

FAQ: INSTALLING TILE ON WALLS AND OVERHEAD



With the size growth of today's tiles, installations on vertical surfaces and ceilings adds extra challenges involving deflection and gravity to a project. Here are some of the most commonly asked questions about how to successfully install tile on walls and overhead, whether indoors and out.

WHAT CAN BE INSTALLED AND WHERE

Question: What is the maximum tile size and weight that can be installed on walls?

Answer: For direct bond installation on commercial projects, the 2012-2020 International Building Code limited tile on exterior walls to less than 24" long on any side, less than 3 square feet in total area and less than 9 lbs. per square foot (43.9 kg/m²) in weight.

The new 2021 International Building Code allows tile on exterior walls as follows: Section 1404.10.2 Exterior adhered masonry veneers-porcelain tile. Adhered units weighing more than 3.5 lbs. per square foot (0.17 kN/M²) shall not exceed 48 inches (1219 mm) in any face dimension nor more than 9 square feet (0.8 m²) in total face area and shall not weigh more than 6 lbs. per square foot (0.29 kN/M²). Adhered units weighing less than or equal to 3.5 lbs. per square foot (0.17 kN/M²) shall not exceed 72 inches (1829 mm) in any face dimension nor more than 17.5 square feet (1.6 m²) in total face area. Porcelain tile shall be adhered to an approved backing system.

Section 1404.10.3 Interior adhered masonry veneers. Interior adhered masonry veneers shall have a maximum weight of 20 lbs. per square foot (0.958 kg/m²) and shall be installed in accordance with TMS 402, section 12.1 and 12.3. Where the interior veneer is supported by wood construction, the supporting members shall be designed to limit deflection to 1/600 of the span of the supporting members. TMS 402 and 602 can be acquired from The Masonry Society.

For porcelain tile there are no specific restrictions for interior walls, but some suggest that maximum weight should not exceed 15 lbs. per square foot. Larger and heavier tiles will require anchoring with mechanical fasteners. Be sure to consult your local building code or other authorities having jurisdiction for tile size and weight limits on your specific project and follow framing and wall board manufacturer's recommendations.

Question: Is gypsum drywall a suitable substrate for tile installation?

Answer: International Building Code restricts the use of gypsum drywall, including water-resistant gypsum drywall, in wet areas such as showers and tub surrounds. In these applications, a cement backerboard such WonderBoard® Lite should be installed. Bare gypsum drywall is a suitable substrate for dry, interior applications.

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Question: Can tile be directly installed to wood surfaces or foam insulation?

Answer: No. Plywood and OSB are not suitable surfaces for installing tile on walls and foam does not have the tensile strength to support tile. WonderBoard Lite cement backerboard or lath and a cement scratch coat must be installed to the wood or foam surface before the installation of tile with an appropriate mortar.

Question: Can tile be installed on painted surfaces?

Answer: On interior dry areas, mortars and adhesives may be used over most latex paints or epoxy paints with preparation considering that the bond of the tile to the surface will only be as good as the bond of the paint to that surface. If the paint is well bonded, it can be well cleaned and/or lightly sanded or primed with MBP Multi-surface Bonding Primer. Tiles can be installed with a suitable polymer-modified, thin-set mortar. In some cases, the paint should be removed. Do not install over oil-based paints.

Question: What is the requirement for movement joints when tile is installed on walls?

Answer: For exterior applications, the requirements are the same for walls and floors. Install flexible movement joints every 8-12 feet and at all changes of plane. The minimum movement joint width for 8' OC is not less than 3/8", though larger joints provide better protection to large format tile, with any side longer than 15". Refer to TCNA / Tile Council of North America Handbook, detail EJ 171 for specific guidelines of movement joints and factor in the thermal expansion rate of the tile.

For interior applications, the movement joints should be placed every 20-25 feet, unless the tile assembly exposed to direct sunlight and then they should be spaced every 8-12 feet. Joints are required at all changes of plane. Always consult with the Project Architect on commercial projects.

Question: What are the guidelines for setting tile on ceilings?

Answer: For porcelain tile there are no specific restrictions for interior ceilings, but some suggest that maximum weight should not exceed 15 lbs. per square foot. Larger and heavier tiles will require anchoring with mechanical fasteners. The ceiling framing and sheathing components must be suitable and well fastened. Be sure to consult your local building code or other authorities having jurisdiction for tile size and weight limits on your specific project. Use a premium quality, non-sag, improved modified dry set cement mortar meeting American National Standards Institute / ANSI A118.15 T and proper bedding technique for best coverage to fully collapse trowel ridges.

Flat Back-Troweling of tiles during installation is strongly recommended to achieve complete bonding mortar coverages, especially in overhead applications. This troweling process is defined by The National Tile Contractors Association / NTCA as the application using the flat side of the trowel (keying in or burning in) a thin layer of improved modified dry set mortar to the backside of the ceramic, porcelain, glass or dimension stone tile just before the tile is embedded into the setting mortar that has been applied to the substrate. This is formerly known as Back-Buttering.

Tiled steam shower walls and ceilings require additional surface preparation with a "Low-perm waterproofing" membrane like RedGard® Waterproofing and Crack Prevention Membrane and must have a slope of 2 inches per foot and specially designed movement joints as detailed in TCNA SR613 and TCNA SR 614.

INSTALLATION PRODUCTS TO USE

Question: Is there a flatness guideline to follow when tiling walls?

Answer: To ensure a flat tiled surface, it is important to start with a flat substrate. The wall framing and/or surface should be installed or corrected so that there are no deviations greater than 1/8" in 10 feet. For shower walls and tub surrounds, install WonderBoard Lite 7/16" backerboard. If tiling on existing walls, apply and smooth an engineered cement based patching compound to bring the surface into flatness tolerances prior to installing tile. Be sure to remove any bond breakers like dust or residues before applying membranes or mortar to any surface.

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Question: What is the best way to waterproof a shower wall or tub surround?

Answer: Monolithic application of RedGuard Waterproofing and Crack Prevention Membrane will waterproof wet areas like shower walls and tub surrounds. Apply two coats of RedGuard to the wall (continuing to the shower floor and drain assembly if applicable). A gallon of RedGuard will cover 55 square feet in two applications (apply 1/2 gallon uniformly to 55 sq. ft. and repeat with remaining 1/2 gallon when the first coat dries). Allow the first coat to fully dry before applying the second and make sure there are no pinholes or voids in the coating. RedGuard also acts as a vapor barrier preventing moisture vapor from the shower entering the wall cavity behind the tile where it can contribute to mold growth.

Question: What kind of mortar should be used to set tile on walls and ceilings?

Answer: When tiling vertical or suspended surfaces, it is important to use a mortar that has excellent non-sag qualities. These mortars are designated by ANSI with the letter "T" after the standards number. ProLite® Premium Large Format Tile Mortar that exceeds the requirements of ANSI A118.15T and is formulated to support the weight of large and heavy tiles on walls. ProLite and MegaLite® weigh 40% less than typical mortars because they are formulated with CustomLite® technology and help reduce overall load bearing created by tile installation.

Question: What about the needs of glass tile?

Answer: Glass Tile Premium Thin-set Mortar is highly polymer-modified to bond to the smooth surface of glass. Its flexibility is designed to accommodate the extra movement of glass tile, which is sensitive to thermal changes. The bright white color offers a clean, uniform appearance when installing clear or translucent glass tile. Check with the manufacturer as some glass tiles cannot be installed over membranes.

Question: Are installation needs different on exterior versus interior applications?

Answer: Yes, exterior tile assemblies are subject to much wider temperature swings and in many cases more prolonged water exposure than interior tile installations. The proper mortar should be selected for these demanding exterior installations that experience freeze/thaw cycles and other thermal fluctuations. Use ProLite or MegaLite® Ultimate Crack Prevention Large Format Tile Mortar, which also exceeds the non-sag requirements of ANSI A118.15T for tile installed in exterior and/or wet applications. Rapid setting versions will not contribute to efflorescence. Tiles must be flat back-troweled to achieve the required 95% mortar coverage to the back of the tile and tiles must be well bedded. Spot bonding is not acceptable! Movement joints should be placed every 8-12 feet within the tile assembly with a flexible sealant like Commercial 100% Silicone Caulk. Liquid-applied RedGuard can mitigate efflorescence due to moisture migration in exterior tile and grout, and help protect the building envelope from water intrusion through the tile assembly.

Question: Do walls require special grout?

Answer: Walls can be stained by accidental splashes and it is important to use a stain resistant grout like Fusion Pro® Single Component® Grout. Epoxy grout can be used, but should be protected from strong UV light, as the color will shift. In extremely wet environments, a cement grout, like Prism® Color Consistent Grout, is the best choice and can be sealed against staining with Aqua Mix® Sealer's Choice® Gold.

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