Ravago
BUILDING SOLUTIONS

RAVATHERM™ XPS X

Insulating Domestic and Non-domestic floors with Ravatherm XPS X

Insulating Domestic and Non-domestic floors with Ravatherm XPS X Version 5 20260209
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BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 21/5866

MADE IN BRITAIN®
All Ravatherm XPS X products are Made in Britain

Ravatherm XPS X insulation is used for ground bearing and suspended floors in both new-build and renovation projects. The Ravatherm XPS X range of extruded polystyrene (XPS) boards have declared thermal conductivity values ranging between 0.030 and 0.031 W/m.K and is rated 300-700 kPa for compressive strength (@10% deformation according to BS EN 826:2013) and 130-250 kPa for compressive creep (2% deformation after 50 years according to BS EN 1606:2013) depending on product grade.

About Ravatherm XPS X

Ravatherm XPS X is used in flooring applications and has low water absorption (<0.7% according to BS EN 12087:2013). It is made using extrusion technology which gives it a uniform structure of closed cells and a smooth skin.
Ravatherm XPS X insulation is available in a range of compressive strengths (300-700 kPa @ 10% deformation according to BS EN 826:2013) to meet the loading requirements of individual projects. Ravatherm XPS X insulation can be installed under or over the slab in ground bearing concrete floors and is used with suspended beam and block and timber floors.

The product is made using carbon dioxide as the main blowing agent and has an Ozone Depletion Potential (ODP) of zero.

Ravatherm XPS X can be cut using hand tools.

Fire

Ravatherm XPS X is classified Euroclass E in terms of reaction to fire according to BS EN 13501-1:2018.

Ravatherm XPS X contains a flame retardant additive to inhibit accidental ignition from a small fire source. However, Ravatherm XPS X is combustible, and if exposed to fire, it may burn rapidly. During shipment, storage, and installation, Ravatherm XPS X products should not be exposed to flames or other ignition sources.

Temperature

Polystyrene products will melt when brought into direct contact with high temperature heat sources: for Ravatherm XPS X boards, the recommended maximum continuous working temperature is 75°C.

Water/moisture

Ravatherm XPS X has:

- Low water absorption (<0.7% according to BS EN 12087:2013)
- Water vapour diffusion resistance factor μ (tabulated value) of 150 (according to BS EN 12086:2013)
- Resistant to repeated freeze/thaw cycles (1% water pickup after freeze thaw according to BS EN 12091:2013).

Chemical

Ravatherm XPS X boards are compatible with many construction materials, such as: lime, cement, plaster, anhydrous gypsum, solvent-free bituminous compounds, water-based wood preservatives, as well as alcohols, acids and alkalis.

Certain organic materials such as solvent-based wood preservatives, coal tar and derivatives (creosote), paint thinners and common solvents (e.g. acetone, ethyl acetate, petrol, toluene and white spirit) will attack Ravatherm XPS X resulting in softening, shrinkage and possible dissolution, with a consequent loss of performance.

The use of solvent-free adhesives is advised. Compatibility with Ravatherm XPS X should be checked with the adhesive suppliers.

Sunlight

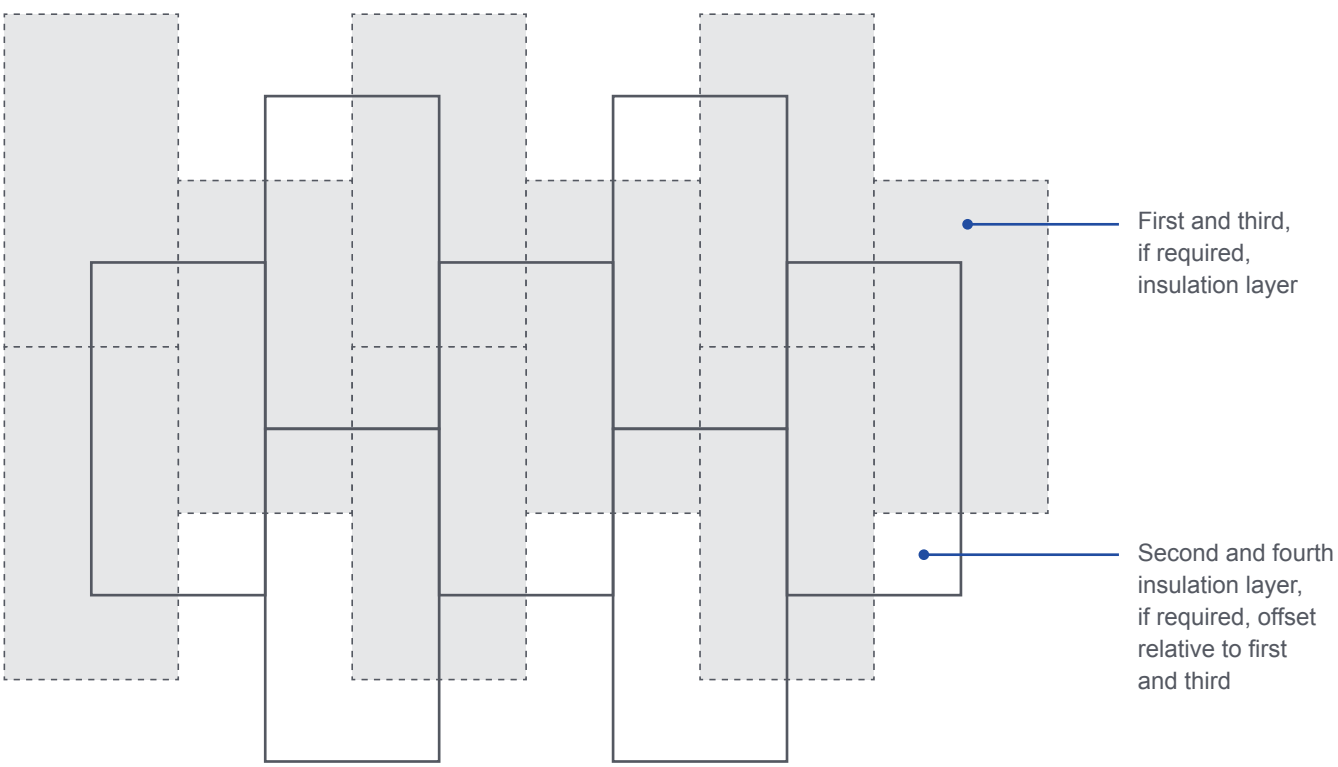
Protect Ravatherm XPS X from prolonged exposure to sunlight to prevent degradation of the surface of the board.

Installation

Ravatherm XPS X thermal insulation in the floor slab beneath the building should be laid only on precisely prepared substrate. The insulation boards should be laid with joints offset in a brick bond pattern, and staggered between layers directly onto a level smooth compacted sand bed or a thin blinding layer of concrete. The boards can be cut to size with a hot wire cutter, knife or small-tooth saw. Cut surfaces should allow the boards to be fitted tightly together.

Ravatherm XPS X is laid directly onto prepared ground with a DPM positioned on top of the insulation rather than below. In doing so, this acts not only as a damp proof membrane, but also a separation layer to stop seepage of concrete through any insulation joints.

When the DPM is positioned below the insulation, an additional separating membrane should always be placed over the insulation & below the concrete/screed, this is to stop seepage though any insulation joints. If a gas membrane has been specified this should be positioned under the insulation.



Thermal performance

Table 1 gives the thicknesses of Ravatherm XPS X 300 SB required to achieve a range of U-values for ground floors.

The insulation boards are available in single thicknesses of: 30mm, 40mm, 50mm, 60mm, 75mm, 80mm, 100mm, 120mm, 125mm, 140mm, 150mm and 200mm.

In applications where a higher compressive strength is required, Ravatherm XPS X 500 SL and Ravatherm XPS X 700 SL are available in thicknesses of 50mm, 75mm and 100mm.

Multiples can be used in order to achieve the desired total thickness.

Table 1

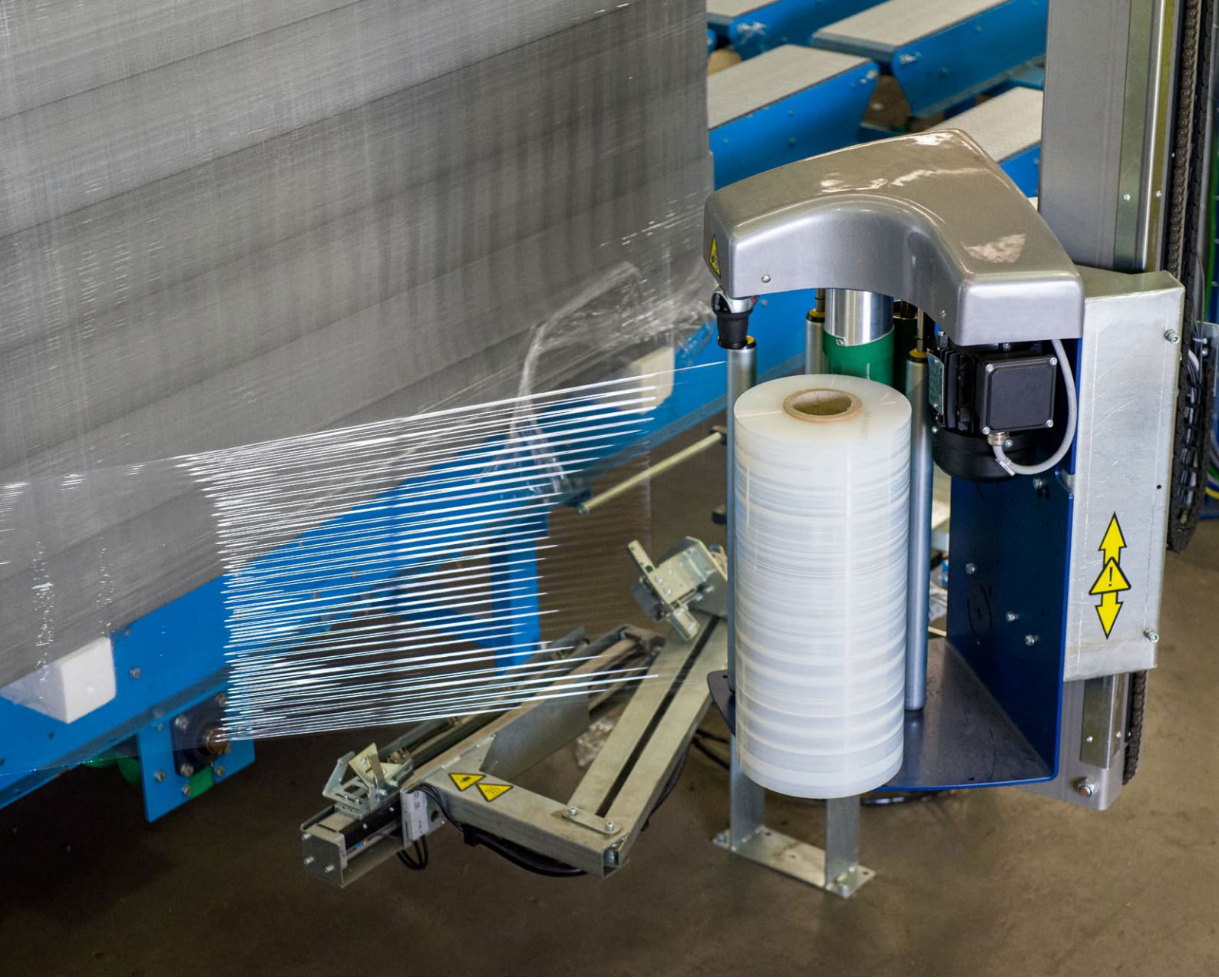
Thickness of Ravatherm XPS X 300 SB (mm)

Solid Ground Bearing Floor Ravatherm XPS X 300 SB (lambda 0.030 W/m.K <120mm 0.031 W/m.K >120mm) (earth conductivity 2.0 W/m.K)										
U Value	P/A	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.12		120mm	175mm	200mm	200mm	200mm	220mm	220mm	220mm	220mm
0.15		60mm	125mm	140mm	150mm	160mm	160mm	160mm	170mm	170mm
0.18		40mm	90mm	110mm	120mm	125mm	125mm	125mm	140mm	140mm
0.2		40mm	75mm	90mm	100mm	105mm	130mm	115mm	125mm	125mm
0.22		40mm	60mm	75mm	90mm	100mm	100mm	100mm	120mm	120mm
0.25		40mm	50mm	70mm	70mm	80mm	90mm	90mm	90mm	90mm
no insulation		0.26 W/m²K	0.43 W/m²K	0.56 W/m²K	0.67 W/m²K	0.76 W/m²K	0.84 W/m²K	0.91 W/m²K	0.97 W/m²K	1.02 W/m²K

65mm screed

Suspended Beam & Block Floor Ravatherm XPS X 300 SB (lambda 0.030 W/m.K <120mm 0.031 W/m.K >120mm)										
U Value	P/A	0.1	0.02	0.03	0.4	0.5	0.6	0.7	0.8	0.9
0.12		120mm	175mm	200mm	200mm	200mm	200mm	220mm	220mm	220mm
0.15		75mm	120mm	140mm	150mm	160mm	160mm	160mm	160mm	160mm
0.18		50mm	90mm	110mm	120mm	125mm	125mm	125mm	130mm	130mm
0.2		30mm	75mm	90mm	100mm	105mm	105mm	110mm	110mm	115mm
0.22		30mm	60mm	80mm	90mm	90mm	100mm	100mm	100mm	100mm
no insulation		0.25 W/m²K	0.40 W/m²K	0.51 W/m²K	0.59 W/m²K	0.66 W/m²K	0.72 W/m²K	0.78 W/m²K	0.82 W/m²K	0.86 W/m²K

65mm screed; block 75 x 440mm. (0.51 W/m.K); beam 60mm. (1.13 W/m.K) Deck thermal resistance 2 m^2K/W



Disclaimer

Recommendations about the methods, use of materials and construction details are given as a service to designers and contractors. These are based on the experience of Ravago with the use of Ravatherm XPS X.

Any drawings are meant only to illustrate various possible applications and should not be taken as a basis for design.

Since Ravago Building Solutions is a materials supplier and exercises no control over the installation Ravatherm XPS X products, no responsibility is accepted for such drawings and recommendations.

In particular, no responsibility is accepted by Ravago for the systems in which Ravatherm XPS X products are used or the method of application by which they are installed. The legal obligations of Ravago in respect of any sale of Ravatherm XPS X products shall be determined solely by the terms of the respective sales contract.

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