Preparation of Concrete for Direct Bond Applications of Mortars and Membranes TDS 118

Before any tile, stone, or membrane can be installed by a direct bond method, the surface must be clean and free of grease, wax, oil, dust, dirt, and any other material that may act as a bond breaker. The performance of any tile, stone, or membrane installation is only as good as its adhesion to the substrate. Therefore, it is critical that the substrate be carefully cleaned and properly prepared to ensure maximum bond strength.

NEW CONCRETE SLABS:
New concrete slabs should have a wood float or light steel trowel finish (consistent with ANSI A108.01). The surface should be true, flat, and pitched to drains where required. Concrete sealers or curing compounds must not be applied to surfaces that will receive finished flooring. If a sealer or curing compound is present, it must be removed by bead-blasting or shot-blasting.
Concrete slabs exhibiting a very smooth or polished surface due to over-troweling should be mechanically scarified to ensure proper bond of the mortar or membrane. Prior to the application of finished flooring, slabs must be thoroughly cleaned to remove loose particles, including plaster, soil, and other foreign materials.

OLD CONCRETE SLABS:
Oil, grease, adhesives, paint, and wax must be removed from existing concrete slabs to ensure proper bond. Mechanical methods, such as the use of a scarifier (e.g., Tennant® or Blastrac equipment), are recommended to remove contaminants, including coatings, adhesives, and asphalt tile residues.

If mechanical scarification is not feasible, contaminants may be removed using chemical cleaning methods. This can be accomplished using a strong detergent solution such as trisodium phosphate (TSP) or a solution of lye and hot water. The solution should be applied to the surface and allowed to dwell for 10–15 minutes, or until it loosens the contaminants. The surface should then be squeegeed or mopped clean, and the process repeated as necessary. Once all contaminants are removed, the surface must be thoroughly rinsed with clean water to eliminate any cleaning residues, and then vacuumed to remove standing water.

SUBSTRATE TOLERANCES:
Whether the concrete slab is new or existing, the following substrate tolerances must be met:

For thick-bed (mortar bed) ceramic tile and stone installations, as well as self-leveling underlayment applications: maximum allowable variation in the substrate is 1/4" in 10' (6 mm in 3 m).
For thin-bed ceramic tile installations using cementitious bonding materials, including medium-bed mortars:

- For tiles with edges shorter than 15" (375 mm): maximum allowable variation is 1/4" in 10' (6 mm in 3 m), with no more than 1/16" variation in 12" (1.5 mm in 300 mm) when measured from the high points.
- For tiles with at least one edge 15" (375 mm) or longer: maximum allowable variation is 1/8" in 10' (3 mm in 3 m), with no more than 1/16" variation in 24" (1.5 mm in 600 mm) when measured from the high points.

For modular substrate units (e.g., exterior glue plywood panels or adjacent concrete masonry units), adjacent edges must not exceed 1/32" (0.8 mm) in height differential.

If more stringent finish tolerances are required (e.g., 1/8" in 10' [3 mm in 3 m]), the project specifications must clearly indicate this requirement or include provisions to bring the substrate into compliance prior to tile installation.

CAUTION:
STRONG DETERGENT SOLUTIONS, SUCH AS TRISODIUM PHOSPHATE OR LYE, MAY IRRITATE EYES AND SKIN. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT, INCLUDING GLOVES AND SAFETY GOGGLES, WHEN HANDLING THESE MATERIALS. ALWAYS FOLLOW THE MANUFACTURER'S INSTRUCTIONS.

CRACKS: Non-structural cracks that occur in slabs can transmit through any thin bed tile work. It is possible to prevent these cracks from coming through the finished flooring by applying FRACTURE BAN SC, HYDRO BAN® or 9235 Waterproofing Membrane over these cracks. Tile can also be installed with 125 TRI MAX® to provide excellent adhesion and crack isolation.