



Requirements for The Thin Bed Method

TDS 105

The "thin bed" method refers to installations of tile with adhesives, dry-set mortars, multipurpose thin-set mortars, latex-fortified portland cement mortars and epoxy mortars. Each of these materials is applied with a notched trowel and the adhesive or mortar thickness is approximately 3/32" - 3/16" (2.5mm - 5mm).

The installation of ceramic and stone tile by the "thin bed" method has certain requirements that should be pointed out to Architects and Builders. The finished tile work will reflect the surface conditions over which it was set. Wavy or irregular walls, or uneven surfaces will produce similar surfaces in the finished tile work. If the tile has a glossy or reflective surface, any waves or irregularities will be highlighted.

It is imperative that the Tile Contractor, before commencing work, examines the surfaces to be covered and report to the Architect and/or Owners whether they are acceptable or not. All surfaces which are to receive tile must be structurally sound, rigid (maximum deflection requirements must be met to comply with International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or local building code). In addition to deflection considerations, above-ground installations are inherently more susceptible to vibration. Consult grout, mortar, and membrane manufacturer to determine appropriate installation materials for above-ground installations. A crack isolation and higher quality setting materials can increase the performance capabilities of above-ground applications. However, the upgraded materials cannot mitigate structural deficiencies including floors not meeting code requirements and/or over loading or other abuse of the installation in excess of design parameters.

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.

If the surfaces to be covered are not satisfactory, then it will be necessary to apply an "underlayment" or a leveling coat consisting of portland cement/sand and a latex additive, such as 3701 Fortified Mortar, 3701 Lite Mortar R, or 3701 Mortar Additive mixed with 226 Thick Bed Mortar. *Never use gypsum based patching materials under ceramic tile or stone.* Interior floors can also be leveled using NXT® Level Plus or NXT Level which are cementitious, free flowing self-leveling underlayments.

The application of the leveling coat or underlayment should be done as a separate application prior to the start of tile work. It is an additional item for which the tile contractor typically receives compensation as an "extra." It is less costly to prepare surfaces properly with a leveling coat or underlayment, than to install tile in "mud" or traditional thick bed portland cement/sand mortar. Although the General Contractor can arrange to prepare surfaces to receive tile, the Tile Contractor is usually better able to ensure fully compatible materials and procedures are used and to accept full responsibility for the finished work.

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