

Ceramic floor tiling on domestic timber floors

This technical document provides additional guidance relating to how the Functional Requirements in the Technical Manual may be satisfied. This article covers the following:

Introduction

Where ceramic tile floor finishes are proposed as part of the 'completed' internal floor finishes it is a fact that under normal loading, timber floor joists will deflect more than the allowable tolerances that a 'ceramic covering' can accept and cracking in the tiles, particularly at floor board junctions, will occur. Whilst ceramic floor tiling is not included under the warranty policy cover, the following good practice guidance is given to developers for the installation of such tiles if on timber floors.

For new floors

The guidance below relates to ceramic tiling only and does not apply to other heavier tiles such as marble, travertine or stone which would be considered too heavy for a traditional suspended timber floor construction.

The floor should be fit for purpose and have adequate stiffness to support the tiles and adhesive.

For floors supported by joists up to 600mm maximum centres, the floor decking should be:

- 18mm exterior grade plywood screwed to the joists at 300mm centres with all square edges supported on joists or noggins. Plywood should be laid with a 1.5mm-2mm movement gap between boards and at abutments OR,
- Moisture resistant floor decking overlaid with a minimum 10mm exterior grade plywood fixed to joists at 300mm centres OR,
- A combination of one of the above with a proprietary separating/de-coupling layer, tile backer board or tile bedding reinforcement sheet used in accordance with manufacturer's recommendations
- The length of screw fixings should be at least 2.5 times the thickness of the combined decking material to ensure adequate penetration into the timber sub-floor or joist/strut supports
- Additional solid timber strutting between the joists will be required to assist in stiffening the floor construction for the entire span of the joists between supports, this may include strutting beyond the area of the tiled room e.g. if the joist span continues over a landing area
- Tiles should be suitable for laying over a timber base and deformable (flexible) tile adhesive (e.g. C2S1), and grout should be used in accordance with the adhesive manufacturer's recommendations
- Tiles must be laid to a level finish except where required in a walk in shower/wet room (see below)

For existing floors (e.g. in conversions)

Existing timber floors to be covered by ceramic tiles should be sufficiently strong and rigid, therefore:

- Prove the existing floor construction is able to take the additional dead load of up to 0.8 kN/m² without excessive deflection. Older properties tend to have smaller depth floor joists than current standards for new joists for the same span. Alternatively replace or strengthen the floor joists, as per a structural engineer's design
- Existing floor boards should be either removed, or exposed from underneath, to allow the floor to be stiffened with noggins, as described both above and in the 'new homes' section

- The existing floor covering or new floor covering, dependent upon how the above point is addressed, must then be treated in accordance with the 'new floors' section above

Walk-in showers and wet rooms

For walk-in showers and wet rooms, timber floor deck substrate is not acceptable.

Ceramic tiling

- Tiles must be solidly bedded on an approved flexible adhesive / grout
- They should be slip resistant
- Laid to a level finish (See the [Tolerances section in our Technical Manual](#))
- Tiles should be suitable for laying over a timber base and flexible tile adhesive (e.g. C2S1) and grout should be used in accordance with the adhesive manufacturer's recommendations

De-coupling layer

De-coupling layers provide an intermediate substrate between the tile covering and load bearing substrate including timber floors. They are designed to neutralise lateral stresses that occur between the substrate and tile covering; they are not designed to accommodate differential vertical movement. De-coupling layers are considered to offer a robust approach to preventing ceramic tile failures, where ceramic tiles are laid on a flexible timber substrate.

Every care was taken to ensure the information in this article was correct at the time of publication. Guidance provided does not replace the reader's professional judgement and any construction project should comply with the relevant Building Regulations or applicable technical standards. For the most up to date Premier Guarantee technical guidance please refer to your Risk Management Surveyor and the latest version of the [Premier Guarantee technical manual](#).

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