



Ceramic Tile & Stone Over New Concrete TDS 128

Frequently the question is asked, "How soon after concrete is placed can we install ceramic or stone tile using a cement based adhesive (thin-set mortar)"?

ANSWER: Using a premium LATICRETE® Latex Thin-Set (e.g. LATICRETE 254 Platinum or LATICRETE 211 Powder gauged with LATICRETE 4237 Latex Additive), tile installations can be made as soon as it is possible to walk on the concrete.

Basic requirements for applying tile on concrete must be observed:

1. Concrete should have a wood float finish or light steel trowel finish.
2. No curing compounds, sealers or coatings shall be applied to the concrete. If curing compounds, sealers or coatings are present then they must be scarified (e.g. bead-blast, shot-blast, etc...) to remove any trace of the compound from the concrete.

QUESTION: *WHAT IS THE MAXIMUM ALLOWABLE HUMIDITY OR MOISTURE CONTENT IN A CONCRETE SLAB FOR INSTALLATION BY PORTLAND CEMENT BASED ADHESIVES (THIN SET MORTARS)?*

ANSWER: There is no maximum or limit to the moisture content when the installation is made with LATICRETE 254 Platinum; LATICRETE 211 Powder gauged with LATICRETE 4237 Latex Additive; or, LATICRETE 272 Mortar or LATICRETE 317 gauged with LATICRETE 3701 Mortar Admix.

BACKGROUND INFORMATION:

Many manufacturers of cement adhesive mortars realize that these mortars are hard, inflexible and very rigid. Therefore, they state that ceramic tile should not be installed until concrete slabs are at least 28 days old.

A common misconception is that 28 day old concrete is fully cured and has finished shrinking. While most concrete pours will attain 80 – 90% of its strength in the first 28 days at 70°F (21°C), it would be difficult to assume that all of the excess water has dissipated. After 28 days, concrete may not have gone through the maximum shrinkage cycle. Shrinkage is due to the loss of excess moisture in the concrete. This water is introduced during the mixing and the placement of the concrete because concrete requires 15-50% (or higher) more water to place and make fluid than is necessary to actually hydrate or harden the cement content. As a result, most concrete has excess water when placed. When the concrete dries, which may be within the first 28 days or maybe as long as 6 or 8 months later, shrinkage will occur from the loss of excess moisture.

Controlled experiments have confirmed that the maximum amount of shrinkage occurs during the drying out period (loss of excess moisture). When concrete is placed directly on the earth which contains moisture or if it is placed during cold weather, in a building without heat, the bulk of the moisture may remain in the concrete until the building is totally enclosed, with the heat or air-conditioning turned on. At that time excess moisture will evaporate from the concrete. It is during the loss of bulk of moisture that most of the shrinkage occurs. **THIS CAN OCCUR MANY MONTHS OR YEARS AFTER THE POUR!**

The shrinkage of concrete results in a strain on the hard cement adhesive, the results are stresses at either the interface between tile and adhesive or adhesive to concrete. When the force exerted exceeds the bond strength of the mortar, the mortar breaks bond. When a premium LATICRETE Latex Additive is used in cement adhesives, the mortar is flexible, not rigid. Therefore, the mortar can move internally to relieve some of the strain, or shrinkage movement, lessening the stress or force transmitted to the back of the tile. The result is that LATICRETE installations can accommodate concrete shrinkage whether it occurs in the first 28 days or in the months after installation.

CAUTION:

All normal cautions for good installations of ceramic or marble tiles by the adhesive method (thin set method) must be observed when installing on fresh or old concrete.

1. Concrete should be clean and free of contamination, curing compounds, sealers or coatings.
2. The concrete should have a wood float or light steel trowel finish.
3. Concrete can be several days old, one month old or older and will provide a suitable surface for installation of tile using a premium grade LATICRETE[®] Latex Thin-Set Mortar.

CURING COMPOUNDS:

The general rule is that there should be no curing compounds or sealers on the concrete because this will interfere with the direct adhesion of any adhesive mortar to the concrete. Refer to TDS 154 “Curing Compounds and Surface Hardeners” for more information.

Technical Data Sheets are subject to change without notice. For latest revision, check our website at www.laticrete.com
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