Substrate diagnosis

The 8 key points to check

Good tile adhesion depends on a correct diagnosis and proper preparation of the substrate beforehand. The following description explains how this should be done. The substrate must be flat, hard, stable, well adhered, clean, dry and have normal absorption.

1 Flatness
How to check the flatness of the substrate

The substrate must be flat in order to avoid an unsightly appearance or defects that can affect the behaviour of the tiles after fixing them onto the floor (do not confuse flatness, or planeness, with horizontality: a substrate can be flat without being completely horizontal).

1 The flatness of the substrate should be checked with a 2 m straight edge mounted on 3 mm thick spacers. In the case of direct bonding of the tiles, any defects should not exceed ±3 mm (i.e. high points not touching and low points no more than 6 mm below) under the 2 m straight edge.

If the defects do not exceed 20% of the total surface over a maximum continuous surface of 1 m², they are considered to be localised. If they do exceed 20%, they are considered to be generalised.

2 Hardness
How to check the hardness of the substrate

The substrate must be both hard and resistant in order to avoid cracking or disbonding at a later stage.

2.1 Check the surface hardness by scratching it with a pointed tool in several places. The scratch must be superficial.

If the substrate is not hard enough, it must be removed until sound material is reached.

2.2 Plaster walls should be brushed with a stiff brush and then wiped to remove any loose material. Also check the in-depth hardness of existing screeds or plastered walls.

3 Stability
How to check the stability of the substrate

The substrate must be stable in order to avoid deterioration of the tiling at a later stage.

3.1 This check mainly concerns wooden floors laid on joists or battens, wooden panels and, more rarely, partitions.

3.2 The flooring strips or wooden panels must not move when they are stepped on. Partitions must not flex when pressed by hand.

If this is not the case, reinforce the floor with noggings between the joists and replace the boards. Brace unstable partitions.

4 Porosity
How to check the porosity of cement-based substrates

cement-based substrates must have normal absorption in order to avoid premature water loss from the cement-based adhesive and to ensure that the bond can develop correctly.

4.1 Pour a little water onto the substrate.

4.2 If the water is absorbed in less than 1 minute the substrate is considered as excessively porous and requires priming with **weber PR360**.

5 Adhesion
How to check the adhesion of the existing covering

The substrate must be cohesive and resistant in order to ensure the cement-based adhesive bonds properly.

5.1 Check the adhesion of existing tiles or rigid floor tiles by tapping with a hammer.

5.2 Any hollow sounding tiles or tiles with poor adhesion must be removed and replaced by similar tiles or the substrate reconstituted with the appropriate product (see selection guide).

5.3 To check the adhesion of existing paint carry out a cross-hatch test using a suitable knife or cutter. Emulsion paint is not suitable for tiling over.

5.4 Score the paint in small 2 x 2 mm squares over a total area of 10 x 10 cm.

The paint is considered suitable for tiling if 80% of the area of the small squares remain bonded. If not, the paint must be removed mechanically.

6 Cleanliness
How to clean the substrate

The substrate must be clean in order to ensure the adhesive bonds properly.

6.1 Eliminate any traces of plaster with a scraper. Carefully remove any dust and then apply **weber PR360** primer, if necessary.

6.2 If the existing floor covering has been removed, eliminate any traces of adhesive so that no film residues remain, only residual coloration of the substrate. Apply **weber PR360** primer.

6.3 If the existing covering is retained, remove any traces of varnish or wax by rubbing or sanding down. Wash existing paints and existing vinyl or ceramic tiles.

6.4 On concrete, remove any residues that may affect the adhesion, such as superficial free lime or traces of oil, using high pressure cleaning, sanding, abrasive cleaning, etc.

7 Humidity
How to check if the substrate is dry

The substrate must not leach moisture.

7 Plaster substrates must not have more than 5% residual moisture during application (depending on the ambient conditions, a plaster finish reaches this level of dryness from two weeks to several months). A minimum of 4 weeks drying time must be allowed prior to tiling.

Anhydrite screeds must not have more than 0.5% residual moisture before being covered.

Cement/sand renders and screeds must be left for 2 weeks and 3 weeks respectively prior to tiling unless special fixing methods are employed (see *Problems/Solutions*).

8 Priming

8.1 Gypsum plaster should normally be primed before applying a tile adhesive. If the adhesive is cement-based, it must be sealed with **weber PR360**.

Anhydrite screeds must be sealed with **weber PR360** before applying any cement-based product, levelling compound or tile adhesive.

For detailed instructions, please refer to the relevant product data sheet. For further information, please contact our Technical Helpline on 01525 722100.