



Natural Stone Specialist Editorial  
Article 5  
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27.7.09

### Fixing Natural Stone to Timber Floors

Timber substrates are not the most ideal of substrates to receive a rigid tiled finish, but are commonplace especially in domestic situations. Before tiling commences it is essential to ensure that the timber is sufficiently strong and rigid to support the additional weight of tiling, (probably up to  $0.8\text{kN/m}^2$ ) without excessive deflection.

The easiest method of checking the rigidity of the timber substrate is the 'Meniscus test'. This simple test involves filling a glass to the rim with water and placing it on the floor. Standing at a 1metre distance from the glass jump up and down on the floor. If the water spills out of the glass then it may be assumed that the floor requires strengthening.

British Standard BS 5385: Part 3 recommends that new timber bases are constructed with noggings between the joists. Water and boil proof (WBP) exterior grade plywood of 15mm minimum thickness should then be screw fixed to both joists and noggings at 300mm maximum intervals, ensuring that all junctions between boards are supported by either noggings or joists. To further reduce the risk of movement it is recommended that an additional layer of plywood sheets of minimum thickness 10mm is screw fixed onto the existing boards at 300mm centres ensuring that the joints in both layers of sheets do not coincide.

Ideally on existing floors not constructed to the above standard, the boards should be removed and the floor stiffened with noggings and joist support sleeper walls. Alternatively the floor may be strengthened by overlaying the existing boards with WBP exterior grade plywood of minimum 15mm thickness screw fixed at maximum 300mm centres to both joists and existing boards.

To avoid shrinkage defects, it is important that the moisture content of the timber sheets and boards are close to the equilibrium moisture content that prevails under service conditions. In heated domestic buildings where the temperature is above  $21^{\circ}\text{C}$ , the moisture content of the timber sheets should be between 8% and 12%. In conservatories, on heated timber sub-floors and areas with high temperatures or lower humidity levels the moisture content value of the timber sheets may need to be around 8% or lower. It may be necessary to pre-condition the timber to the appropriate moisture content before installation. It is also essential to ensure that there is adequate ventilation beneath the boards and that an effective damp-proof course has been installed.

The design of the installation should take into account the initial drying shrinkage of the timber and subsequent movement due to seasonal moisture changes, with consideration being given to the type of heating.

Prior to installation, the timber sheets should be sealed with a styrene butadiene rubber (SBR) primer on the back, face and edges. This will prevent the ingress of moisture and subsequent distortion of the boards due to atmospheric humidity.

The safest option when fixing natural stone tiles to timber floors is to lay an anti-fracture membrane such as Norcross Permalayer onto the timber prior to tiling. Tiles may then be fixed in a suitable polymer modified (BS EN 12004 C2) cement-based adhesive such as Norcross Thick Bed Stone & Porcelain adhesive.



Joints between the tiles should be filled with a flexible (BS EN 13888 CG2) cement-based grout. Movement joints should be provided as per the recommendations in British Standard BS 5385: Part 3.