

8. SCREEDS AND FLOOR COVERINGS

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8. SCREEDS AND FLOOR COVERINGS

GENERAL STRUCTURAL PRE-CONDITIONS

In general, site requirements according to BS 1264 - 4 apply. They include:

- The roof is already on, windows and doors have been installed and the walls have been plastered
- Wall openings, cavities, wall and ceiling breakthroughs have been created for connecting and installing the manifold, cabinet and connecting lengths
- The sub-floor is secure, swept clean and sufficiently flat and even to comply with BS 8204 class SR2 (a 3m straight edge on the floor leaves no gaps larger than 5mm).

In addition to the above requirements, the following should also be ensured:

- Electricity and water connections must be available for jointing and pressure testing
- A damp proof floor membrane must be installed



Please note that the REHAU membrane is NOT a damp proof membrane.

- A detailed drawing of the exact configuration of the heating circuits and required pipe lengths per circuit is available

- A current valid plan for expansion joints is available for any joints that may be required.

ScreeDs

- The time taken from laying the pipes, pressure testing and screeding should be minimised. This avoids any damage to the pipe from foot traffic. Please also refer to BS 1264 - 4
- The relevant manufacturer's guidelines for screeding should be followed



Ensure that the selected screed is suitable for underfloor heating.

- The recommended cement / sand screed height over the pipe is at least 50mm.

The following points should be clarified at the planning stage with the architect, structural engineer, heating engineer, screed layer and installer of the floor covering:

- Type and thickness of the screed and floor coverings
- Area of the screed, layout and shape of the expansion joints
- The number of joints at which the residual humidity is to be measured.

Anhydride (flow) Screeds

The following measures should be taken when using an anhydride (flow) screed:

- Only select an anhydride (flow) screed that has been approved for underfloor heating use by a screed manufacturer
- All membrane joints must overlap by at least 80mm or be taped to avoid leaks as specified by BS 1264 - 4
- Long-term operating temperatures must not exceed the limits specified by the screed manufacturer (usually 55°C, refer to BS 1264 - 4)
- For areas of high humidity (bathrooms, saunas, pool areas, etc), the use of an anhydride (flow) screed is limited (please refer to the screed manufacturer). In such cases the manufacturer's guidelines should be closely followed.

Screed Curing

Once the screed has been laid, foot traffic must be limited, in accordance with the screed manufacturer's guidelines. Usually, no foot traffic is permitted for the first three days and no site traffic for the first twelve days.

All anhydride (flow) and cement screeds must go through a heat cycle before any floor coverings can be laid. Please follow the screed manufacturer's guidelines and those set out by BS 1264 - 4. It is usual that the heat cycles are carried out:

- Cement screeds - after a minimum 21 days
- Anhydride (flow) screeds - after a minimum 7 days.

After the heat cycle, floor coverings must not be laid until the screed has fully cooled down. Please ensure that while cooling down the screed is not exposed to draughts.

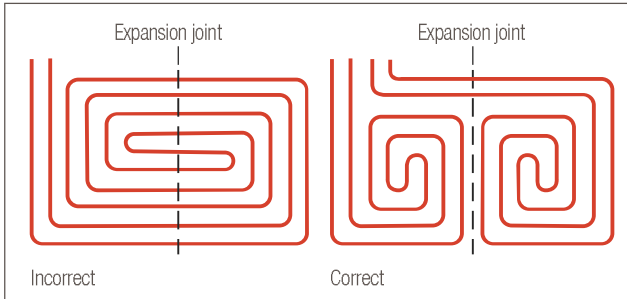


The underfloor heating system must NOT be used to accelerate the curing of the screed.

The company responsible for the final floor covering e.g. carpet, wood, vinyl must establish that the moisture content within the screed is suitable.

8. SCREEDS AND FLOOR COVERINGS

EXPANSION JOINTS



Layout

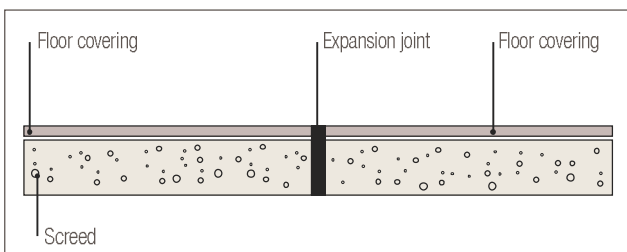
- BS 8204 guidelines and requirements should be adhered to
- One joint is always required between a heated screed slab and an unheated screed slab
- In addition to expansion joint around the perimeter created by the edge insulation, heated screeds require joints if one of the following apply:

1. The screed surface is in excess of 40m².
2. The side lengths are in excess of 8m.
3. The ratio A/B of both sides A and B is greater than half.
4. There are construction joints in the base.

- All planned joints must be marked on the architects drawing and then submitted to the underfloor heating installer / designer as part of their works schedule
- Manifold positions and underfloor heating circuits should be planned and positioned to avoid routing through expansion joints (see diagram on the left)
- Connecting lengths may cross through expansion joints, but must be protected using the REHAU expansion joint profile and the REHAU corrugated sleeve, extending to at least 25cm either side of the joint.



Incorrect expansion joints are the most common cause of damaged floor screeds.



Floor Coverings

Floor coverings when used in conjunction with expansions joints should be discussed and agreed at the planning stage with the company responsible for laying the final floor covering.

Expansion joints should continue through the screed slab and should be level with the upper most part of the final floor covering e.g. hard coverings (ceramic and wood) and soft coverings (i.e. plastic and textile). This will reduce the potential rippling and cracking of the floor covering.

8. SCREEDS AND FLOOR COVERINGS

FLOOR COVERINGS

When installing an underfloor heating system the final floor covering must be considered and calculated for resistance to thermal conductivity at the design stage. Specifiers should check that any materials used for the floor covering adhesives are suitable and can tolerate the floor surface temperatures.

A wide range of materials can be used from wood to stone. But the most efficient floor material is that which has a low thermal resistance and can easily conduct heat from the floor.

In principle any type of floor covering can be used as long as its thermal properties are incorporated within the underfloor heating design. However, it is recommended that the maximum R-value of the floor covering does not exceed 0.15m²K/W or a carpet tog value of 1.5.

Once the screed has cured and has undergone its first heat cycle, minor micro cracking may occur within the screed. This does NOT affect the performance of the screed. However, final floor coverings must NOT be laid until the floor has cooled down completely as joints and grouting within the floor covering could be damaged.

The table below shows the most common types of materials used for final floor coverings and their resistance to thermal conductivity.

Typical Floor Coverings

Type	Cross Section	Thickness		Thermal conductivity	Resistance to thermal conductivity	Thickness of the overall structure
		d	mm	λ W/mk	R_x m ² K/W	d_{WD} mm
Textile floor covering		10		0.07	max 0.15	10
Parquet adhesive compound		8 2		0.2 0.2	0.04 0.01 0.05	10
Plastic covering, e.g. Vinyl		5		0.23	0.022	5
Ceramic floor tiles thin bed of mortar		10 2		1.0 1.4	0.01 0.001 0.011	12
Ceramic floor tiles mortar bed		10 10		1.0 1.4	0.01 0.007 0.017	20
Natural or cast stone tiles: marble mortar bed		15 10		3.5 1.4	0.004 0.007 0.011	25