the wire mesh. The mesh must be either propped up before or during the application, so that the mesh is approximately in the middle of the mortar bed with at least 5/8" (16 mm) of mortar thickness covering the wire mesh.
5. Work the mortar mixture with a wood or magnesium float to compact and close up the surface.
6. Finish the surface true and flat to the necessary tolerances, typically 1/4" in 10 feet (6 mm in 3.05 m) for tile and stone.

EXPANSION AND CONTROL JOINTS

- Provide for expansion and control joints as specified per TCNA Method EJ171 or TTMAC Specification Guide 09 30 00, Detail 301MJ. Do not cover expansion joints with mortar.
- Expansion and control joints placed within the mortar bed should be carried up through the tilework and left as soft joints that are filled with an approved expansive material.

CLEANUP

- Clean tools and tile with water while the mortar is fresh.

PROTECTION AND CURING

- Provide for dry, heated storage on site and deliver materials at least 24 hours before work begins.
- Protect from rain, snow, freezing and direct solar heat, which will cause curing and performance deficiencies.
- Because temperature and humidity (during and after installation of tile) affect the final curing time, allow for extended periods of cure and protection when jobsite temperatures drop below 60°F (16°C) and/or when relative humidity is higher than 70%.
- Allow the mortar to fully cure before installing tile.

- If the installation will be covered with a non-breathable membrane or if a moisture-sensitive stone is the finish, allow an extended period of curing before applying the membrane.
- Protect floor from foot traffic for 16 hours and from heavy traffic for 72 hours.

Product Performance Properties

at 73°F (23°C) and 50% relative humidity

Laboratory Tests	Results
VOC content	0 g per L
Compressive strength (ASTM C109, 28 days)	> 2,500 psi (17.2 MPa)
Pull-out rupture (28 days)	
Mixed with water	> 72 psi (0.50 MPa)
Mixed with *Planicrete AC*	> 260 psi (1.79 MPa)

Shelf Life and Product Characteristics

Shelf life	1 year when stored in original, unopened packaging at 73°F (23°C)
Color	Gray

Application Properties

Application temperature range	40°F to 95°F (4°C to 35°C)
Pot life at 68°F (20°C)	90 to 120 minutes

Packaging

Size
Bag: 55 lbs. (24.9 kg)

Approximate Coverage – Direct Bonding

Thickness	Coverage*
1" (2.5 cm)	5 to 6 sq. ft. (0.46 to 0.56 m^2)
2" (5 cm)	2.5 to 3 sq. ft. (0.23 to 0.28 m^2)

** Coverage shown is for estimating purposes only. Actual jobsite coverage may vary according to substrate conditions and setting practices.*

ADDITIONAL INFORMATION

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

For information on MAPEI's commitment to sustainability and transparency, as well as how MAPEI products may contribute to green building standards and certification systems, contact sustainability_USA@mapei.com (USA) or sustainability-durabilite@mapei.com (Canada).

WARNING

The test results shown in the TECHNICAL DATA table were obtained in compliance with test methods and curing cycles, if applicable, defined in the industry standards referenced on the Technical Data Sheet. Please note that the use of test procedures or methods other than those indicated in the table could lead to different values and that, in such cases, any liability of our company is excluded.

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The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement nor 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. **ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED IN OR DERIVED FROM THIS TDS SHALL VOID ALL RELATED MAPEI WARRANTIES.**
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Edition Date: September 17, 2024 MK 3000015 (24-2323)

For the most current product data and BEST-BACKED℠ warranty information, visit www.mapei.com.
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