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# Installing Gauged Porcelain Tile & Gauged Porcelain Panel

## TDS-1170

Have you seen the wave of the new gauged porcelain tile & panel that have been on the market for a little while now? These product types range in thickness from 3mm to 7mm thick and can be manufactured with or without a resin or mesh backing. Undoubtedly, the resin or mesh backing provides stability to the thin porcelain tile. Many of the manufacturers of these gauged porcelain tile & panel products are suggesting that their products can be used for interior vertical applications and limited interior floor applications. Consult with the porcelain tile manufacturer for their recommendation on which specific gauged porcelain tile & 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 porcelain panel (type and thickness) that has been rated for the application and area of use.

LATICRETE, the world leader in ceramic tile and stone installation systems, has had a long and successful history of installing thin, ceramic tile panels dating back to the early 1970's. Based on our successful track record, the following installation systems can be specified for today's innovative, gauged porcelain tile & panel installation challenges. Special installation techniques are required for successfully installing these gauged porcelain tile & panel units. For example, using a glass installer's "vacuum suction cups" and / or "installation frames" can facilitate easier handling and placing of the tile and reduce the chance of cracking them during handling and installation. Consult the gauged porcelain tile & 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 gauged porcelain tile & panel provide information regarding the tile's suitability and acceptability for the intended use and for the service rating of the tile.

### SUBSTRATE PREPARATION:

The main challenge for installers is to make sure that the substrate is extremely flat, so as to achieve the required coverage. Floor installations of gauged porcelain tile & panel are only recommended over interior concrete floor slabs (and approved existing interior ceramic tile over concrete) that meet the maximum allowable deflection standard of  $L/360$  under total anticipated load. Installation over wood-framed floor constructs is not suitable for most of these panels. Floor substrates for the installation of gauged porcelain tile & panels must be prepared to a Floor Flatness (FF) of 50. The floor flatness (FF) requirements should be determined just prior to the installation of the gauged porcelain tile & panels. If the slab does not meet the floor flatness requirements then appropriate surface preparation should be conducted. Maximum variation in the substrate is not to exceed 3mm in 3m from the required plane, and no more than 1.5mm in 30cm when measured from high points. Please refer to LATICRETE TDS233 "Floor Flatness (FF) and Floor Levelness (FL)" for more information. Typical interior wall substrates are concrete, concrete block and cement backer board. Typically, the following LATICRETE Polymer Fortified Mortars and LATICRETE Self-Levelling Underlayment's can be used to properly prepare a substrate prior to the installation of these gauged porcelain tile & panels:

- 3701 Fortified Mortar Bed
- 3701 Mortar Admix and 226 Thick Bed Mortar
- LATICRETE LEVEL PLUS or 86 LATILEVEL™ (interior floors only)

### INTERIOR APPLICATIONS - walls and limited floor applications based on porcelain panel manufacturer's recommendations:

Gauged porcelain tile & 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:

- 254 Platinum Adhesive
- LATAPOXY 300 Adhesive

### EXTERIOR FACADES (based on porcelain panel manufacturer's recommendations):

In some cases, requests have been made to use gauged porcelain tile & panels on exterior applications. Please note that for exterior veneer installations, the thickness of the panels can be a concern. The 2012 International Building Code (IBC) - Chapter 14 - Exterior Walls - requires that "adhered veneer finish types" (which include ceramic and porcelain tiles) be a minimum of 6mm thickness for use as exterior cladding although in Australia this may vary from government precinct to precinct. In addition, facial size dimensions can also be a factor. For porcelain tile, the 2012 IBC [Section 1405.10.2] requires that exterior adhered porcelain tile be a maximum of 610mm in any face dimension nor more than 0.28m<sup>2</sup> in total face area and shall not weigh more than 44.2 kg/m<sup>2</sup>. Therefore, the project Architect or Engineer will have to gain code approval for the use of a gauged porcelain tile & panel finish material for use in these applications. The following LATICRETE product can be used for these applications upon code and manufacturer approval:

- 254 Platinum Adhesive

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® is an ideal waterproofing membranes for exterior façade installations and are 100% compatible with LATICRETE adhesives and mortars used for these installations.

#### Notes;

Obtaining complete Adhesive coverage between the porcelain panel and the substrate (100%) is absolutely essential to the long term performance of the porcelain panels. Using the appropriate specialty notched trowel (e.g. European Tile Masters Euro Notch Trowel or Raimondi Flow Ridge Slant Notch Trowel) along with proper troweling techniques and back-buttering including notching will make achieving complete coverage easier. To help ensure maximum coverage to both the substrate and to the back of the porcelain panels, mix the adhesive to a slightly wetter consistency than as a typical thin bed adhesive (Adhesive ridges must still hold their shape). Typically, the trowel ridges are applied in straight lines and should be parallel to each other when placed (unless otherwise directed by porcelain panel manufacturer). The gauged panel after being set in place shall also be manipulated by moving the panel forward back into position, perpendicular to the adhesive ribs. Do not allow the Adhesive to dry or skin over during the installation process. Care must also be taken when removing a panel to inspect the thin set adhesive coverage during the installation process and while the Adhesive is still wet to avoid damaging the gauged porcelain panels during this process. The use of hand held “vibrating” pads can assist in properly bedding the panels and achieving maximum adhesive coverage.

Allow a minimum of 72 hours for cure time at 21°C prior to exposing floor installations of gauged porcelain tile & panel to light foot traffic only. Regardless of whether rapid or normal setting thin set are used, LATICRETE typically requires that floors need to be protected from heavy traffic, lifts, etc... for at least 7 days 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 panels can impact the cure rates. In addition, anytime heavy lifts or other equipment is exposed to the floor, protection of the tile should be put into place (typically 20mm thick plywood / OSB). See the Tile Council of North America’s (TCNA) statement of protection on this matter in the current TCNA Handbook for Ceramic, Glass and Stone Installations. It is important to note that the above cure rates are typical, but can be affected by many variables. Consult with the gauged porcelain tile & panel manufacturer for their suggestions on cure rates, time to traffic and protection of newly installed projects.

Using mechanical edge-levelling systems for floor applications (e.g. Tuscan Levelling System) can help reduce lippage and achieve complete coverage beneath the porcelain panels; especially at the edges and corners. Ensure voids are not created in the bedding layer with the use of the lippage control devices.

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

In all cases, ensure 100% adhesive coverage and follow the guidelines of the gauged porcelain tile & panel manufacturer and good trade practice in order to prevent the tiles / panels from cracking. Care must also be taken when simply removing a tile to inspect the thin set adhesive coverage during the installation process and while the Adhesive is still wet. The tiles / panels can crack during this process.

#### Interior Applications:

- SPECTRALOCK® PRO Premium Grout
- PERMACOLOR® Grout

#### Exterior Applications:

- PERMACOLOR Grout

#### MOVEMENT JOINTS:

Joints scheduled to act as movement joints should also be cleaned out of all adhesive and grout in order to receive a bond breaker tape and the suitable sealant so as to allow the movement joint to function correctly. Use LATICRETE LATASIL™ to treat the movement joints. Follow standard industry guidelines for movement joints in accord with the Australian Standards AS3958.1 or Tile Council of North America’s movement joint details and information EJ-171. For more information on the nuances of installing large format tiles and stones, see LATICRETE TDS1193 – Installation of Large Format Tile & Stone.