

Problem 7

Tiling onto wood

Timber floors and ceramic tiles are not natural bedfellows – tiles are inherently rigid and brittle whereas timber floors are flexible.

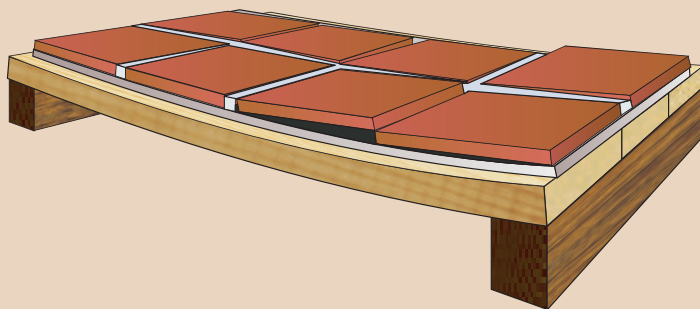
There are many types of wooden floor but in principle the challenges that they present to the tiler are all the result of this mismatch.

There are a number of contributing sources of movement in timber floors which need to be considered when fixing ceramic tiles or natural stones.

1

General deflection due to the applied load

Felt as bounce as you walk across the floor



The floor will deflect according to the load applied and the stiffness of the structure (joist size, spacing etc).

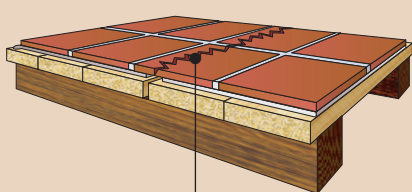
If the adhesive is not flexible or laid thick enough to absorb the amount of movement, the tiles will either delaminate or crack. Large tiles will exacerbate the deflection across each tile's width.

2

Localised movement at unsupported board joints

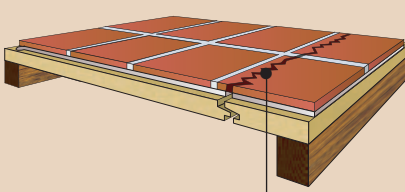
Creaking in certain places as you walk on the floor

Non-tongue and grooved timber



Cracked tile

Unsupported tongue and grooved joint



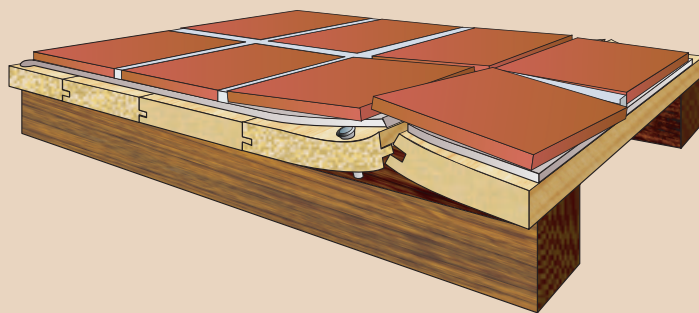
Cracked tile

Any inadequately supported joint will cause a highly localised movement which will crack the tile.

Joints may be supported by joists, noggings, or each other's tongues and grooves.

3

Temperature related expansion and contraction

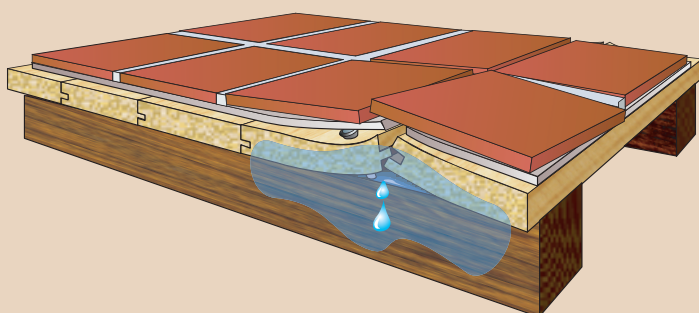


Wood expands and contracts with changes in ambient temperature at a different rate to mortars, ceramics and stones.

As a further complication, timber expands much more across the grain than it does along the grain (this is not really a factor with manufactured boards such as plywood).

4

Moisture/humidity related expansion and contraction



Wood swells if it gets wet even with changes in atmospheric humidity.

This can be a problem in potentially wet areas such as showers and bathrooms and also if the wood is not dry when installed (e.g. if it has been kept outside).



Overboard with plywood or tile backer-board

The most secure system for tiling wooden floors is to screw fix another layer of boarding over the top of the original timber. This increases the

rigidity of the floor, prevents localised movement and if a water-resistant tile backer board is used virtually eliminates moisture-related movement.

Screwing the boards down also helps prevent any pullout of fixings.

Products required

weber AD250
weber.set SPF or **weber.set rapid SPF**
weber.joint wide flex
weber SL450 or **stoneset flexible NC sealant**

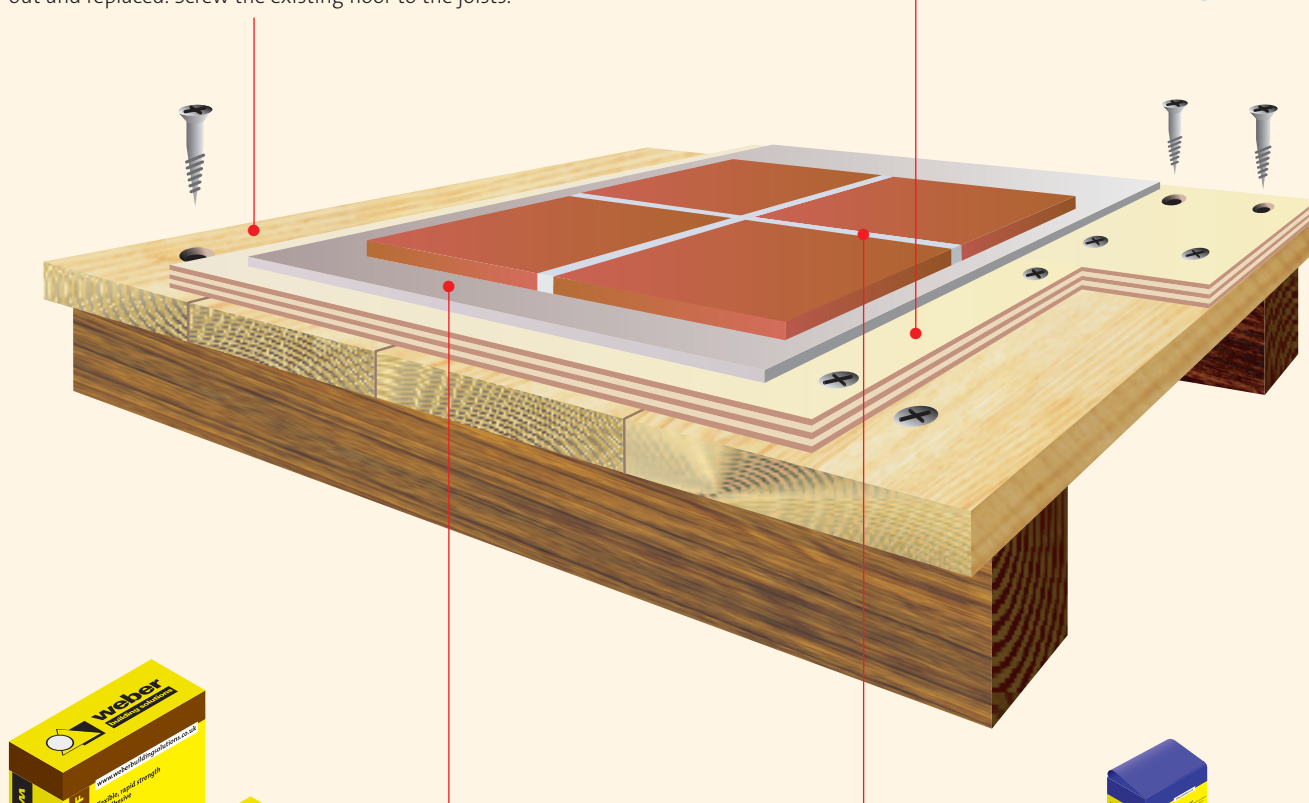
Stage 1: Assess and prepare the floor

Make sure that the floor will be capable of supporting the expected load. It must be stable, well supported, ventilated underneath and level. Verify that the extra height from over-boarding can be accommodated.

Brace any areas that need extra support with noggings between the joists. Any defective boards should be cut out and replaced. Screw the existing floor to the joists.

Stage 2: Fix the over-boarding

Use WBP grade plywood at least 15 mm thick. Prime the back and edges of the plywood with **weber AD250**. Lay the boards so that the joints do not coincide with joints in the existing timber and leave slight gaps between the boards to allow for expansion. Screw the floor every 200 to 300 mm. Leave a movement joint around the perimeter.



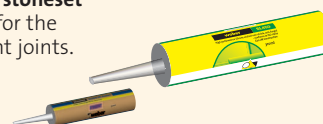
Stage 3: Fix the tiles

Fix the tiles into a solid 3 mm bed of **weber.set rapid SPF** or **weber.set SPF**. Leave joints at least 3 mm wide for grouting and make adequate provision for movement (around the perimeter and dividing large areas into bays).

Stage 4: Grout

Leave the adhesive to set for 2 to 3 hours if a rapid adhesive has been used or 24 hours if a standard adhesive has been used. Fill the joints between the tiles with **weber.joint wide flex**.

Use **weber SL450** or **stoneset flexible NC sealant** for the perimeter movement joints.



Tile directly onto tongued and grooved boards or sheets

It is possible to tile directly onto tongued and grooved wooden floors by using a highly polymer-modified 2-part

adhesive, providing that the floor is rigid enough and the tongued and grooved joints provide effective support. If the

tiles are larger than approximately 400 mm square, over-boarding is recommended (see *Solution 7.1*).

Products required

weber.set WF21 or weber.set rapid flex
weber.joint wide flex
weber SL450 or stoneset flexible NC sealant

Stage 1: Assess and prepare the floor

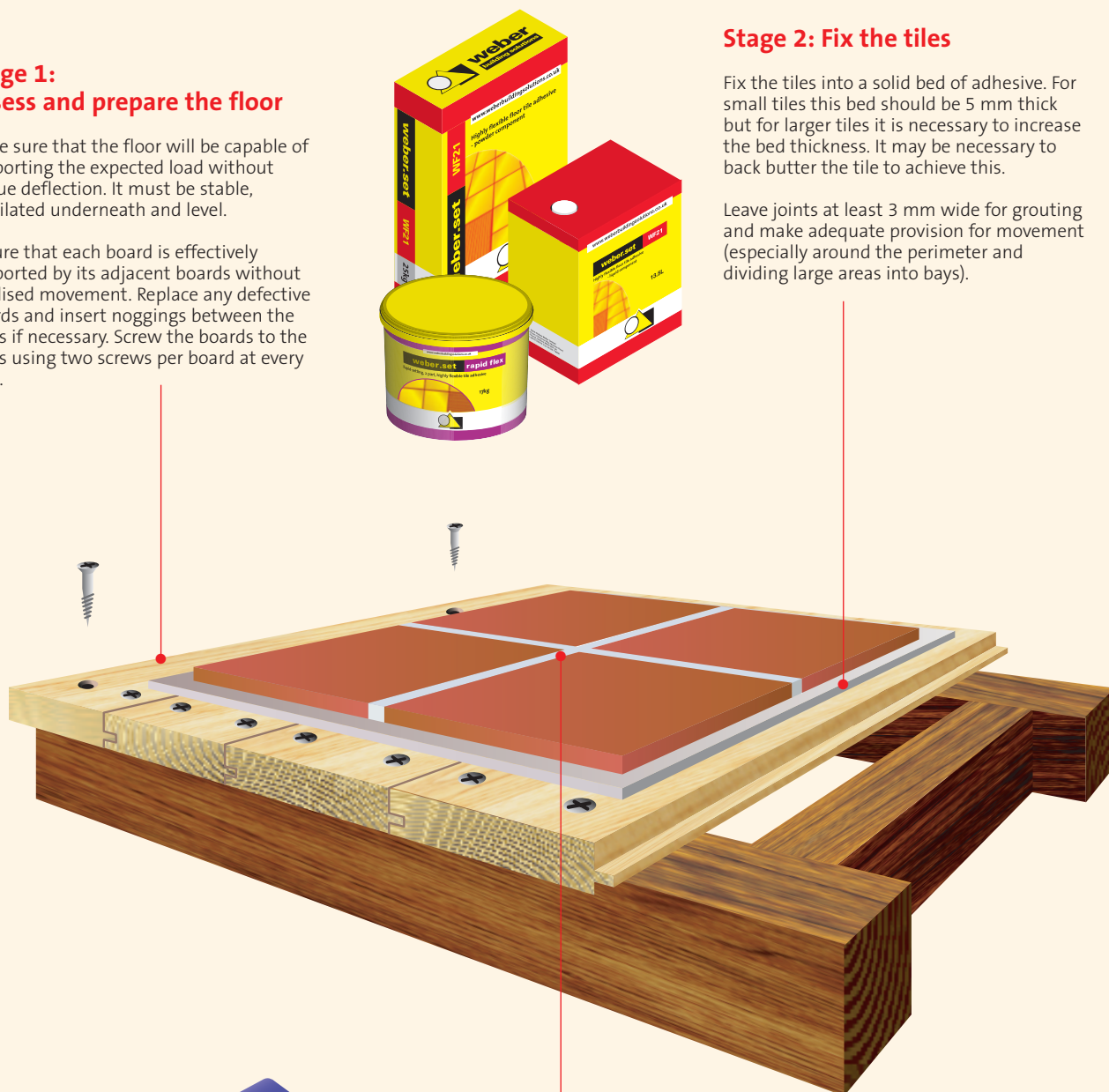
Make sure that the floor will be capable of supporting the expected load without undue deflection. It must be stable, ventilated underneath and level.

Ensure that each board is effectively supported by its adjacent boards without localised movement. Replace any defective boards and insert noggings between the joists if necessary. Screw the boards to the joists using two screws per board at every joist.

Stage 2: Fix the tiles

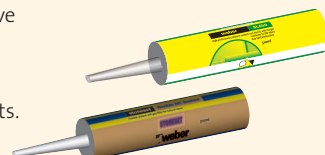
Fix the tiles into a solid bed of adhesive. For small tiles this bed should be 5 mm thick but for larger tiles it is necessary to increase the bed thickness. It may be necessary to back butter the tile to achieve this.

Leave joints at least 3 mm wide for grouting and make adequate provision for movement (especially around the perimeter and dividing large areas into bays).



Stage 3: Grout

Leave **weber.set rapid flex** to set for 2 to 3 hours, leave **weber.set WF21** for at least 5 hours (both at normal temperatures). Fill the joints between the tiles with **weber.joint wide flex**. Use **weber SL450** or **stoneset flexible NC sealant** for the perimeter movement joints.



Tile directly onto non tongued and grooved sheets (plywood)

If the floor consists of sheets that do not support each other, it is necessary to ensure that each edge is fully supported underneath. If the tiles are

small (not more than 400 x 400 mm) **weber.set rapid SPF** is adequately flexible.

For larger tiles use either **weber.set rapid flex** or **weber.set WF21**.

Products required

weber.set WF21 or **weber.set rapid flex**
weber.set rapid SPF (if tiles are not more than 400 x 400 mm)
weber.joint wide flex
weber SL450

Stage 1:

Assess and prepare the floor

Make sure that the floor will be capable of supporting the expected load without undue deflection. It must be stable, ventilated underneath and level.

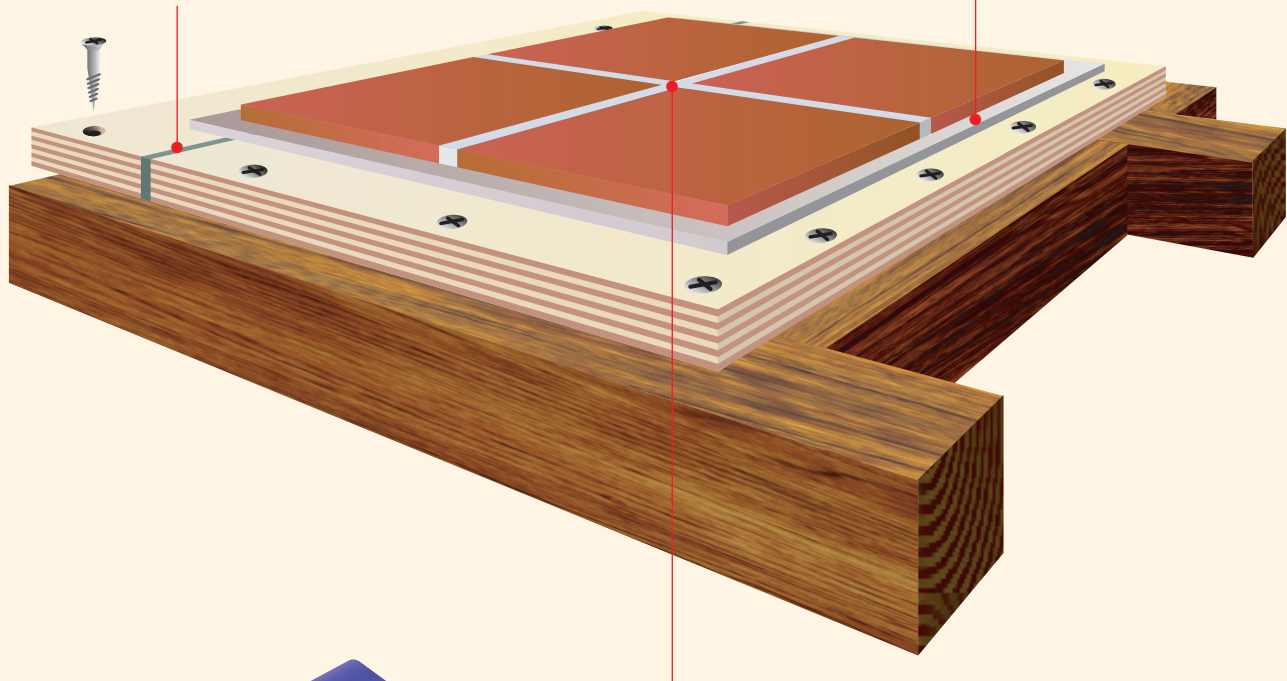
The sheets should be of exterior grade plywood and at least 18 mm thick. It may be necessary to increase the thickness if heavy loads are anticipated or if the joists are spaced more widely than normal. Replace any defective sheets and fit noggings between the joists beneath any unsupported sheet edges.

Screw the sheets to the joists/noggings every 200 – 300 mm, leaving slight gaps to allow for expansion. Fill the gaps with **weber SL450** flexible sealant or cover them with tape to prevent them being filled with tile adhesive when fixing the tiles.

Stage 2: Fix the tiles

Fix the tiles into a solid bed of adhesive. For small tiles this bed should be 5 mm thick but for larger tiles it is necessary to increase the bed thickness. It may be necessary to back butter the tile to achieve this.

Leave joints at least 3 mm wide for grouting and make adequate provision for movement (especially around the perimeter and dividing large areas into bays).



Stage 3: Grout

Leave **weber.set rapid flex** to set for 2 to 3 hours, leave **weber.set WF21** for at least 5 hours (both at normal temperatures). Fill the joints between the tiles with **weber.joint wide flex**. Use **weber SL450** or **stoneset flexible NC sealant** for the perimeter movement joints.

