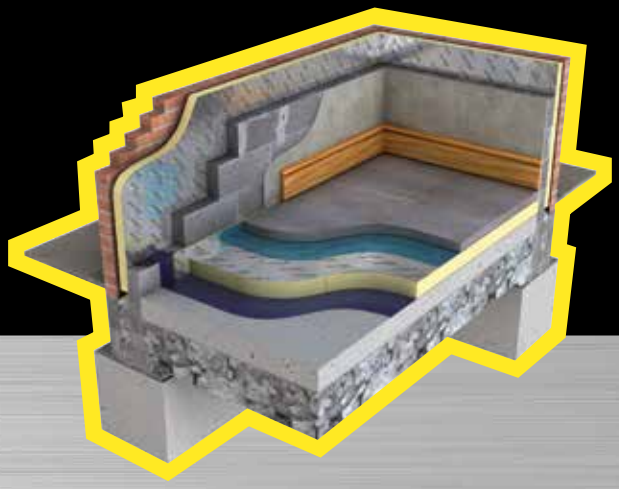
RECTICEL insulation

FLOORS.

Specification Guide



INSULATION **EXCELLENCE**

Floors
CONTENTS

RECTICEL
RAISING THE STANDARDS

Driven by a culture of innovation, technical competence and flair, Recticel Insulation is dedicated to raising the quality standards of insulation products in the UK.

Recticel Insulation, based at its state-of-the-art facility in Stoke-on-Trent, is part of the International Recticel Group, the European market leader in polyurethane products and one of the world's largest producers of PIR insulation products.

At Recticel Insulation, quality is at the heart of everything we do. Striving for excellence in quality across the board, Recticel Insulation will raise product standards and fulfil customers' requirements by providing unparalleled PIR insulation and fantastic service. Our mission is to demonstrate that, on all levels, Recticel Insulation will continue to deliver perfection in every way.

In addition, Recticel's range of high performance PIR insulation materials benefit the environment as they help to reduce energy consumption, which contributes to lowering carbon dioxide emissions and reducing global warming.

Recticel's products are designed and manufactured to result in the lowest environmental impact. Recticel's Stoke-on-Trent site has attained ISO 14001 certification for its environmental management system.

Through using Recticel insulation you are guaranteed thermal conductivities as low as 0.022 W/mK, zero ozone depletion potential across the entire range, low global warming potential, and the reassurance of using a product that will repay the energy used in its manufacture many times over during its lifetime in use.

Visit **recticelinsulation.co.uk** to view detailed product guides, including U-value calculations, or contact **Recticel Technical Services Department** on **0800 0854079** or our **Sales Department** on **01782 590480** to discuss your requirements.

'Our aim is to make an essential difference in the daily comfort of everyone'

RECTICEL PIR
THE ADVANTAGES

Not every brand of PIR thermal insulation is as easy to install.

Because we manufacture our boards to the most perfecting standards, installation is significantly easier. Precision cut straight edges, greater consistency in board size, high Compressive Strength and a super-flat surface finish makes installations quicker, easier and more cost effective. So for a trouble-free, perfect build, use Recticel PIR insulation.

OPTIMUM STABILITY
Combined with correct facing, the raw material blends of our board provides stability in a variety of conditions – high/low temperatures, humidity, moisture, sunlight, UV. These blends have been perfected through vigorous testing, for optimal performance across roof, wall and floor insulation.

PRECISION FLATNESS
Our material blend, manufacturing parameters and processes at our facility in Stoke-on-Trent have resulted in a board that boasts perfect flatness for a precision finish without imperfections.

CUTTING TOLERANCES
Our cutting tolerance goes far beyond the industry standard and other brands, meaning every Recticel board that leaves our factory is consistent in length and width.

STRAIGHTEST EDGES
There's nothing straighter than our PIR board, ensuring there are no gaps during installation and risks such as thermal bridging are minimised.

STRUCTURALLY BETTER
Our manufacturing process produces a homogeneous consistent volume of PIR foam to improve the board's structural integrity, meaning that structural weaknesses are greatly reduced.

COMPRESSIVE STRENGTH
Manufactured to have a greater compressive strength than most, important for a more practical end result for applications that are under load.

PERFECT APPEARANCE
Our PIR insulation board is the best-presented and packaged product on the market, ensuring you're confident in its specification.

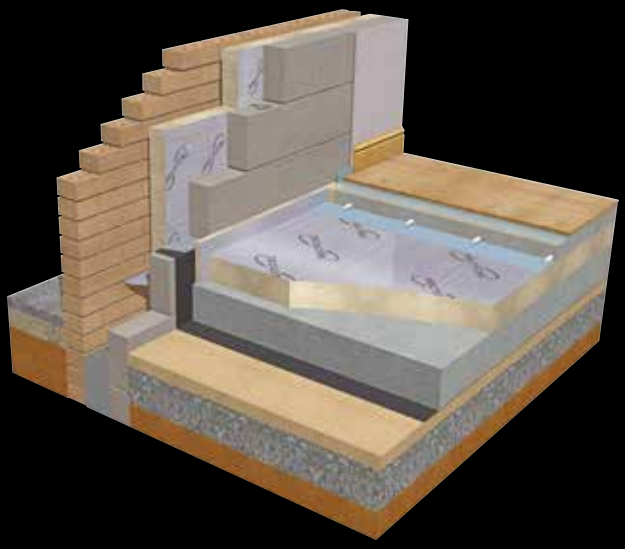
GLOBAL PIONEER
As part of the International Recticel Group, Recticel Insulation is one of the world's largest producers of PIR products. Excellence is ensured through continued investment and research into advancing insulation production processes.

RECTICEL
HIGH PERFORMANCE IN FLOORS

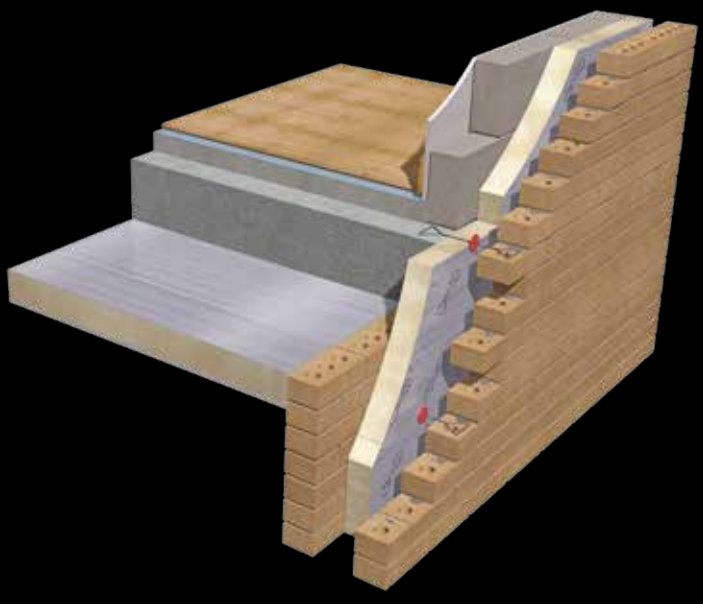
When it comes to specifying ground floor insulation, it is important to select a product that not only offers the correct thermal properties, but also suitable mechanical properties. Whether it's for use in domestic or commercial buildings, Eurothane GP offers the low thermal conductivity and high compressive strength required for a range of floor constructions. And as underfloor heating remains a popular feature of modern flooring, with its excellent pipe clip retention, Eurothane GP is the ideal choice.

It's not just in the ground where Recticel's PIR insulation excels. For lining the soffit of an intermediate floor above a basement or car park, Eurothane FP provides the same thermal performance coupled with a Class 0 spread of flame rating.

EUROTHANE® GP



EUROTHANE® FP



EUROTHANE® GP

EUROTHANE GP is a high performance PIR insulation suitable for common ground floor constructions.

Product Overview

- High performance PIR insulation
- 0.022 W/mK lambda
- High compressive strength
- Manufactured using a blowing agent with zero ODP (Ozone Depletion Potential) and low GWP (Global Warming Potential)

- Lightweight Board
- Easy Handling and Installation
- ISO 9001 and ISO 14001
- Moisture Tolerant

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 02/3905

EUROTHANE GP Thermal Resistances

Product Code	Thickness (mm)	R-value (m^2K/W)
64681/001	25	1.10
64681/002	30	1.35
64681/004	40	1.80
64681/005	50	2.25
64681/006	60	2.70
64681/008	70	3.15
64681/058	75	3.40
64681/009	80	3.60
64681/010	90	4.05
64681/011	100	4.50
64681/089	110	5.00
64681/068	120	5.45
64681/086	130	5.90
64681/080	140	6.35
64681/091	150	6.80
64681/104	160	7.25

Product Details

Thermal Conductivity	0.022 W/mK
Compressive Strength	Exceeds 140kPa at yield
Moisture Vapour Resistance	Installed value of 100 MNs/g
Specific Heat Capacity	1.4kJ/kgK
Fire Performance	Class 1 BS 476 (Part 7)
Dimensions	2400mm (l) x 1200mm (w)
Facing	Low emissivity multilayer coated aluminium on both sides

Introduction

EUROTHANE GP is a high performance PIR insulation suitable for ground floor applications. Lightweight and easy to cut, handle and install, the board is available in a variety of thicknesses to suit precise specifications and to ensure that thermal regulations are met or even exceeded.

With EUROTHANE GP, you are specifying a board that:

- Has a low thermal conductivity (0.022 W/mK) providing an excellent thermal performance
- Is available in a range of thicknesses from 25mm – 160mm and in a board size of 2400mm x 1200mm
- Will not degrade or deteriorate if exposed to moisture, therefore maintaining its thermal performance

Specification Clause

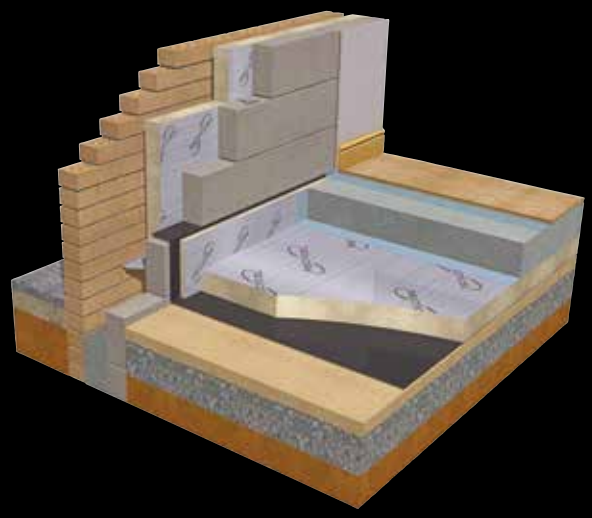
The insulation shall be Recticel EUROTHANE GP ___mm thick for use in flooring applications, manufactured in accordance with an ISO 9001 quality management system and an ISO 14001 environmental management system. It should comprise a rigid polyisocyanurate (PIR) core faced on both sides with a gas tight multilayer composite aluminium foil facing. The product should be manufactured using a blowing agent with zero ODP and low GWP, and be CE marked in accordance with BS EN 13165. EUROTHANE GP should be installed in accordance with Recticel's recommendations.

THERMAL PERFORMANCE

Typical U-values (W/m²K) achieved in common floor constructions

Insulation Below Concrete Slab

- Concrete slab (with 25mm insulated upstand to reduce thermal bridging)
- 500-gauge polythene VCL
- Recticel Eurothane GP, thickness as indicated
- 1200-gauge polythene DPM
- Sub-floor make up



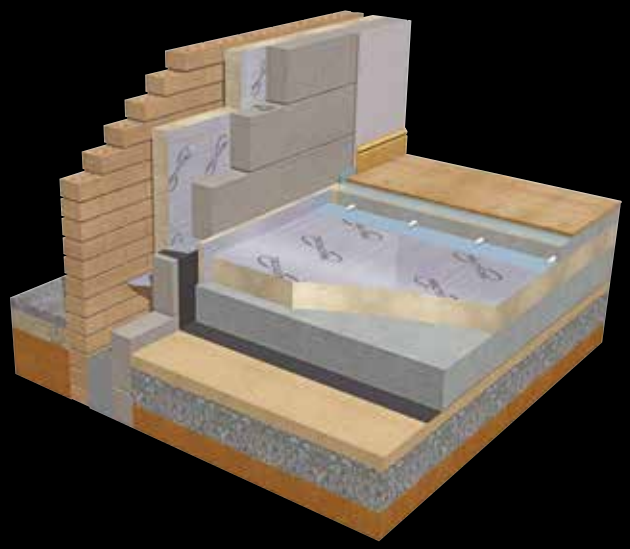
P/A	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
25 (mm)	0.19	0.29	0.35	0.40	0.43	0.45	0.47	0.48	0.50	0.52
30 (mm)	0.18	0.27	0.32	0.36	0.39	0.40	0.42	0.44	0.45	0.46
40 (mm)	0.16	0.24	0.28	0.31	0.33	0.34	0.35	0.36	0.37	0.38
50 (mm)	0.15	0.21	0.25	0.27	0.28	0.29	0.30	0.31	0.32	0.33
60 (mm)	0.14	0.19	0.22	0.24	0.25	0.26	0.27	0.27	0.28	0.28
70 (mm)	0.13	0.18	0.20	0.21	0.23	0.23	0.24	0.24	0.25	0.25
75 (mm)	0.13	0.17	0.19	0.20	0.21	0.22	0.23	0.23	0.23	0.24
80 (mm)	0.12	0.16	0.18	0.20	0.21	0.21	0.22	0.22	0.22	0.23
90 (mm)	0.12	0.15	0.17	0.18	0.19	0.19	0.20	0.20	0.20	0.21
100 (mm)	0.11	0.14	0.16	0.17	0.17	0.18	0.18	0.18	0.18	0.19
110 (mm)	0.10	0.13	0.15	0.15	0.16	0.16	0.17	0.17	0.17	0.17
120 (mm)	0.10	0.12	0.14	0.14	0.15	0.15	0.15	0.16	0.16	0.16
130 (mm)	0.10	0.12	0.13	0.14	0.14	0.14	0.14	0.15	0.15	0.15
140 (mm)	0.09	0.11	0.12	0.13	0.13	0.13	0.14	0.14	0.14	0.14
150 (mm)	0.09	0.11	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13
80+80 (mm)	0.08	0.10	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12
75+100 (mm)	0.08	0.09	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11
90+100 (mm)	0.07	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.11
100+100 (mm)	0.07	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10

THERMAL PERFORMANCE

Typical U-values (W/m²K) achieved in common floor constructions

Insulation Over Slab, Below Screed

- 75mm screed (with 25mm insulated upstand to reduce thermal bridging)
- 500-gauge polythene VCL
- Recticel Eurothane GP, thickness as indicated
- Concrete slab
- 1200-gauge polythene DPM
- Sub-floor make up

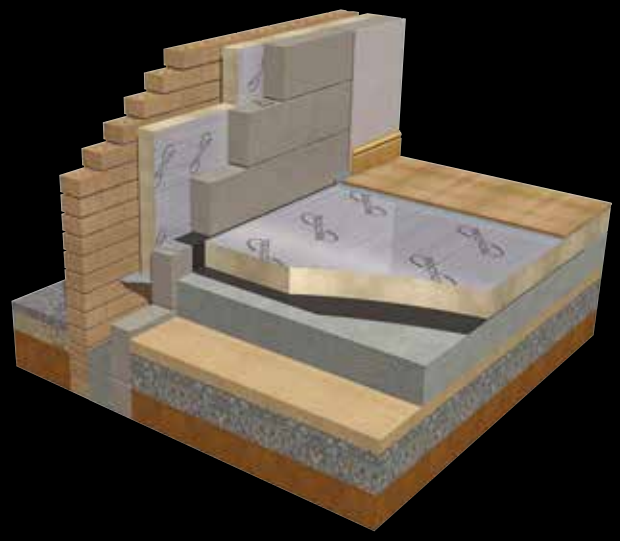


P/A	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
25 (mm)	0.19	0.28	0.34	0.39	0.42	0.44	0.46	0.48	0.49	0.50
30 (mm)	0.18	0.26	0.32	0.35	0.38	0.39	0.41	0.43	0.44	0.45
40 (mm)	0.16	0.23	0.27	0.30	0.32	0.33	0.35	0.36	0.37	0.37
50 (mm)	0.15	0.21	0.24	0.26	0.28	0.29	0.30	0.31	0.31	0.32
60 (mm)	0.14	0.19	0.22	0.23	0.25	0.26	0.26	0.27	0.28	0.28
70 (mm)	0.13	0.17	0.20	0.21	0.22	0.23	0.24	0.24	0.24	0.25
75 (mm)	0.13	0.17	0.19	0.20	0.21	0.22	0.22	0.23	0.23	0.23
80 (mm)	0.12	0.16	0.18	0.19	0.20	0.21	0.21	0.22	0.22	0.22
90 (mm)	0.12	0.15	0.17	0.18	0.19	0.19	0.20	0.20	0.20	0.20
100 (mm)	0.11	0.14	0.16	0.16	0.17	0.18	0.18	0.18	0.18	0.19
110 (mm)	0.10	0.13	0.14	0.15	0.16	0.16	0.16	0.17	0.17	0.17
120 (mm)	0.10	0.12	0.14	0.14	0.15	0.15	0.15	0.16	0.16	0.16
130 (mm)	0.09	0.12	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15
140 (mm)	0.09	0.11	0.12	0.13	0.13	0.13	0.13	0.14	0.14	0.14
150 (mm)	0.09	0.11	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.13
80+80 (mm)	0.08	0.10	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12
75+100 (mm)	0.08	0.09	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11
90+100 (mm)	0.07	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.11
100+100 (mm)	0.07	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10

Insulation Over Slab, Below Floating Timber Floor

- 18mm chipboard
- 500-gauge polythene VCL
- Recticel EUROTHANE GP, thickness as indicated
- Concrete slab (with 25mm insulated upstand to reduce thermal bridging)
- 1200-gauge polythene DPM
- Sub-floor make up

In this form of construction, a single insulation layer only is recommended.



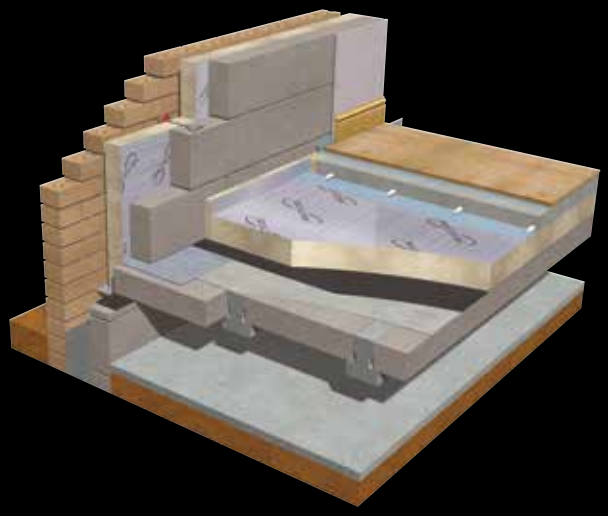
P/A	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
25 (mm)	0.18	0.28	0.34	0.38	0.41	0.43	0.45	0.46	0.48	0.49
30 (mm)	0.17	0.26	0.31	0.34	0.37	0.38	0.40	0.42	0.43	0.44
40 (mm)	0.16	0.23	0.27	0.29	0.31	0.33	0.34	0.35	0.36	0.36
50 (mm)	0.15	0.21	0.24	0.26	0.27	0.29	0.30	0.30	0.31	0.31
60 (mm)	0.14	0.19	0.21	0.23	0.24	0.25	0.26	0.27	0.27	0.27
70 (mm)	0.13	0.17	0.19	0.21	0.22	0.23	0.23	0.24	0.24	0.24
75 (mm)	0.13	0.17	0.18	0.20	0.21	0.22	0.22	0.22	0.23	0.23
80 (mm)	0.12	0.16	0.18	0.19	0.20	0.21	0.21	0.21	0.22	0.22
90 (mm)	0.12	0.15	0.17	0.18	0.18	0.19	0.19	0.20	0.20	0.20
100 (mm)	0.11	0.14	0.15	0.16	0.17	0.17	0.18	0.18	0.18	0.18
110 (mm)	0.10	0.13	0.14	0.15	0.16	0.16	0.16	0.17	0.17	0.17
120 (mm)	0.10	0.12	0.13	0.14	0.15	0.15	0.15	0.15	0.16	0.16
130 (mm)	0.09	0.12	0.13	0.13	0.14	0.14	0.14	0.14	0.15	0.15
140 (mm)	0.09	0.11	0.12	0.13	0.13	0.13	0.13	0.14	0.14	0.14
150 (mm)	0.09	0.10	0.11	0.12	0.12	0.12	0.13	0.13	0.13	0.13

THERMAL PERFORMANCE

Typical U-values (W/m²K) achieved in common floor constructions

Suspended Block And Beam, Insulation Below Screed

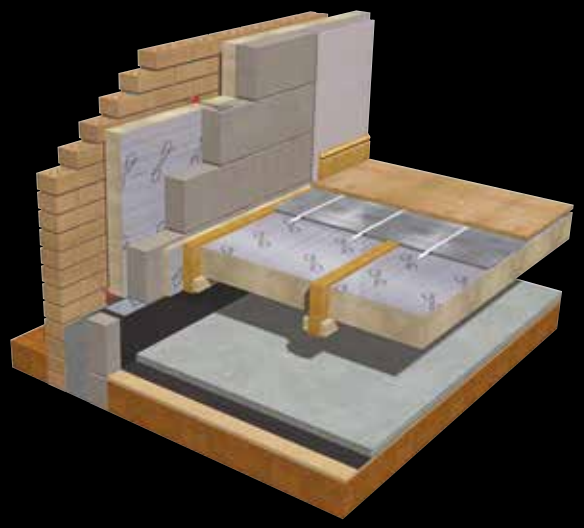
- 75mm screed (with 25mm insulated upstand to reduce thermal bridging)
- 500-gauge polythene VCL
- Recticel EUROTHANE GP, thickness as indicated
- 1200-gauge polythene DPM
- Concrete block and beam floor deck
- Ventilated void and sub-floor make up



P/A	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
25 (mm)	0.23	0.31	0.35	0.39	0.41	0.42	0.44	0.45	0.46	0.46
30 (mm)	0.21	0.29	0.33	0.35	0.37	0.38	0.39	0.40	0.41	0.42
40 (mm)	0.20	0.25	0.28	0.30	0.32	0.33	0.33	0.34	0.35	0.35
50 (mm)	0.18	0.23	0.25	0.27	0.28	0.28	0.29	0.30	0.30	0.30
60 (mm)	0.17	0.21	0.23	0.24	0.25	0.25	0.26	0.26	0.26	0.27
70 (mm)	0.15	0.19	0.21	0.22	0.22	0.23	0.23	0.23	0.24	0.24
75 (mm)	0.15	0.18	0.20	0.20	0.21	0.21	0.22	0.22	0.22	0.22
80 (mm)	0.14	0.17	0.19	0.20	0.20	0.21	0.21	0.21	0.21	0.21
90 (mm)	0.14	0.16	0.17	0.18	0.18	0.19	0.19	0.19	0.19	0.20
100 (mm)	0.13	0.15	0.16	0.17	0.17	0.17	0.18	0.18	0.18	0.18
110 (mm)	0.12	0.14	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.17
120 (mm)	0.11	0.13	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15
130 (mm)	0.11	0.12	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14
140 (mm)	0.10	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.13	0.14
150 (mm)	0.10	0.11	0.12	0.12	0.12	0.12	0.13	0.13	0.13	0.13
80+80 (mm)	0.09	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12
75+100 (mm)	0.09	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11
90+100 (mm)	0.08	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
100+100 (mm)	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10

Suspended Timber Floor, Insulation Between Joists

- 18mm chipboard
- Recticel Eurothane GP, thickness as indicated, between joists (11% bridging)
- Ventilated void and sub-floor make up



P/A	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
25 (mm)	0.21	0.27	0.31	0.33	0.35	0.36	0.37	0.38	0.38	0.39
30 (mm)	0.20	0.26	0.29	0.31	0.33	0.34	0.35	0.36	0.36	0.37
40 (mm)	0.19	0.24	0.27	0.29	0.30	0.31	0.31	0.32	0.32	0.33
50 (mm)	0.18	0.22	0.25	0.26	0.27	0.28	0.29	0.29	0.30	0.30
60 (mm)	0.17	0.21	0.23	0.24	0.25	0.26	0.26	0.27	0.27	0.27
70 (mm)	0.16	0.20	0.22	0.23	0.23	0.24	0.24	0.25	0.25	0.25
75 (mm)	0.16	0.19	0.21	0.22	0.23	0.23	0.24	0.24	0.24	0.24
80 (mm)	0.15	0.19	0.20	0.21	0.22	0.22	0.23	0.23	0.23	0.23
90 (mm)	0.15	0.18	0.19	0.20	0.21	0.21	0.21	0.22	0.22	0.22
100 (mm)	0.14	0.17	0.18	0.19	0.19	0.20	0.20	0.20	0.20	0.21
110 (mm)	0.13	0.16	0.17	0.18	0.18	0.19	0.19	0.19	0.19	0.19
120 (mm)	0.13	0.15	0.16	0.17	0.17	0.18	0.18	0.18	0.18	0.18
130 (mm)	0.12	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17
140 (mm)	0.13	0.15	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.17
150 (mm)	0.12	0.14	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16
80+80 (mm)	0.12	0.13	0.14	0.15	0.15	0.15	0.15	0.15	0.16	0.16
75+100 (mm)	0.11	0.13	0.13	0.14	0.14	0.14	0.14	0.15	0.15	0.15
90+100 (mm)	0.11	0.12	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14
100+100 (mm)	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.13	0.13

TYPICAL INSTALLATION

EUROTHANE® GP

GENERAL

Calculating P/A ratios for U-value calculations

Because of the uneven heat loss patterns in floors, the usual calculation method for U-values has to be adapted. As floors get larger their overall heat transmittance reduces, so to take this into account a P/A ratio is required.

'P' is a measurement of the length of the exposed perimeter (i.e. not including any length of floor adjacent to heated spaces). 'A' is a measurement of the total floor area being insulated, then P is divided by A to give the ratio. Where guideline U-value tables are consulted, the calculated ratio should be rounded up – i.e. for a ratio of 0.32, refer to the column for 0.4.

Perimeter upstand insulation

Heat loss through a ground floor depends on the size and shape of a building and the type of soil on which it is constructed. Although calculations average it over the whole floor area, the greatest heat loss is around the perimeter.

For any floor, where the screed or slab abuts external walls or unheated spaces, a perimeter upstand of at least 25mm Eurothane GP insulation will minimise thermal bridging at the floor/wall junction. Similarly, care should be taken to ensure that cavity wall insulation continues beyond the top of the floor insulation by 150mm.

Underfloor heating

Eurothane GP is suitable for use with underfloor heating systems, which should be installed in accordance with the manufacturer's instructions.

Heating regime

In a solid floor construction it is helpful to position the insulation based on the anticipated heating regime of the building, particularly where underfloor heating is incorporated.

For continuous heating, placing the insulation below the slab increases the thermal mass of the building. The concrete slab takes time to warm up, but then acts as a heat store for when the heating is switched to a lower setting or off.

Conversely, where the heating is used intermittently, the insulation is placed above the concrete slab and below the screed or chipboard covering for a faster thermal response. Underfloor heating pipes can also be incorporated in a suspended timber floor with a sand/cement fill between the chipboard and insulation, an arrangement that also suits intermittent heating.

Compressive strength

Eurothane GP is perfectly suited to bearing typical domestic and light commercial loads in any of the constructions detailed. During installation, use scaffolding planks (or similar) in heavily trafficked areas to avoid damaging boards. If higher loadings are anticipated, a structural engineer should be consulted. Mesh reinforcement or an increased slab or screed thickness may be required.

Fire Performance

Used within a ground floor construction, and installed in accordance with this installation guide and good practice guidance, EUROTHANE GP will not prejudice the fire resistance of the floor and adds no significant fire load to the building. The product has a Class 1 fire rating, tested to BS 476-7: 1997.

EUROTHANE® GP

Insulation Below Concrete Slab

- Lay, level and compact the hardcore before applying sand blinding. This base should be level to within 5mm along any 3m straight edge
- The damp proof membrane (DPM), normally 1200g polythene sheet or a radon barrier, is laid over the blinding with suitably lapped and sealed joints. Extend the DPM to connect with the DPC
- Install the EUROTHANE GP boards, laid in a tightly-butted brick bond pattern
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost
- Cut strips of 25mm EUROTHANE GP to the width of the slab depth and place around the perimeter to provide edge insulation as described above
- Overlay the EUROTHANE GP with a minimum 500g polythene sheet to act as a vapour control layer (VCL) and protect the insulation boards from the concrete. Laps should be minimum 150mm with taped joints
- For underfloor heating: lay the pipes and clip to the Eurothane GP through the VCL, in accordance with the heating system design and supplier's instructions
- Pour and compact the concrete slab in the normal manner

Insulation Below Screed

- Lay, level and compact the hardcore before applying sand blinding. This base should be level to within 5mm along any 3m straight edge
- Pour and compact the concrete slab in the normal manner. Sand blinding may be required to ensure the base is level
- Allow the slab to dry as fully as possible prior to continuing – the normal rate is one day for every millimetre of floor slab
- Pre-cast systems or block & beam floors should be installed in accordance with manufacturer's instructions. A thin levelling screed or grout may be required to ensure the base is level
- Lay the damp proof membrane (DPM), normally 1200g polythene sheet or a radon barrier, on the concrete with suitably lapped and taped joints. Extend the DPM to connect with the damp proof course (DPC)
- Install the EUROTHANE GP boards, laid in a tightly-butted brick bond pattern
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost
- Cut strips of 25mm Eurothane GP to the width of the screed depth and place around the perimeter to provide edge insulation as described above
- Overlay the EUROTHANE GP with a minimum 500g polythene sheet to act as a vapour control layer (VCL) and protect the insulation boards from the screed. Laps should be minimum 150mm with taped joints
- For underfloor heating: lay the pipes and clip to the Eurothane GP through the VCL, in accordance with the heating system design and supplier's instructions
- Lay and thoroughly compact the sand/cement screed. The minimum thickness to prevent cracking is 65mm for domestic applications and 75mm for others

TYPICAL INSTALLATION

EUROTHANE® GP

Insulation Below Floating Chipboard Floor

- Lay, level and compact the hardcore before applying sand blinding. This base should be level to within 5mm along any 3m straight edge
- Pour and compact the concrete slab in the normal manner. Sand blinding may be required to ensure the base is level
- Allow the slab to dry as fully as possible prior to continuing – the normal rate is one day for every millimetre of floor slab
- Pre-cast systems or block & beam floors should be installed in accordance with manufacturer's instructions. A thin levelling screed or grout may be required to ensure the base is level
- Lay the damp proof membrane (DPM), normally 1220g polythene sheet or a radon barrier, on the concrete with suitably lapped and sealed joints. Extend the DPM to connect with the damp proof course (DPC)
- Install the EUROTHANE GP boards, laid in a tightlybutted brick bond pattern. In this form of construction, a single layer of insulation only is recommended
- Overlay the EUROTHANE GP with a minimum 500g polythene sheet to act as a vapour control layer (VCL). Laps should be minimum 150mm with taped joints
- For underfloor heating: mechanically fix timber battens that have been suitably oversized (to accommodate the heating pipes between the insulation and the chipboard). Lay the pipes and clip to the EUROTHANE GP through the VCL, in accordance with the heating system design and supplier's instructions
- Use timber battens at doorways and to support internal stud partitions or access traps for pipework. Size the battens appropriately for them to sit flush with the top of the insulation
- Lay tongue & groove chipboard, minimum 18mm thick, with all edges glued, leaving an expansion gap of approximately 10mm around the floor perimeter

Insulation Between Suspended Timber Joists

- EUROTHANE GP should not be fixed directly over joists, only between
- Install floor joists over the ventilated sub-floor void in the normal manner, including any bracing
- Fix timber support battens to the sides of the joists, leaving sufficient depth for the insulation and any additional airspace (if required for underfloor heating pipes). Alternatively use galvanised nails, driven into the sides of the joists and left 40mm proud
- Cut EUROTHANE GP boards to size and slot between the joists, ensuring a tight fit. Take into account variations in joist spacing where necessary
- Use expanding foam or mastic sealant to sill any remaining gaps
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost
- Use expanding foam or mastic sealant to sill any remaining gaps less than 25mm
- Lay the chipboard covering and fix directly to the joists in the normal manner
- A vapour control layer (VCL) is not required in this form of construction. However, a polythene layer may still be installed to help improve the airtightness of the construction
- Limit air infiltration around the perimeter of the floor by using expanding foam or mastic-type sealants under the skirting board to seal the floor edge
- If installing the insulation from below, ensure the floor boards are already in position. Friction fit the insulation, pushing it up to the underside of the boards, then fix the chosen means of support

EUROTHANE® FP

EUROTHANE FP is a high performance PIR insulation board with Class 0 fire performance.

Product Overview

- Premium PIR insulation
- Class 0 fire performance
- 0.022 W/mK lambda
- Manufactured using a blowing agent with zero ODP (Ozone Depletion Potential) and low GWP (Global Warming Potential)

- Lightweight Board
- Easy Handling and Installation
- ISO 9001 and ISO 14001
- Moisture Tolerant

EUROTHANE GP Thermal Resistances

Product Code	Thickness (mm)	R-value (m²K/W)
64689/021	25	1.10
64689/022	45	2.00
64689/017	55	2.50
64689/018	65	2.95
64689/019	75	3.40
64689/023	80	3.60
64689/003	85	3.85
64689/020	95	4.30
64689/004	105	4.75
64689/024	125	5.65
64689/025	160	7.25

Product Details

Thermal Conductivity	0.022 W/mK
Compressive Strength	Exceeds 140kPa at yield
Moisture Vapour Resistance	Installed value of 100 MNs/g
Fire Performance	Class 0 BS 476 (Part 6 and 7)
Dimension	2400mm (l) x 1200mm (w)
Facing	Embossed aluminium foil

Introduction

EUROTHANE FP is a high performance PIR insulation board, suitable for use in soffit lining applications. The embossed aluminium foil facing gives a Class 0 surface spread of flame rating when tested to BS 476 (Parts 6 and 7).

With EUROTHANE FP, you are specifying a board that:

- Has Class 0 fire performance in accordance with BS 476 (Part 6 and 7).
- Has a low thermal conductivity (0.022 W/mK) providing an enhanced thermal performance
- Is available in a range of thicknesses from 25mm – 160mm and in a board size of 2400mm x 1200mm.
- Will not degrade or deteriorate if exposed to moisture, therefore maintaining its thermal performance

Specification Clause

The insulation shall be Recticel EUROTHANE FP ___mm thick for use in soffit lining applications, manufactured in accordance with an ISO 9001 quality management system and an ISO 14001 environmental management system. It should have a CLass 0 fire performance and comprise a rigid polyisocyanurate (PIR) core faced on both sides with a gas tight aluminium foil facing. The product should be manufactured using a blowing agent with zero ODP and low GWP, and be CE marked in accordance with BS EN 13165. EUROTHANE FP should be installed in accordance with Recticel's recommendations.

THERMAL PERFORMANCE

Typical U-values (W/m²K) achieved in common floor constructions

Concrete Soffit Lining

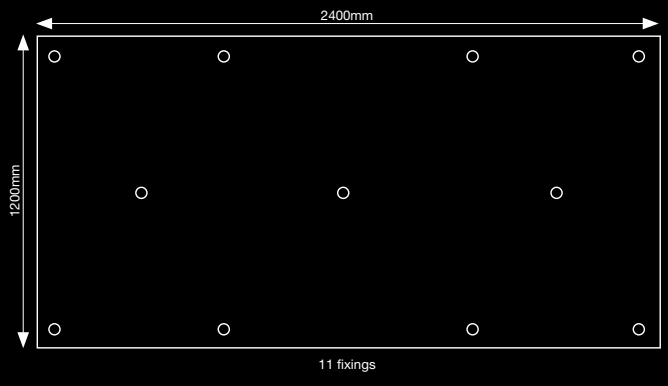
- Concrete floor slab
- Recticel Eurothane FP, secured directly to the concrete with thermally broken telescopic tube fixings

Insulation Thickness (mm)	Direct Fix to Concrete
55	0.37
65	0.32
75	0.28
80	0.26
85	0.25
95	0.22
55+55	0.19
125	0.17
65+75	0.16
75+75	0.15
160	0.14
85+85	0.13
85+95	0.12
95+95	0.11

TYPICAL INSTALLATION

EURΘTHANE® FP

- Install boards in a brick-bond pattern with all joints tightly butted
- Cut boards with a sharp knife or fine-toothed saw, and take care when fitting them around fixings or protrusions to avoid gaps and maintain the continuity of insulation
- Tape exposed board joints and edges with self-adhesive aluminium jointing tape, to further weatherproof the system
- Boards of 2400mm x 1200mm require a minimum of 11 fixings, a density of 3.81 fixings/m^2, though it may be determined that more are necessary. In all cases, fixings should be used evenly over the area of the board
- Fixings should have a minimum head diameter of 35mm.
- Fixings at board edges should be located 50-150mm from edges and corners
- Fixings should penetrate the substrate to a minimum depth of 40mm
- Where the board may be subjected to external wind pressure, the requirement for additional fasteners should be assessed in accordance with BS EN 1991-1-4:2005 (UK National Annex to Eurocode 1 Actions on structures, general actions, wind actions)
- Refer to individual fixing manufacturers for advice on fixings and fixing pattern



BUILDING REGULATIONS

ENGLAND

PART L 2013

U-values are part of wider assessment criteria to meet the requirements of Part L as a whole. Other factors taken into account include: airtightness, door and window U-values, the heating system, and thermal bridging.

'Limiting U-values' are the worst acceptable level of performance, but designing to these values is unlikely to result in compliance. The 'notional building specification' is a recipe approach that will ensure compliance if all standards are met. Regulatory compliance should be assessed through the appropriate SAP (for domestic) or SBEM (for non-domestic) calculation software.

NEW BUILD: L1A – new dwellings; L2A – new buildings other than dwellings

		Floor	Extenal Wall	Flat Roof	Pitched Roof	
					Sloped Ceiling	Flat Ceiling
L1A	Notional dwelling	0.13	0.18	0.13	0.13	0.13
	Limiting Values	0.25	0.30	0.20	0.20	0.20
L2A	Notional building	0.22	0.26	0.18	0.18	0.18
	Limiting Values	0.25	0.35	0.25	0.25	0.25

EXISTING PROPERTIES: L1B – existing dwellings; L2B – existing buildings other than dwellings

U-value requirements for existing buildings are unchanged from Part L 2010.

		Floor	Extenal Wall	Flat Roof	Pitched Roof	
					Sloped Ceiling	Flat Ceiling
L1B & L2B	New element	0.22	0.28	0.18	0.18	0.16
	Retained element	0.25	0.30*	0.18	0.18	0.16

*where insulation is installed internally or externally

WALES

PART L 2014

U-values are part of wider assessment criteria to meet the requirements of Part L as a whole. Other factors taken into account include: airtightness, door and window U-values, the heating system, and thermal bridging.

'Limiting U-values' are the worst acceptable level of performance, but designing to these values is unlikely to result in compliance. The 'notional building specification' is a recipe approach that will ensure compliance if all standards are met. Regulatory compliance should be assessed through the appropriate SAP (for domestic) or SBEM (for non-domestic) calculation software.

NEW BUILD: L1A – new dwellings; L2A – new buildings other than dwellings

		Floor	Extenal Wall	Flat Roof	Pitched Roof	
					Sloped Ceiling	Flat Ceiling
L1A	Notional dwelling	0.15	0.18	0.11	0.11	0.11
	Limiting Values	0.18	0.21	0.15	0.15	0.15
L2A	Notional building	0.22	0.26	0.18	0.18	0.18

EXISTING PROPERTIES: L1B – existing dwellings; L2B – existing buildings other than dwellings

		Floor	Extenal Wall	Flat Roof	Pitched Roof	
					Sloped Ceiling	Flat Ceiling
L1B	New element	0.18	0.21	0.15	0.15	0.15
	Retained element	0.25	0.30	0.18	0.18	0.16
L2B - all elements	Domestic*	0.18	0.21	0.15	0.15	0.15
	Limiting Values	0.22	0.26	0.18	0.18	0.15

*refers to buildings other than dwellings that are 'domestic' in character

SCOTLAND

SECTION 6 2015

U-values are part of wider assessment criteria to meet the requirements of Section 6 as a whole. The 'notional building specification' is a recipe approach that will ensure compliance if all standards are met. Regulatory compliance should be assessed through the appropriate SAP (for domestic) or SBEM (for non-domestic) calculation software.

DOMESTIC NEW BUILD

As well as U-values, the notional dwelling specifications for gas, LPG and oil fuel packages take into account: airtightness, door and window U-values, the heating system, and thermal bridging. They also include photovoltaics and waste water heat recovery. Specifying U-values therefore needs to be done in careful consideration with the entire dwelling package.

	Floor	Extenal Wall	Flat Roof	Pitched Roof	
				Sloped Ceiling	Flat Ceiling
New domestic (notional dwelling)	0.15	0.17	0.11	0.11	0.11

EXISTING DOMESTIC PROPERTIES

For extensions to existing dwellings, the required U-values for the new elements depend on the performance of the existing building:

- 'A' applies where the walls of the existing building have a U-value better than 0.70 and the roof better than 0.25, or will be upgraded to those levels as part of the works
- The higher standards in 'B' apply where the walls of the existing building have a U-value poorer than 0.70 and the roof is poorer than 0.25

Where existing domestic elements are to be altered or refurbished, the standards in 'A' apply.

		Floor	Extenal Wall	Flat Roof	Pitched Roof	
					Sloped Ceiling	Flat Ceiling
Existing domestic	A	0.18	0.22	0.18	0.18	0.15
	B	0.15	0.17	0.13	0.13	0.11

NON-DOMESTIC BUILDINGS – NEW AND EXISTING

For all building types, early consultation with Local Authority Building Standards is advised.

Non-domestic new build standards are based on heating/ventilation specification (natural or mechanical) and have different limiting values depending on type of building (e.g. shell construction where future occupancy/use is uncertain).

For existing buildings, a degree of flexibility is available depending on the feasibility of achieving U-value targets (e.g. in listed buildings). Again, early discussion Local Authority Building Standards is recommended.

THE SUSTAINABLE SOLUTION

Specifying Recticel Insulation is a real commitment to minimising energy consumption, harmful CO_2 emissions and impact on the environment. Using our products is one of the most effective ways to reduce energy consumption – in fact, after just eight months the energy they save far outweighs the energy used in their production. In addition, our manufacturing facility operates to an ISO 14001 certified Environmental Management System.

The BRE Green Guide

The 2008 Green Guide to Specification produced by the BRE gives Recticel Insulation products manufactured in the UK a summary rating of A.

Green Guide ratings are used to gain credits in BREEAM (BRE Environmental Assessment Method) for non-residential buildings, and under 'Mat 4 – Insulation' the first credit requires the building to have an Insulation Index of 2 or greater – only achievable if the weighted average rating of the insulation is A or A+.

Responsible Sourcing

The second BREEAM credit under that category is based on responsibly-sourced materials – at least 80% of the total insulation used in roofs, walls, ground floors and services must meet any of tier levels 1 to 6 in the BREEAM table of certification schemes.

Our Environmental Management System is certified under BS EN ISO 14001, and our raw materials come from companies with similarly-certified EMS (copies of all certificates are available for BREEAM assessments). This level of responsible sourcing meets tier level 6 in the BREEAM table.

Global Warming and Ozone Depletion

All Recticel Insulation products use CFC-and HCFC-free materials, and are manufactured using a blowing agent with a low GWP and zero ODP.

BREEAM

The Building Research Establishment's Environmental Assessment Method is an internationally-recognised process for assessing any type of building, of any age, anywhere in the world against established environmental and sustainability benchmarks. Although heat loss and energy use have a significant influence on the calculation method, environmental performance is measured by awarding credits in a number of categories, each of which is given a different weighting.

TECHNICAL SUPPORT

To help you find the best insulation products for your project – and comply with building regulations – our dedicated technical team can provide you with U-value calculations, condensation risk analysis and advice on installation.

Our team is focused on helping specifiers in particular specialist areas, details of which can be found at recticelinsulation.co.uk:

Fabric First

Concentrate on getting a building's fabric right and each element - whether a floor, wall or roof - will be well-built, thermally efficient and airtight, achieving the designed level of performance for the life of the building. At Recticel, we advocate 'fabric first' as the best way to reduce energy consumption.

Sharing aspects of the Passivhaus comfort standard, a fabric first approach concentrates on high levels of thermal performance and airtightness (including from doors and windows), and reduced thermal bridging. Air quality is also a vital part of the building specification to ensure occupant comfort and health, so the correct ventilation strategy needs to be considered - possibly requiring mechanical ventilation with heat recovery (MVHR). When it comes to the insulation specification, we'll recommend the right thickness of PIR to meet your requirements in the most efficient manner possible.

The Performance Gap

While new buildings might meet thermal regulations on paper, the actual performance level once occupied can be well below expectations. Although we can advise on the theoretical performance of our products in particular building elements, we still rely on contractors and site supervisors to make sure they perform as intended – so we're committed to providing more information and improving knowledge about the installation of our products.

Thermal Bridging Models

Linear thermal transmittance (or psi value) is a measure of heat loss at junctions. In order to minimise this, it is necessary to ensure continuity of the insulation layer across adjacent building elements. This means careful detailing of junctions between elements and openings to reduce thermal bridging. For example; between wall and roof, wall and floor, lintel and wall.

Why is it important to consider thermal bridging details?
Recent changes to building regulations have resulted in lower U-value requirements for the main construction elements. As thermal transmittance through these elements reduces, heat energy seeks to escape by the path of least resistance, normally through inadequately insulated junctions. Heat loss at junctions can account for up to 15% of a building's total heat loss.

Accredited and Enhanced Construction Details (ACDs & ECDs) are one way of limiting heat loss through thermal bridging at junctions, reducing psi values and improving the overall fabric energy efficiency of the building. An additional benefit of minimising thermal bridging is reducing the risk of surface condensation and associated mildew at otherwise cold spots, and thereby improving occupant health.

Recticel Insulation's range of thermal bridging details can assist designers with improved psi values for use in SAP calculations to ensure that carbon emissions and fabric energy efficiency targets of the latest building regulations are achieved, or even exceeded.

U-values

Recticel Insulation supports the accurate calculation of U-values for the construction industry. Calculations are issued under the Competent Person scheme administered by the BBA (British Board of Agrément).

All U-values are calculated by the Combined Method, in accordance with the conventions detailed in BS EN ISO 6946, BR 443, and other standards laid out by the BBA in their scheme guidance.

Calculations are provided free of charge to demonstrate the performance of Recticel products and compliance with building regulations. Calculation requests can be made in writing by email to technicalservices@recticel.com or by fax to 01782 590497.

Every Recticel U-value calculation is supplied with a Condensation Risk Analysis, and additional guidance is offered when required. Advice on condensation risk is given in accordance with BS EN ISO 13788 and BS 5250.

BIM (Building Information Modelling)

BIM not only helps with building simulation and architectural data, but also with structural engineering, sustainability and even project and cost management. To support architects and specifiers who use BIM, we've utilised our relationship with RIBA through the NBS Product Selector and made our products available as BIM objects held within the NBS National BIM Library.

For instant access to Recticel's BIM library visit www.nationalbimlibrary.com/recticel.

NBS Plus

RIBA NBS Plus gives architects access to a library of product information that can be consulted or copied directly into building specifications, supported by the RIBA Product Selector building product directory, both of which are widely used by industry professionals. Recticel products are listed within the RIBA product selector, making them accessible to all specifiers instantly.

Certification

All our products are manufactured to the harmonised European standard EN 13165, and are CE marked accordingly. Where stated, products have been certified by the British Board of Agrément (BBA). Our manufacturing facilty operates to an ISO 9001 Quality System and ISO 14001 Environmental Management System. Declarations of Performance are available as required by the Construction Product Regulations.

RIBA CPD

Recticel Insulation is a member of the RIBA CPD Providers Network, which features manufacturers and suppliers who provide RIBA Continuing Professional Development to architects and specifiers.

We offer a range of RIBA CPD Assessed Material (some of which is part of the RIBA CPD Core Curriculum), including seminars (typically 45 minutes in duration, with 15 minutes available for questions and answers after) and CPD Articles that can be accessed directly on the RIBA CPD website.

Seminar bookings are available across the UK and can be requested online, via either the Recticel Insulation or RIBA CPD websites.

PRODUCT CHARACTERISTICS

USING RECTICEL PIR INSULATION

Durability

Treated with appropriate care and installed correctly, Recticel Insulation products offer an indefinite service life and should not require maintenance. They are resistant to mould growth and will not rot.

PIR foam is not resistant to solvent-based products and should not be used in conjunction with them. Any boards that have come into contact with solvents or acids, or been damaged by such products, should be discarded.

PIR foam is a closed cell material, meaning water absorption is minimal. However, they should always be protected from the elements and never installed in exposed situations such as inverted flat roofs or in direct contact with the ground. Boards should be kept dry during installation and covered at the end of each day's work on site. If boards get wet, they should be allowed to dry naturally prior to use.

Handling, Cutting and Storage

Recticel Insulation's PIR boards are lightweight and inherently safe to handle. They should be treated with respect and maintained in the best possible condition during installation to ensure they perform as expected over the life of the building. They can be cut with a sharp knife or fine toothed saw.

Boards are supplied in polythene shrink wrap which is designed for short-term protection only. It is accepted that storing boards indoors is not always possible – when outdoor storage is necessary, boards should be stored clear of the ground, on a level surface, and under cover to protect them from prolonged exposure to moisture or mechanical damage.

Recticel Insulation products should not be installed when the temperature is at or below 5°C and falling.

Health and Safety

A comprehensive Product Information Data Sheet (PIDS) is available on request.

During cutting or machining, any dust is of nuisance value only. Large scale machining should be connected to a dust extraction system.

Foil-faced boards reflect light as well as heat, including ultraviolet light. Installation during bright weather may require UV eye protection, and a high SPF sun cream for bare skin. Foil facings can also become slippery when wet.

Avoid skin and eye contact with any sharp edges. Do not stand on or otherwise support your weight on boards unless the product is fully supported by a load-bearing surface.

Recticel Insulation Products
Enterprise Way
Whittle Road
Meir Park
Stoke-on-Trent
ST3 7UN

Technical Freephone: 0800 0854079

Technical Support Email: technicalservices@recticel.com
Customer Support Email: customer.services@recticel.com

t 01782 590470
f 01782 590497
recticelinsulation.co.uk

@RecticelInsulUK

Issue date: November 2015

NS 19867