What exactly are Reduced Thickness Porcelain Tiles?

Reduced thickness porcelain tiles, or thin-tiles, are now in the marketplace with properties different from traditional ceramic tiles. Several manufacturing technologies exist, producing tiles in traditional sizes up to tiles, or “panels,” as large as 5 feet by 10 feet and less than ¼” thick (nominally).

 Depending on the thickness, while typically meeting ISO 13006 modulus of rupture requirements (one measurement of strength), many of these thinner tiles do not meet ANSI A137.1 breaking strength requirements and require handling and installation that take the lower breaking strength into consideration. Not all manufacturers recommend their tiles for all substrates. Check with the manufacture for recommended applications, and whether flooring applications are supported. Some reduced thickness tiles employ reinforcement on the back changing the physical properties of the tiles, adding impact resistance, raising the breaking strength (although in this category, the breaking strength after reinforcement can still be below the ANSI A137.1 threshold), and reducing crack propagation.

In general, specialized tools, equipment, thin-bed mortar, and training are required for the successful installation of reduced thickness tiles. With larger tiles, flattening the substrate before installation may be required as stringent substrate and installation requirements apply, especially in flooring applications. Special care may be required to achieve sufficient mortar contact between the tile and substrate, especially near the grout joints.

These products are not characterized by ASTM, ANSI or ISO product performance or installation standards. Consult manufacturer for all substrate, performance and installation criteria. Some manufacturers may require the use of pre-qualified installers.


Installation of Reduced Thickness Porcelain Tiles

The installation process for Reduced Thickness Porcelain panels is much different from the typical standard-body, porcelain tiles we are accustomed to seeing in the marketplace. The manufacturers of these new panels are requiring very different handling, tools, surface preparation and placement of these large panels.

SUBSTRATE PREPARATION

The maximum allowable service rating shall be determined by the tile manufacturer in accordance with the ASTM 627 test method. Consult with the manufacturer and follow any specific recommendations they have on their own tile panels. Acceptable interior wall substrates include concrete, cement backer board, properly prepared existing ceramic tile and gypsum wall board. Floor systems shall be in conformance with the IRC for residential applications, IBC for commercial applications and or the applicable local building codes.

Note: The owner should communicate in writing to the project design professional and general contractor the intended use of the tile installation, in order to enable the project design professional and general contractor to make the necessary allowances for the expected live, concentrated loads, impact loads, and dead loads including weight of the tile and setting bed. The tile installer shall not be responsible for any floor framing or subfloor installation not compliant with applicable building codes, unless the tile installer or tile contractor designs and installs the floor framing or subfloor.

Typical acceptable interior floor substrates include structurally sound, cured concrete slabs free of any moisture, wax, oil, paint particles, curing agents or foreign matter.

Perimeter and field movement joints within a tile installation are essential and required. Consult architect or project design professional for specific locations and details. Follow TCNA Detail EJ-171. The subsurface tolerance requirements for these panels are more stringent and require that the maximum allowable variation in the substrate not exceed 1/8” in 10’, 1/16” in 1’ or FF 50 as noted by ASTM E1155, ACI-117 and ANSI 108.1B (modified).
Acceptable SGM underlayments include the following:

- Self Level 815
- Fast Setting Patch 826
- Concrete Bonding Agent 45
- Southcrete 1132 Waterproofing
  (Optional layering element)

Acceptable SGM Mortars include the following:

- Flex Set
- Multi Lite
- Fast Set Thin-Set

One of the many challenges of installing these reduced thickness porcelain tile panels is the ability to get complete coverage between the panel and the substrate. In order for the system to perform long term, 100% coverage to both the panel and substrate is essential. Therefore, using the proper equipment such as the euro (zipper) trowel for the wall substrate and 3/16" v-notch trowel for the back of the tile panel along with proper troweling techniques will help ensure complete mortar coverage. Detailed installation procedures may be found in the current revision of ANSI 108.5.

Apply mortar to both the substrate and tile panel so that the trowel ridges are applied in straight lines and should be parallel to each other when the tile is placed on the substrate. Place tile panel while the surface of the mortar is wet and tacky and before the mortar has dried or skinned over. Press tile panel firmly to flatten out the trowel ridges completely without voids. The use of a hand held mechanical orbital vibrating sander with pad may be used to help embed the panels and ensure complete coverage of mortar without voids.

Note: The use of a mechanical edge-leveling system is suggested to help reduce lippage of the tile panel installations. Minimum cure is reached in 72 hours under normal conditions and 12 hours for rapid-setting mortars. Resin or mesh backed tile panels require lab testing prior to installation to ensure that the appropriate adhesive is used. Failure of Installation of these resin or mesh backed panels without testing is not the responsibility of SGM.

Acceptable SGM grouts include the following:

- Security Polymer Grout
- EGS 100% solids epoxy grout
- Dry-set (unsanded) polymer grout

Due to the minimal thickness of these tile panels, it is suggested that complete removal of the mortar from the grout joint to the depth of the tile panel is achieved in order for the grout to perform as intended.

Customer and Technical assistance is just a phone call away. You can also visit our website to learn about new innovations, and product information.

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