Globally Proven Construction Solutions

Installation of Resin-Backed Tile and Stone

TDS-1150

In recent years we have seen a large increase in the use of different backing materials for ceramic tile and stone. Cutting the stone thinner allows more stone to be taken from a quarry. Advances in stone cutting and tile setting technology means that traditional methods are no longer required to install tile and stone.

In the old days, tile and stone installations were composed of a mortar bed, a "neat" cement coat, water, and then the tile or stone was beat into the fresh mortar bed. Installations of tile or stone in this manner were labour intensive and expensive, but extremely durable. Stone was cut thicker (and heavier) which led to the additional advantage that gravity provides.

Today, with the increases in stone cutting technology, natural stone can be cut dimensionally into tile that is 6 mm thick. It is a fact that part of stone's natural beauty is that each piece is different and may contain many defects or flaws; this adds not only to the beauty of stone, but also to its fragility. To maintain the structural integrity of each piece of stone many manufacturers are applying a backing material to provide added stability and rigidity. Some of these backing types are even showing up on ceramic mosaic tile, glass mosaic tile, and stone mosaic tile. However, these backings can present some real challenges to the installer.

The backing materials widely used throughout the industry include polyester, urethane and epoxy. Some backings can include a fibre mesh imbedded in the resin while others can be a resin with a coarse sand broadcast into it. Ceramic tile and stone backed with the nominally half exposed coarse sand impregnated backing may be set with 254 Adhesive on favorable backgrounds and relies on the fact that better mechanical adhesion can be achieved with the structurally, embedded and exposed sand.

The type of resin used on the back of the finish material can also influence the adhesive that can or should be used. Another factor that must be taken into account is how well the resin or backing is attached to the tile or stone. Examination and testing should be conducted to determine how well these resins are attached. A simple fact is that, at present, there are no standards that govern the required parameters of the resinous backing to the tile or stone. This leaves the installer in the unfortunate position of trying to determine if the finish material and backing are suitable, and then trying to figure out how to install it. It is ironic that the tile setting materials should meet industry standards but the resin backing materials do not have standards to meet. Therefore, it would stand to reason that the adhesive used would be subject to failure due to the loss of bond of the resin to the tile or stone.

Polyester is the most common backing material being used in the tile and stone industry because it is the most inexpensive type of material. Polyester resins are generally cold applied and are poured or rolled onto the back of the stone. As the polyester hardens it develops a waxy film on the surface which presents a daunting problem for most latex thin-set adhesives. Therefore, it is strongly recommended that LATAPOXY® 300 Adhesive be used for these types of backings.

Epoxy resins are of better quality and usually provide excellent adhesion to the back of the stone. But, latex fortified thin-set adhesives will have a very hard time bonding to these resins. The epoxy resins are generally a two-part product (resin and hardener) which are cold applied to the back of the stone. LATAPOXY 300 Adhesive is the preferred choice when setting epoxy backed stone.

Urethane backing materials are the least used throughout the industry. LATAPOXY 300 Adhesive is also the adhesive of choice for this type of backing.

Another alternative for interior dry area applications would be to use LATICRETE PRIME-N-BOND™. Simply apply LATICRETE PRIME-N-BOND primer using a 9mm nap roller or paint brush to the back of the unit, and allow to dry for 15 to 60 minutes, depending on environmental conditions, prior to installing the tile using LATICRETE 254 adhesive, given all normal caveats. Please refer to DS 1258 for further information on the use of PRIME-N-BOND.

NOTE: An option for using resin backed stone in vertical applications is to use the spot bond method. This can be done using LATAPOXY 310 Stone Adhesive or LATAPOXY 310 Rapid Stone Adhesive placed in a minimum of five spots on the back of the stone and should cover a minimum of 10% of the area. The resin must first be ground off the back, exposing bare stone, and then cleaned prior to applying the LATAPOXY 310 Stone Adhesive. The stone must also be structurally sound enough to be bonded with this method.

Some of the old rules apply even to large format, resin backed tile or stone. Moisture sensitive stone (e.g. green marble) must still be set with LATAPOXY 300 Adhesive - no matter what type of resin is used on the back. White or light coloured stone should still be set using a white adhesive, and some installers will only use a white adhesives when setting any stone product to avoid any confusion at the job site. Movement joints must be honoured at the perimeter of the installation as well as in the field. The recommendation is to follow movement joint recommendations in AS3958.1 & 2 or the Tile Council of North America (TCNA) Handbook guidelines outlined in EJ-171 and use LATASIL™ for movement joint applications. Some porous stone may require LATASIL 9118 Primer.

For more information on the installation of Resin-Backed Glass Mosaic Tile please refer to LATICRETE TDS1145.

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