

SUPERIOR UNDERFLOOR HEATING & COOLING SYSTEMS

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FLOOR POINT LOADING-SCREEDED FLOORS

THEORETICAL CALCULATION TO DETERMINE THE EFFECT OF POINT LOADS THROUGH SCREEDS ON FLOOR INSULATION LAYER.

Any load put upon a screeded floor is initially carried by the floor finish and screed. This load-spreading layer, disperses the point load across the floor area. The load is also born by the underfloor heating insulation layer below the screed.

If the load upon the floor causes the insulation layer to compress too much the screed could crack due to insufficient support.

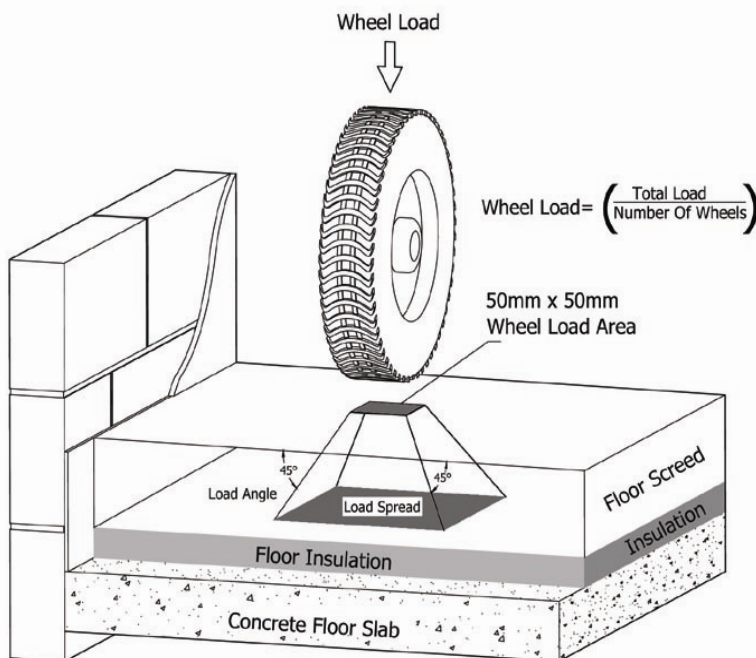
Insulation grades of varying strength are available to suit different load requirements. As well as the strength of the insulation, it is critical that it's compressibility (that is by how much the insulation can be compressed and return to its original size after repeated loads being applied) is taken into account.

Generally, the compressivity of standard floor insulation used in underfloor heating installations below floor screeds will easily withstand the floor load imposed upon it.

However in buildings where heavy equipment, traffic, access towers, cherry pickers etc are used, high point loads can cause a problem.

In these situations calculations by a structural engineer are required to determine the force transmitted through the insulation and the strength and type of insulation required for this.

To understand this, the theoretical diagram below details how the load impacts upon the floor.



64A THEORETICAL FLOOR POINT LOAD DIAGRAM

There are a number of variable factors that affect the load calculation.

- The point load.
- Static or dynamic load.
- The foot print area of the load.
- Depth of screed.
- Type of screed and its ability to disperse the load.
- The ° angle of the load through the floor.
- Depth of insulation.

It should be noted that safety margins in these theoretical calculations of 3-4 times are usually incorporated to reflect unknown data.

It is important to remember that it is chiefly the ability of the spreading layer to disperse the load that determines any eventual substrate compression and therefore the suitability of the chosen insulation grade.

Remember-screed must be fully cured to full strength before any loads can be applied to it.

Load and point load calculations are a structural engineering calculation and calculations of load should always be carried out by a qualified structural engineer.