



# 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 any grease, wax, oil, dust, dirt and any other material that can act as a bond breaker. The best tile, stone or membrane installation is only as good as its adhesion to the substrate. Therefore, it is very important that the substrate be carefully cleaned and prepared to assure maximum bonding properties.

### 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 should not be applied to the surface of concrete slabs that are to receive finished flooring. If the concrete surface does have a sealer or curing compound present it must be removed by bead-blasting or shot-blasting. Also note that a concrete slab with a very smooth shiny surface, due to over-trowelling, should be mechanically scarified to ensure that the mortar or membrane can achieve a suitable bond to the concrete. Prior to the application of the finished flooring, the slabs should be thoroughly cleaned to remove any loose particles of plaster, soil and other foreign material.

### OLD CONCRETE SLABS:

Oil, grease and wax must be removed from old concrete slabs to insure a good bond. A mechanical scarifier, such as a Tennant® or Blastrac, will remove oil, grease or wax, as well as paint, adhesives, and even layers of asphalt tile from the surface.

If a mechanical scarifier is not used it will be necessary to remove oil, grease, or paint by chemical means. This can be accomplished by using a strong detergent solution such as tri-sodium phosphate or a solution of lye and hot water. The solution is mopped on the surface and allowed to stand 10 or 15 minutes or until it loosens the paint or grease. The solution is then squeegeed or mopped off and the treatment repeated. When all of the material has been removed from the floor, the surface should be flushed thoroughly with water to remove any remaining cleaning solution, and then vacuumed to remove any residual water.

Whether the concrete slab is new or old the following guidelines for subsurface tolerance should be met; for thick bed (mortar bed) ceramic and stone tile installations and self-leveling methods: maximum allowable variation in the installation substrate to be 1/4" in 10' (6mm in 3m).

For thin-bed ceramic tile installations when a cementitious bonding material will be used, including medium bed mortar: maximum allowable variation in the tile substrate – for tiles with edges shorter than 15" (375mm), maximum allowable variation is 1/4" in 10' (6mm in 3m) from the required plane, with no more than 1/16" variation in 12" (1.5mm variation in 300mm) when measured from the high points in the surface. For tiles with at least one edge 15" (375mm) in length, maximum allowable variation is 1/8" in 10' (3mm in 3m) from the required plane, with no more than 1/16" variation in 24" (1.5mm variation in 600mm) when measured from the high points in the surface. For modular substrate units, such as exterior glue plywood panels or adjacent concrete masonry units, adjacent edges cannot exceed 1/32" (0.8mm) difference in height. Should the architect/designer require a more stringent finish tolerance (e.g. 1/8" in 10' [3mm in 3m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the subsurface tolerance into compliance with the desired tolerance.

**CAUTION:** STRONG DETERGENT SOLUTIONS, SUCH AS TRISODIUM PHOSPHATE OR LYE, MAY IRRITATE EYES AND SKIN. WEAR PROTECTIVE CLOTHING AND GOGGLES WHEN PREPARING OR USING SUCH MATERIALS. ALWAYS READ MANUFACTURER'S INSTRUCTIONS BEFORE USING.

**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<sup>®</sup> or 9235 Waterproofing Membrane over these cracks. Tile can also be installed with 125 TRI MAX<sup>®</sup> to provide excellent adhesion and crack isolation.

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