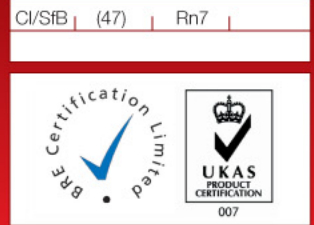


YBS Insulation

HIGH QUALITY PRODUCTS FOR THE BUILDING INDUSTRY

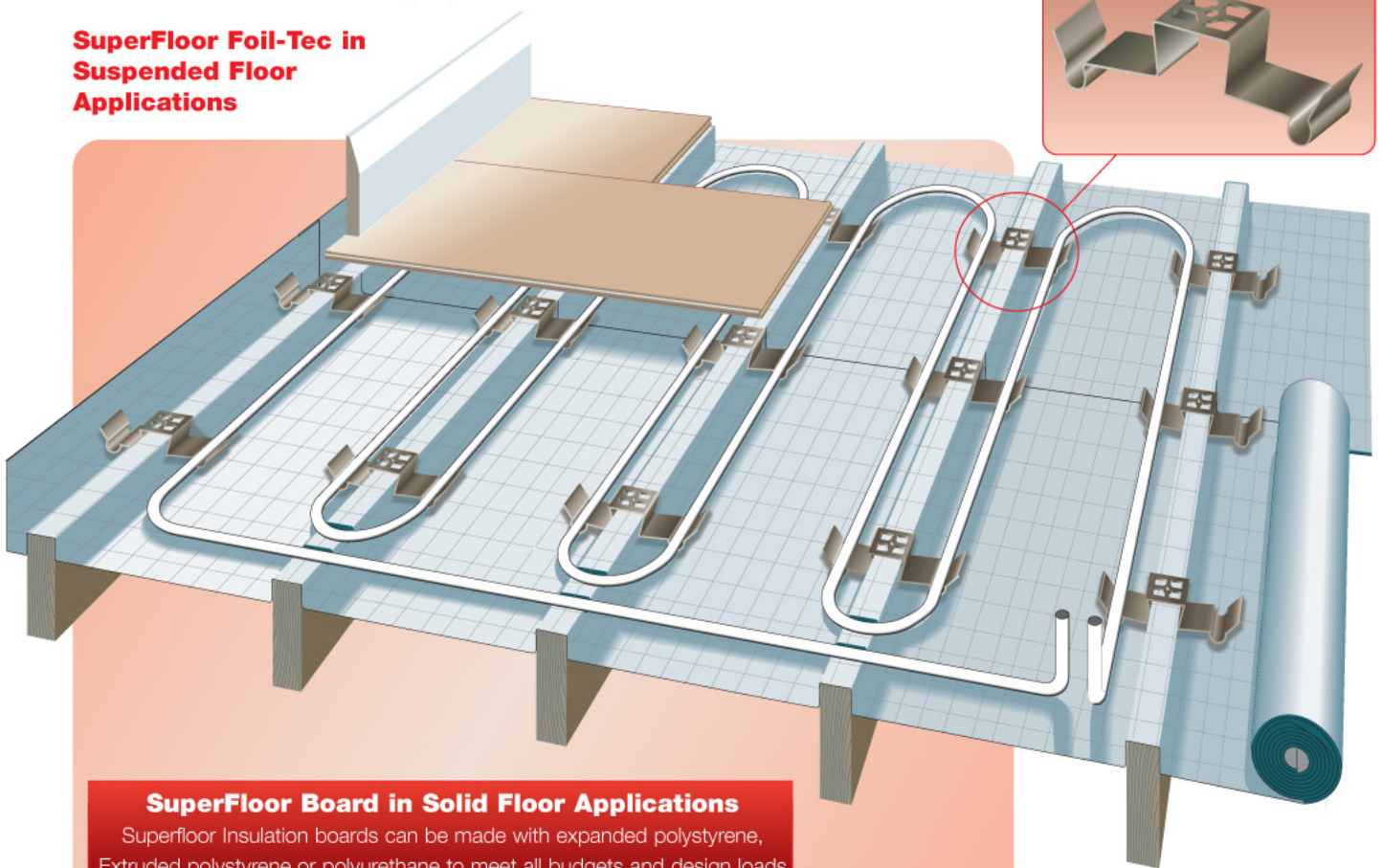


CERTIFICATE NUMBER 107/04
FULLY PATENTED

SuperFloor

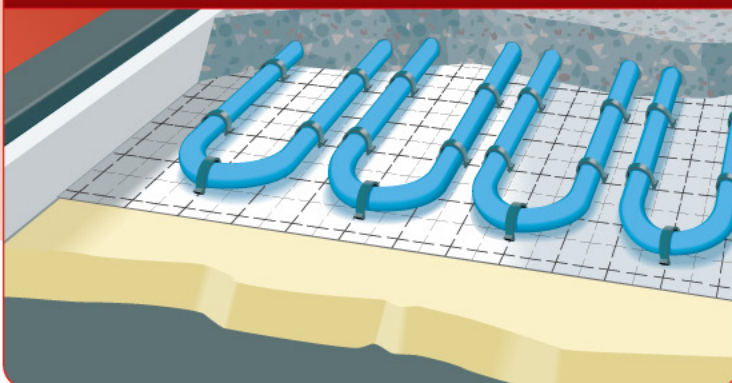
**High Performance Insulation
for Underfloor Heating Systems**

**SuperFloor Foil-Tec in
Suspended Floor
Applications**



SuperFloor Board in Solid Floor Applications

Superfloor Insulation boards can be made with expanded polystyrene, Extruded polystyrene or polyurethane to meet all budgets and design loads



High Reflective Performance

High Thermal Resistance

Meets Part L1, L2 and Part J

CFC/HCFC Free

Manufactured in UK and made to a Quality System
meeting the requirements of BS EN ISO 9002



SuperFloor

With demands on energy saving insulation, smaller rooms can be a result. These rooms are often made to feel even smaller with a radiator taking up a large part of precious wall space, reducing options of where to put furniture, bedding, chairs, settees etc.

Underfloor heating provides a very effective solution, freeing up walls, and giving the required conditions for human thermal comfort with the principal heating effect being evenly distributed at ground level and not above head level. Rather than the localised radiator or convector heating systems a vertical temperature gradient is produced; colder at foot level than at the head.

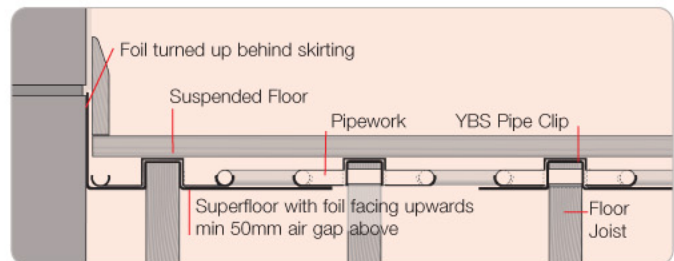
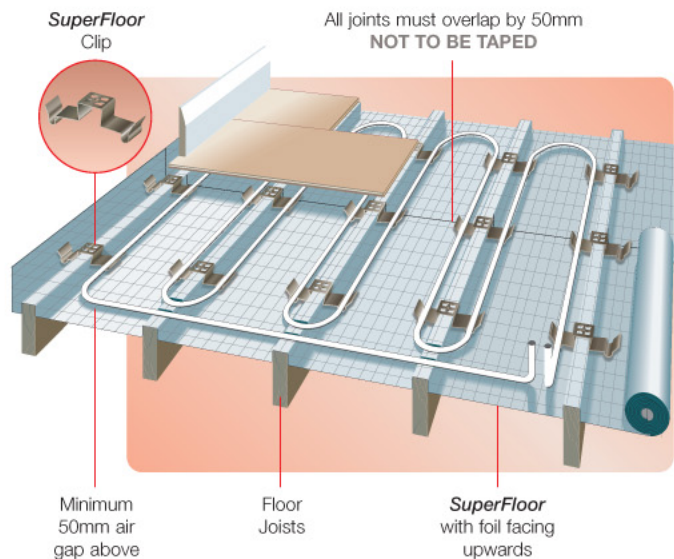
SuperFloor Foil-Tec Insulation

Foil-Tec Double for Suspended Ground Floors

- Foil-Tec Double is rolled out over the joists.
- Foil-Tec Double is then nailed in place through the YBS Pipe Clips to maintain required air gap - 5 per m².
- The horizontal joints are overlapped by 100mm and are left open to allow any moisture accumulation to dissipate.
- Foil-Tec Double must be brought up (behind the skirting board) to 75mm (following the fixing instructions for joist end fittings below).
- The decking is then fixed with screws (at 200mm centres) 37mm into the joists.

The heat loss in a floor is greater at the exposed perimeter edge of the floor. To calculate the U-Value, the exposed perimeter edge to area ratio needs to be worked out e.g. - a 100m² area, semi-detached house with 3 external walls of 10m each has a perimeter edge to area ratio of 0.3 (i.e. 30m ÷ 100m²=0.3) which, using Foil-Tec Double, gives a U-Value of 0.2 W/m²K.

NB: The calculation method used presumes the perimeter walls are insulated to 0.35 W/m²K.



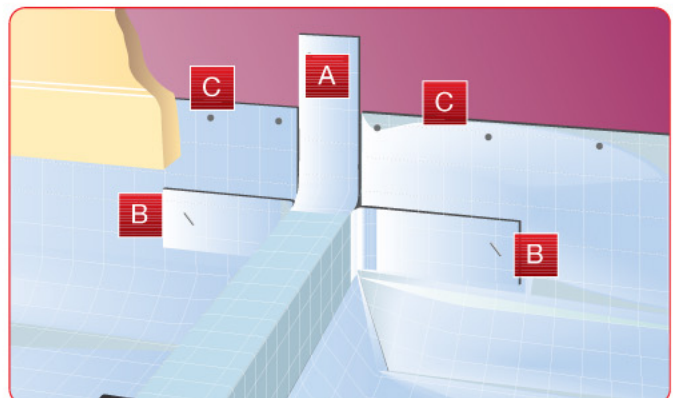
SuperFloor Foil-Tec Insulation

Foil-Tec Single for Upper Floors

- Superfloor is rolled out with the foil facing upwards, over the joists.
- The pipework is then clipped through into the insulation layer using the specifically designed YBS pipe clips to maintain required air gap - 5 per m².
- The horizontal joints are overlapped by 50mm and are left open to allow for any moisture accumulation to dissipate.
- Superfloor must then be brought up (behind the skirting board) to 75mm.
- The pipework is then laid starting from the manifold and then into the required room (see drawing). The pipe is then laid uniformly to approximately 200mm centres, notching where necessary.
- The decking is then fixed with screws (at 200mm centres) into battens/joists providing 25mm penetration into the 50mm wide battens/joists.

Joist End Fitting Recommendations

Make 2 x 75-100mm cuts in Foil-Tec - same width as joist. Then make one further cut, same width again, on each side. Fold up flap (A), fold back flaps (B) and pull Foil-tec (C) up to meet wall. Fix to wall and fit skirting board over, concealing Foil-Tec.



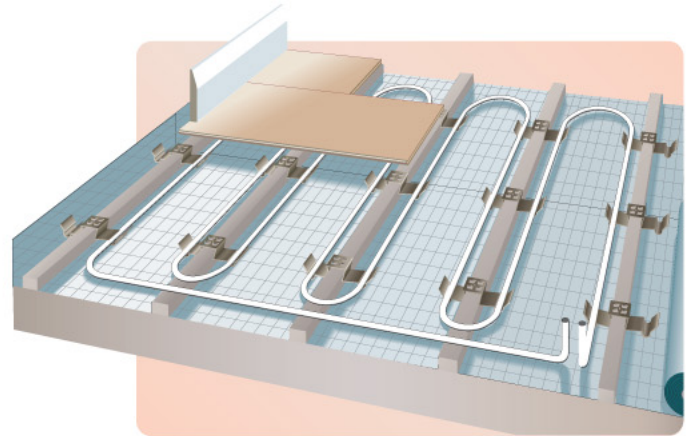
SuperFloor

SuperFloor Foil-Tec Insulation

Foil-Tec Single for Solid Ground Floors

- Superfloor Single is rolled out onto concrete floor with shiny side facing upwards - leaving enough edge overlap for 75mm lip to be left behind skirting.
- Timber battens/joists (min 50mm x 50mm) are then laid on top of the Superfloor single, spaced at centres to suit the particular flooring.
- The decking is then fixed with screws (at 200mm centres) into battens/joists providing 25mm penetration into the 50mm wide battens/joists.

Superfloor Foil-Tec for solid ground floors has a thermal output of 85W/m² as tested by BSRIA.



FLOORING U-VALUES

Perimeter Length to Area Ratio	U-Value W/m ² K
1:1	0.46
0:9	0.45
0:8	0.44
0:7	0.42
0:6	0.4
0:5	0.38
0:4	0.35
0:3	0.3
0:2	0.26
0:1	0.17

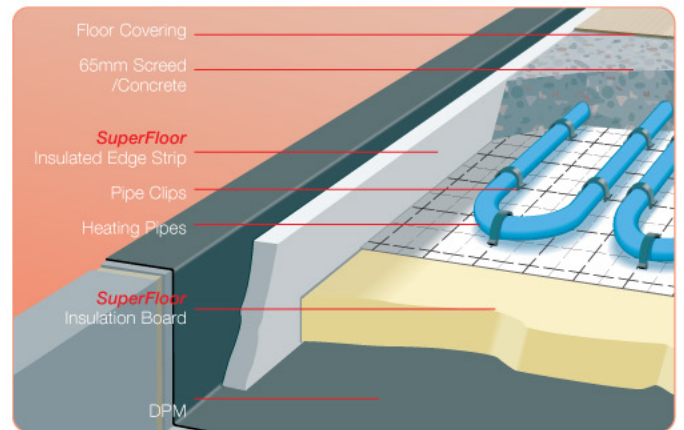
SuperFloor Board

SuperFloor Board for Solid Ground Floors

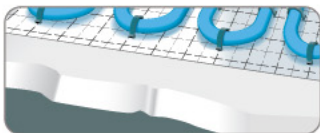
Floor Applications

The screeded system comprises:

- The Superfloor edge strip - to be laid against all external and internal walls, providing edge insulation and an expansion zone for the screed.
- Superfloor insulation board is laid on top of the concrete slab. (YBS provide a wide range of thicknesses and types of insulation to ensure the required insulating properties are achieved).
- Using the grid pattern - lay down the heating pipes as planned, using the specially designed YBS fixing clips to fix position.
- The screed is standard with no special additives.
- Most situations will require 65-85mm thickness of screed.
- Reinforcing mesh can be used where required.
- Expansion profiles are to be used where pipework passes through an expansion.

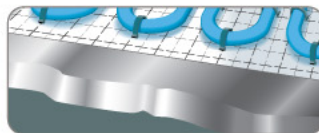


Superfloor Insulation is available with Expanded Polystyrene, Extruded Polystyrene or Polyurethane



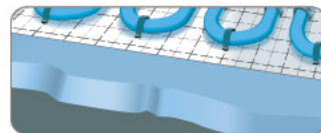
EXPANDED POLYSTYRENE

If budget is tight then standard Expanded Polystyrene is a very cost effective answer. It's thermal conductivity for EPS 70 is 0.038W/Mk and EPS 100 is 0.036W/Mk.



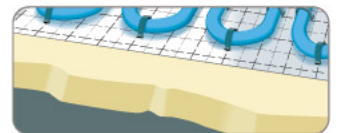
EPS SILVER

A cost effective interim board, is EPS Silver with an improved thermal conductivity (similar to Extruded Polystyrene) 0.030W/Mk.



EXTRUDED POLYSTYRENE

Extruded Polystyrene can be employed in areas where the design load is critical - often in factory and commercial situations. Its thermal conductivity is 0.029W/Mk.



POLYURETHANE

If floor height is absolutely critical then the most effective insulation, polyurethane, twice as efficient as Polystyrene, offers the best solution. Its thermal conductivity is 0.023W/Mk.

'U' Value Calculation

U-Value of 0.25

P/A Ratio	1.00	0.90	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25
	Thickness Required – Millimeters													
EPS 70	110	110	105	105	100	100	95	95	85	85	80	75	65	60
EPS 100														
EPS Silver	90	85	85	80	80	80	75	75	70	65	65	60	50	40
XPS	85	85	80	80	75	75	75	70	65	65	60	55	50	40
PUR	70	65	65	65	60	60	60	55	55	50	50	45	40	30

U-Value of 0.22

P/A Ratio	1.00	0.90	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25
	Thickness Required – Millimeters													
EPS 70	130	130	125	120	120	120	115	115	110	105	100	90	80	70
EPS 100														
EPS Silver	105	100	100	95	95	95	90	90	85	80	75	70	65	55
XPS	100	100	95	95	95	90	90	85	80	80	75	70	65	55
PUR	80	80	75	75	75	70	70	70	65	65	60	55	50	45

Technical Specifications

SUPERFLOOR FOIL-TEC

Thermal Resistance	1.327 m ² K/W (inc 50mm air space)	
Fire Properties	Foil face meets Class 1	
Environmental	CFC & HCFC Free	
Dimensions	Thickness	< 1mm
	Width	1000/1500 mm
	Length	50m roll

HEAT OUTPUT

Solid Floor (using Foil-Tec Single)	Total Measured Output = 85W/m ²
Suspended Floor (using Foil-Tec Double)	Total Measured Output - 71.2W/m ²

SUPERFLOOR BOARD

Grid Pattern	100mm ² main squares	
Size	2.4m x 1.2m	
Insulation Boards		
EPS 70	Conductivity	0.038 W/Mk
	Compressive Strength	70 KPa
EPS100	Conductivity	0.036 W/Mk
	Compressive Strength	100KPa
EPS Silver	Conductivity	0.030 W/Mk
	Compressive Strength	70 KPa
XPS	Conductivity	0.029 W/Mk
	Compressive Strength	200, 350, 500, 700 KPa
PUR	Conductivity	0.023 W/Mk
	Compressive Strength	140 KPa

TECHNICAL REFERENCES

- Building Regulations 2000 Approved Documents L1 & L2.
- Building Standards Part J Sept. 2001
- BRE publication 'Thermal Insulation: Avoiding the risks'.
- BRE Paper IP12/94 'Assessing the Condensation Risk and Heat Loss at Thermal Bridges Around Openings'.
- BS EN ISO 6946 : 1997 Building components and building elements - Thermal resistance and thermal transmittance - Calculation method.
- British Standard References: BS 5250 Control of Condensation in Buildings.

TESTED

- Emissivity measured by National Physical Laboratory.
- Thermal resistance measured by Independent Test Laboratories.
- Thermal Output tested by BSRIA.