



Globally Proven
Construction Solutions

Installing Large Porcelain Tiles and Panels (Walls)

TDS-1170W

Large porcelain tile and panel products range in thickness from ~3.5 mm to 12 mm and some may be manufactured with a resin or mesh backing. Undoubtedly, the resin or mesh backing provides stability to the reduced thickness porcelain tile or panel. Many of the manufacturers of these large porcelain products are suggesting that their products can be used for interior vertical applications and limited interior floor and exterior wall applications. Consult with the porcelain tile or panel manufacturer for their recommendation on which specific large tile or panel type and thickness is suitable for a specific application. Note that not all thicknesses in a manufacturer's product range are suitable for all applications. Exterior applications and demanding floor applications may require the use of a specific manufacturer's large porcelain tile or panel (type and thickness) that has been rated for the application and area of use. Consult the large porcelain tile and panel manufacturer before selection and installation to determine the porcelain's suitability for the intended area of use and the specified project. It is highly recommended that the manufacturer of the large porcelain tile or panel provide information regarding the tile or panel's suitability and acceptability for the intended use and for the service rating of the tile or panel.

LATICRETE, the world leader in ceramic tile and stone installation systems, has had a long and successful history of installing thin, ceramic tile and panel dating back to the early 1970's. Based on our successful track record, the following installation systems can be specified for today's innovative, large porcelain tile and panel installation challenges. Special installation techniques and tools are required for successfully installing these large porcelain units. For example, using a glass installer's "vacuum suction cups" and / or "installation frames" can facilitate easier handling and placing of the tile or panel and reduce the chance of cracking them during handling and installation. Consult the panel manufacturer for any special handling, processing, cutting or laying considerations prior to installation.

LATICRETE strongly recommends the use of installers who have demonstrated their commitment to their craft and taken the time to stay current with the latest materials and methods. Requiring references and a portfolio along with a quote or estimate is a good way to ensure the installer has successfully completed work of similar size, scope, and complexity. In addition, installations should be done in accordance with LATICRETE specifications and technical data, manufacturers guidelines, good trade practice and AS3958.

SUBSTRATE PREPARATION:

The main challenge for installers is to make sure that the substrate is extremely flat and in the required plane, to achieve the required adhesive coverage. Installations of large porcelain tile and panel are recommended over cured vertical mortar beds/renders (must conform to AS 3958 requirements) and meet the maximum allowable deflection standard of L/360 under total anticipated load. Concrete substrates should be cured in accordance with the large porcelain tile or panel manufacturer's written installation instructions. Installations of large format porcelain tile or panel to steel or wood framed constructs, can be directly bonded to rendered surfaces or approved cement backer boards. External installation over walls require a maximum allowable deflection standard of L/720.

Wall systems for the installation of large porcelain tile and panel must be prepared to the following requirements per LATICRETE specifications or AS 3958: Maximum allowable variation in the tile substrate – for tiles with all edges shorter than 381mm, maximum allowable variation is 5mm in 3m from the required plane, with no more than 1.5mm variation in 300mm when measured from the high point in the surface. For tiles with at least one edge 381mm in length, maximum allowable variation is 3mm in 3m from the required plane, with no more than 1.5mm variation in 600mm when measured from the high points in the surface. Typically concrete, concrete block or brick masonry can be dimensionally corrected and rendered with LATICRETE 3701 Fortified Mortar Bed, 226 Thick Bed Mortar Gauged with 3701 Mortar Admix. Out of plane cement backer boards or other suitable drywall linings should be removed and replaced after frame correction. Shallow skimming with the selected tile adhesive is permissible with these boards.

INTERIOR - walls based on the porcelain tile manufacturer's recommendations:

Large porcelain tile and panel manufacturer's installation information and product testing that has been received / conducted to date reveals that the following LATICRETE / LATAPOXY products can be used for interior applications:

- 257 TITANIUM™
- 254 Platinum
- LATAPOXY® 300 Adhesive

EXTERIOR FACADES:

Large porcelain Tile and panel can be used externally. Consult the large porcelain tile and panel manufacturer for approvals and recommendation.

The following LATICRETE products can be used for approved external applications.

- 257 TITANIUM™
- 254 Platinum

In addition, exterior façade installations should be waterproofed to help prevent the infiltration of water into the structure and to protect building elements from corrosion. HYDRO BAN® Waterproofing Membrane is the ideal waterproofing membrane for exterior façade installations and is 100% compatible with LATICRETE adhesives and mortars used for these installations. Weather protection during the installation and cure period are vital to the performance of the exterior veneer. Please refer to TDS 1110 for more information.

For full installation instructions for exterior large porcelain tile and panel applications, please contact LATICRETE.

NOTES:

Obtaining suitable adhesive thickness and coverage between the porcelain unit and the substrate is essential to the long term performance of the porcelain tile and panel, especially at corners and edges. For interior installations, there should not be any voids larger than 12.9cm² and a coverage minimum of 85% per 929cm² is required. See AS 3958 for further information about required adhesive coverages and thickness. Some large porcelain tile manufacturers require a flat troweled skim coat on the back of the tile in lieu of a notched trowel coat. Using the appropriate specialty notched trowel (e.g. European Tile Masters Euro Notch Trowel or Raimondi Flow Ridge Slant Notch Trowel), typically 9mm deep, along with proper troweling techniques and back-buttering will make achieving complete coverage easier. To help ensure maximum coverage to both the substrate and to the back of the porcelain tile, mix the adhesive to a slightly wetter consistency (e.g. 257 TITANIUM Adhesive mixed with up to 5.2 L of water) than as a typical thin bed adhesive (adhesive ridges must still hold their shape).

Key adhesive into the substrate and large porcelain tile or panel. Apply notched coats of the thin-set adhesive to BOTH the back of the large porcelain tile or panel and the substrate. Typically, the trowel ridges are applied in straight lines, on both the back of the large porcelain tile or panel and on the substrate, and, should be parallel to each other and perpendicular to the long edge of the tile when placed (unless otherwise directed by porcelain tile or panel manufacturer). Do not allow the adhesive to dry or skin over during the installation process. Care must also be taken when removing a large porcelain tile or panel (if possible) to inspect the thin set adhesive coverage during the installation process and while the adhesive is still wet to avoid damaging the large porcelain tiles or panels during this process. The use of hand-held “vibrating” pads can assist in properly bedding the tiles or panels and achieving maximum adhesive coverage. Follow the large porcelain tile or panel manufacturer’s installation instructions concerning proper embedding/beat in/vibrating of their tiles or panels, including possibly walking on freshly installed tile or panel for horizontal applications.

Allow a minimum of 72 hours for cure time at 21°C prior to grouting. Regardless of whether rapid or normal setting thin set / large, heavy tile adhesives are used, LATICRETE typically recommends that walls need to be protected from exposure to contact for 72 hours at 21°C. Full cure typically occurs in 28 days at 21°C. However, cooler temperatures (and other climatic conditions) and the size of the porcelain tile or panel can impact the cure rates. See the AS 3958 statement of protection on this matter. It is important to note that the above cure rates are typical but can be affected by many variables. Consult with the large porcelain tile or panel manufacturer for their suggestions on cure rates and protection of newly installed projects.

Using lippage control devices (e.g. Ramondi Leveling System, MLT Systems, etc. . .) can help reduce lippage and achieve complete coverage beneath the porcelain tile and panels; especially at the edges and corners.

Bonding issues of the resin or mesh backing to the large porcelain tile and panels (or any tile or stone) is outside of the control of LATICRETE and is an issue of which the tile or panel manufacturer is responsible.

GROUTING:

Since some of the large porcelain tiles and panels are thinner than typical tile or panel, extra attention must be given to “clean out” any adhesive left in the joints during the installation in order to facilitate grouting, and the acceptance of enough grout within the grout joint. In most cases, half the depth of the grout joint should be available to receive the grout. For 3mm thick porcelain tile and panel that would be only 1.5mm. This may not be enough to allow the grout to remain in place. Therefore, the entire depth of the thin large porcelain tile or panel should be free of adhesive in the joints to receive the grout.

Interior Applications:

- SPECTRALOCK® PRO Premium Grout* (provides best performance for commercial applications)
- PERMACOLOR® Select†
- PERMACOLOR Grout
- PERMACOLOR NS

Exterior Applications:

- PERMACOLOR Select
- PERMACOLOR Grout
- PERMACOLOR NS

MOVEMENT JOINTS:

Joints scheduled to act as movement joints should also be cleaned out of all adhesive, grout and other contaminants in order to receive bond breaker tape and the suitable sealant so as to allow the movement joint to function correctly. Use LATASIL™ to treat the movement joints. Follow standard industry guidelines for movement joints in accord with AS 3958 movement joint details and information.

For more information on the nuances of installing large format tiles and stones, see TDS 1193 “Installation of Large Format Tile & Stone”.

* United States Patent No.: 6,881,768 (and Other Patents)

† United States Invention Patent: 6,784,229 B2 (and Other Patents)

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