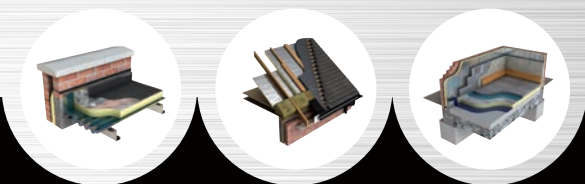
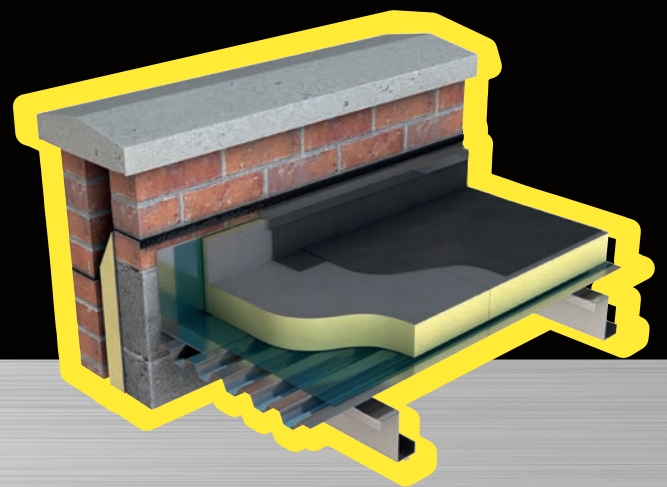


FLAT ROOFS.

Specification Guide



INSULATION EXCELLENCE

Flat Roofs

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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](https://www.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 compression 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.

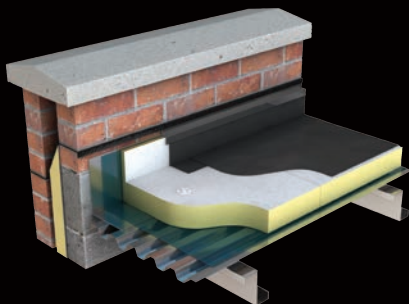
RECTICEL

HIGH PERFORMANCE IN FLAT ROOFS

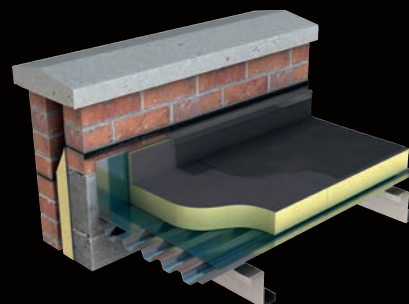
We manufacture **PIR insulation boards** that are the ideal solution across a variety of flat roofing applications, including single ply membranes, built-up felt, torch-on felt and mastic asphalt, with either concrete, steel or timber decks. Through our sister company, Gradient, we also work closely with our customers to design, manufacture and advise on the installation of bespoke, single layer tapered roofing solutions. As experts in single layer tapered roofing solutions, Gradient offers unparalleled technical expertise to ensure your bespoke roofing solution is the most efficient, economical and cost effective solution for the project

All our PIR products are available in a wide choice of thicknesses, with low thermal conductivity and high compressive strength. Crucially, our insulation boards can assist in meeting the required thermal regulations in new build and refurbishment projects.

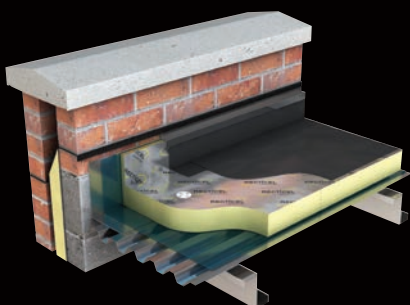
POWERDECK® F



POWERDECK® U



EURATHANE® EURODECK



PLYLOK®



POWERDECK® F


POWERDECK F is a durable, market leading PIR insulation board for built-up felt, mastic asphalt and single ply membrane waterproofing systems.


Product Overview

- ▲ Durable, market-leading PIR insulation
- ▲ 0.024* W/mK lambda
- ▲ LPCB LPS 1181 approved
- ▲ 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



Introduction

POWERDECK F is a durable, marketleading PIR insulation board for built up felt, mastic asphalt and single ply membrane waterproofing systems. This board benefits from high compressive strength and excellent dimensional stability that ensures the flat surface finish required to ensure optimum performance.

With POWERDECK F, you are specifying a board that:

- ▲ Has a low thermal conductivity (0.024 W/mK)*, providing an excellent thermal performance
- ▲ When tested to BS 476-3:2004, the product achieves an FAA rating when waterproofed with a 3-layer built-up felt covered with 10mm chippings. For other specifications it is advised to contact the manufacturer of the cap sheet for fire classification details. For single ply membranes the rating achieved will vary depending on the single ply membrane used
- ▲ Compressive strength that exceeds 150kPa at yield and is suitable for loads associated with maintenance traffic on roofing systems
- ▲ Is available in a range of thicknesses from 25mm – 160mm and in a board size of 1200mm x 600mm
- ▲ Will not degrade or deteriorate when exposed to moisture, therefore maintaining its thermal performance

*Thickness dependent

Specification Clause

The insulation shall be Recticel POWERDECK F ____mm thick for use in single ply membrane, built-up felt and mastic asphalt flat roofing applications, manufactured in accordance with an ISO 9001 quality management system and an ISO 14001 environmental management system. It should be LPCB approved and comprise a rigid polyisocyanurate (PIR) core faced on both sides with a perforated mineral coated glass fleece. 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. Powerdeck F should be installed in accordance with Recticel's recommendations.

POWERDECK F Thermal Resistances

Product Code	Thickness (mm)	R-value (m ² K/W)
64004/049	25	0.96
64004/001	30	1.15
64004/002	40	1.50
64004/003	50	1.90
64004/004	60	2.30
64004/009	70	2.65
64004/005	80	3.20
64004/010	90	3.60
64004/006	100	4.00
64004/034	110	4.40
64004/007	120	5.00
64004/038	130	5.40
64004/008	140	5.80
64004/036	150	6.25
64004/039	160	6.65

Product Details

Thermal Conductivity	0.024 W/mK (thicknesses 120mm and above) 0.025 W/mK (thicknesses between 80mm and 119mm) 0.026 W/mK (thicknesses below 80mm)
Compressive strength	Exceeds 150kPa at yield
Moisture Vapour Resistance	Installed value of 15 MNs/g
Fire Performance	Class 1 BS 476 (Part 7)
Dimensions	1200mm (l) x 600mm (w) Available as tapered insulation board
Facing	Perforated mineral coated glass fibre tissue to both sides
Certification	LPCB (LPS 1181) approved

THERMAL PERFORMANCE

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

Warm Flat Roof

- ▲ Waterproofing
- ▲ Recticel Powerdeck F
- ▲ Vapour control layer
- ▲ Structural deck
 - Timber deck: 18mm ply
 - Concrete deck: 150mm high density concrete
 - Metal deck: unsealed galvanised steel deck
- ▲ Ceiling
 - Timber deck: 150mm joists with plasterboard finish
 - Concrete and metal decks: 50mm timber battens with plasterboard finish


Powerdeck F				
Product Thickness (mm)	Timber Deck		Metal and Concrete Deck	
	Ceiling	No Ceiling	Ceiling	No Ceiling
60	0.35	0.39	0.37	0.41
70	0.31	0.34	0.32	0.35
75	0.29	0.32	0.31	0.33
80	0.27	0.29	0.28	0.30
90	0.24	0.26	0.25	0.27
100	0.22	0.23	0.23	0.24
110	0.20	0.21	0.21	0.22
120	0.18	0.19	0.19	0.19
130	0.17	0.18	0.17	0.18
140	0.16	0.16	0.16	0.17
150	0.15	0.15	0.15	0.16
160 (80+80)	0.14	0.15	0.15	0.15
165 (90+75)	0.14	0.15	0.14	0.15
170 (90+80)	0.14	0.14	0.14	0.14
180 (90+90)	0.13	0.13	0.13	0.14
190 (100+90)	0.12	0.13	0.13	0.13
200 (100+100)	0.12	0.12	0.12	0.12
210 (120+90)	0.11	0.11	0.11	0.11
220 (120+100)	0.10	0.11	0.11	0.11
230 (130+100)	0.10	0.10	0.10	0.10
240 (120+120)	0.10	0.10	0.10	0.10


POWERDECK® U


POWERDECK U insulation is a high performance rigid polyisocyanurate (PIR) foam board for use in warm flat roofs with torch-on felt.

Product Overview

- ▲ High performance, rigid PIR insulation
- ▲ 0.024 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

Introduction

POWERDECK U insulation is a high performance rigid polyisocyanurate (PIR) foam board for use in warm flat roofs with torch-on felt waterproofing systems. High compressive strength and excellent dimensional stability ensures the board benefits from the flat surface finish required to ensure optimum performance. POWERDECK U is lightweight, easy to cut, handle and install and is also available in tapered forms to assist roof drainage.

With POWERDECK U, you are specifying a board that:

- ▲ Has a low thermal conductivity value (0.024 W/mK)*, providing an excellent thermal performance
- ▲ When tested to ENV 1187:2002 Test 4, it achieves a B_{ROOF} (t4) rating on a plywood deck and with an IKO SBS Gold Seal cap sheet. For other specifications, contact the manufacturer of the waterproofing
- ▲ Compressive strength exceeds 150kPa at yield
- ▲ Will not degrade or deteriorate if exposed to moisture, therefore maintaining its thermal performance

*Thickness dependent

Specification Clause

The insulation shall be Recticel POWERDECK U ____mm thick for use in torch-on felt flat roofing 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 bituminous glass fleece. 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.

POWERDECK U Thermal Resistances

Product Code	Thickness (mm)	R-value (m ² K/W)
64602/001	30	1.15
64602/015	40	1.50
64602/016	50	1.90
64602/017	60	2.30
64602/018	70	2.65
64602/019	80	3.20
64602/020	90	3.60
64602/021	100	4.00
64602/023	120	5.00
64602/024	130	5.40
64602/025	140	5.80
64602/026	150	6.25

Product Details

Thermal Conductivity	0.024 W/mK (thicknesses 120mm and above) 0.025 W/mK (thicknesses between 80mm and 119mm) 0.026 W/mK (thicknesses below 80mm)
Compressive strength	Exceeds 150kPa at yield
Moisture Vapour Resistance	Installed value of 15 MNs/g
Fire Performance	Class 1 BS 476 (Part 7)
Dimensions	1200mm (l) x 600mm (w)
Facing	Bitumen glass fleece on both sides

THERMAL PERFORMANCE

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

Warm Flat Roof

- ▲ Waterproofing
- ▲ Recticel Powerdeck U
- ▲ Vapour control layer
- ▲ Structural deck
 - Timber deck: 18mm ply
 - Concrete deck: 150mm high density concrete
 - Metal deck: unsealed galvanised steel deck
- ▲ Ceiling
 - Timber deck: 150mm joists with plasterboard finish
 - Concrete and metal decks: 50mm timber battens with plasterboard finish

Powerdeck U				
Product Thickness (mm)	Timber Deck		Metal and Concrete Deck	
	Ceiling	No Ceiling	Ceiling	No Ceiling
60	0.35	0.39	0.37	0.41
70	0.31	0.34	0.32	0.35
75	0.29	0.32	0.31	0.33
80	0.27	0.29	0.28	0.30
90	0.24	0.26	0.25	0.27
100	0.22	0.23	0.23	0.24
110	0.20	0.21	0.21	0.22
120	0.18	0.19	0.19	0.19
130	0.17	0.18	0.17	0.18
140	0.16	0.16	0.16	0.17
150	0.15	0.15	0.15	0.16
160 (80+80)	0.14	0.15	0.15	0.15
165 (90+75)	0.14	0.15	0.14	0.15
170 (90+80)	0.14	0.14	0.14	0.14
180 (90+90)	0.13	0.13	0.13	0.14
190 (100+90)	0.12	0.13	0.13	0.13
200 (100+100)	0.12	0.12	0.12	0.12
210 (120+90)	0.11	0.11	0.11	0.11
220 (120+100)	0.10	0.11	0.11	0.11
230 (130+100)	0.10	0.10	0.10	0.10
240 (120+120)	0.10	0.10	0.10	0.10

EUROTHANE® EURODECK


EUROTHANE EURODECK is a high performance rigid PIR insulation board for mechanically fixed single ply membrane applications.


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



Introduction

EUROTHANE EURODECK is a high performance rigid PIR foam board for use in warm flat roofs under mechanically fixed single ply membrane systems. With dimensional stability and a flat surface, the board benefits from a high compressive strength that exceeds 150kPa at yield and is suitable for loads associated with maintenance traffic.

With EUROTHANE EURODECK, you are specifying an insulation board that:

- ▲ Has a low thermal conductivity (0.022 W/mK) providing an enhanced thermal performance
- ▲ Compressive strength exceeds 150kPa at yield
- ▲ Has Class 1 fire performance in accordance with BS 476 (Part 7)
- ▲ Will not degrade or deteriorate if exposed to moisture, therefore maintaining its thermal performance

Specification Clause

The insulation shall be Recticel EUROTHANE EURODECK _____mm thick for use in single ply membrane flat roofing 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 EURODECK should be installed in accordance with Recticel's recommendations.

EUROTHANE EURODECK Thermal Resistances

Product Code	Thickness (mm)	R-value (m ² K/W)
64685/003	60	2.70
64685/004	70	3.15
64685/015	75	3.40
64685/005	80	3.60
64685/006	90	4.05
64685/007	100	4.50
64685/008	110	5.00
64685/009	120	5.45

Product Details

Thermal Conductivity	0.022 W/mK
Compressive strength	Exceeds 150kPa 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) Available as tapered insulation board
Facing	Multilayer coated aluminium on both sides.

THERMAL PERFORMANCE

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

Warm Flat Roof

- ▲ Waterproofing
- ▲ Recticel Eurothane Eurodeck
- ▲ Vapour control layer
- ▲ Structural deck
 - Timber deck: 18mm ply
 - Concrete deck: 150mm high density concrete
 - Metal deck: unsealed galvanised steel deck
- ▲ Ceiling
 - Timber deck: 150mm joists with plasterboard finish
 - Concrete and metal decks: 50mm timber battens with plasterboard finish




Eurothane Eurodeck				
Product Thickness (mm)	Timber Deck		Metal and Concrete Deck	
	Ceiling	No Ceiling	Ceiling	No Ceiling
60	0.31	0.34	0.32	0.35
70	0.27	0.29	0.28	0.30
75	0.25	0.27	0.26	0.28
80	0.24	0.26	0.25	0.26
90	0.22	0.23	0.22	0.24
100	0.20	0.21	0.20	0.21
110	0.18	0.19	0.19	0.19
120	0.17	0.18	0.17	0.18
130	0.16	0.16	0.16	0.17
140	0.15	0.15	0.15	0.15
150	0.14	0.14	0.14	0.14
160 (80+80)	0.13	0.13	0.13	0.13
165 (90+75)	0.12	0.13	0.13	0.13
170 (90+80)	0.12	0.13	0.12	0.13
180 (90+90)	0.11	0.12	0.12	0.12
190 (100+90)	0.11	0.11	0.11	0.11
200 (100+100)	0.10	0.11	0.11	0.11
210 (120+90)	0.10	0.10	0.10	0.10
220 (120+100)	0.10	0.10	0.10	0.10
230 (130+100)	0.09	0.09	0.09	0.09
240 (120+120)	0.09	0.09	0.09	0.09

PLYLOK®

PLYLOK is a high performing, resilient PIR insulation board for use in warm flat roofs under built-up felt and single ply waterproofing systems.

Product Overview

- ▲ High performing, resilient PIR insulation/plywood laminate
- ▲ 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

Introduction

PLYLOK is a high performing, resilient PIR insulation board for use in warm flat roofs under built-up felt and single ply waterproofing systems.

PLYLOK consists of an insulation board bonded to a 6mm plywood top layer and boasts high compressive strength, dimensional stability and consistent board sizes.

With PLYLOK, you are specifying a board that:

- ▲ Has a low thermal conductivity value (0.022 W/mK) compared to some other PIR boards in the market, providing an excellent thermal performance
- ▲ Is available in a range of thicknesses from 56mm – 156mm 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 PLYLOK ____mm thick for use in built-up felt and single ply membrane roofing 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, together with a 6mm plywood sheet on the upper face. The product should be manufactured using a blowing agent with zero ODP and low GWP. Plylok should be installed in accordance with Recticel's recommendations.

PLYLOK Thermal Resistances

Product Code	Thickness (mm)	R-value (m ² K/W)
64383/001	56	2.30
64383/005	96	4.10
64383/007	116	5.00
64383/008	126	5.45

Product Details

Thermal Conductivity	0.022 W/mK insulation
Compressive strength	Exceeds 150kPa at yield
Moisture Vapour Resistance	Installed value of 100 MNs/g
Fire Performance	Class 1 BS 476 (Part 7) – insulation only
Dimensions	2400mm (l) x 1200mm (w)
Facing	Multilayer coated aluminium foil to both sides and 6mm plywood bonded to one side.



THERMAL PERFORMANCE

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

Warm Flat Roof

- ▲ Choice of waterproofing
- ▲ Recticel PLYLOK, secured with stainless steel helical nails (9 per m²)
- ▲ On joists: insulation bedded in mastic prior to fixing
- ▲ On deck: 1000-gauge polythene VCL, on 18mm ply
- ▲ 150x50mm joists at 400mm centres, unvented cavity
- ▲ Plasterboard ceiling

Plylok		
Product Thickness (mm)	On Joists	On Deck
56	0.35	0.37
96	0.22	0.23
116	0.18	0.19
126	0.17	0.17

TYPICAL INSTALLATION

Recticel PIR insulation products in common flat roof applications

GENERAL

Warm Roof Construction and Condensation Control

Fixing insulation on top of the roof deck means no ventilation is required. And because the roof structure is maintained at the internal temperature, the risk of harmful condensation is reduced. To ensure the optimum performance of the roof, a vapour control layer (VCL) should be installed on the warm side of the insulation, usually on the structural deck.

BS 5250:2011, the British Standard for the control of condensation in buildings, does not recommend installing insulation between timber joists as well as above the deck (a hybrid roof construction).

Overlaying Existing Roofs

For the thermal upgrade of existing buildings, existing bituminous waterproofing may be used as the VCL where it is in good condition and adequate bond strength with the roof deck remains. If in doubt, a suitable new vapour control layer needs to be installed. The specification of new insulation should be considered in conjunction with any insulation(s) already present in the roof build up.

Thermal Bridging

For optimum thermal efficiency and reduced heat loss, it is important to ensure continuity of the insulation layer with adjacent building elements. This means careful detailing at junctions between elements to minimise or eliminate thermal bridging and 'cold spots'. For example, at the junction of the roof and wall, packing the eaves with a compressible insulation will prevent thermal bridging as well as closing the cavity.

An insulation upstand should be provided around the perimeter of the roof at parapets. It should be at least 25mm thick and minimum 300mm in height from the deck. The wall insulation should also be continued to the height of the top of the upstand.

Wind Uplift

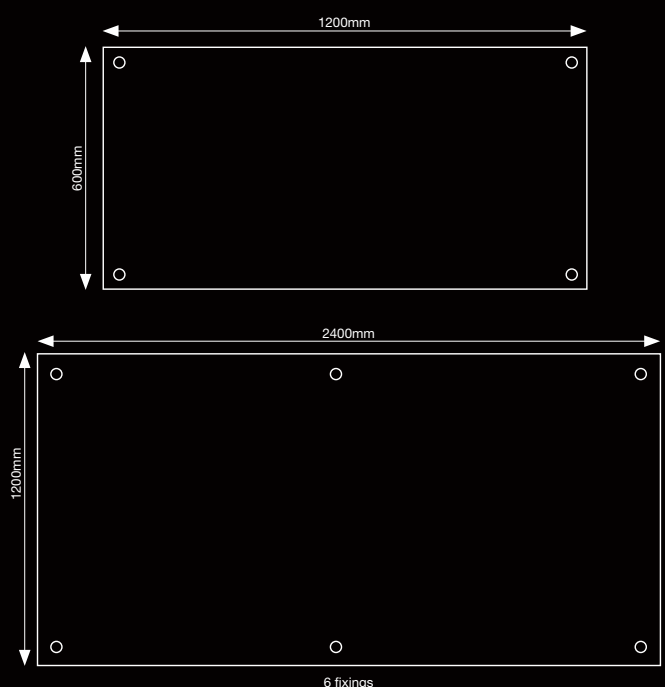
The wind uplift force exerted on a roof will vary according to wind speed, location, site topography, and building size and orientation. Wind loads and the requirement for additional fixings over the minimum should be calculated to BS 6399-2: 1997 or BS EN 1991-1-4 (UK National Annex).

Reference should be made to BS 6229 for adequate bonding of the vapour control layer.

Mechanical Fixing Pattern

The fixing pattern shows the minimum requirement for 1200mm x 600mm boards and 1200mm x 2400mm insulation boards. The number of fixings may vary and additional fixings may be required subject to project specific requirements determined by the wind load calculations.

- Four fixings for one board equates to a rate of 5.55/m².
- Six fixings for one board equates to a rate of 2.08/m².



Specifying Adhesives

PIR insulation is renowned for its chemical stability, although the foam core of boards can be softened if exposed to ketonic solvents. Non-ketonic polyurethane adhesives have no adverse effect on the foam; taping of board joints is not required when using polyurethane adhesives, as any excess adhesive running down between the board joints will not affect the exposed foam core. If in doubt, consult the adhesive manufacturer.

Roof Loading and Trafficking

Recticel Insulation's flat roofing boards are suitable for loads associated with infrequent pedestrian maintenance traffic. Extra precautions should be taken in areas of heavier traffic, such as the use of walkways (consult membrane manufacturers for details). Take care to avoid damage to boards through impacts or concentrated loads.

When using ballasted and/or green roof systems, the roof structure must be designed to accept the additional dead load (minimum 80kg/m²).

Fire Performance

Recticel Insulation's flat roofing boards will not prejudice the fire resistant properties of a roof and add no significant fire load to the building.

- EUROTHANE EURODECK: when tested in accordance with BS 476-3: 2004, the rating achieved by EUROTHANE EURODECK will vary depending on the single ply membrane used.
- POWERDECK F: when tested to BS 476-3:2004, the product achieves an FAA rating when waterproofed with a 3-layer built-up felt covered with 10mm chippings. For other specifications it is advised to contact the manufacturer of the cap sheet for fire classification details. For single ply membranes the rating achieved will vary depending on the single ply membrane used.
- POWERDECK U: when tested to ENV 1187:2002 Test 4, it achieves a B_{ROOF} (t4) rating on a plywood deck and with an IKO SBS Gold Seal cap sheet. For other specifications, contact the manufacturer of the waterproofing.

Roof Drainage

'Ponding' adds additional load to a roof, looks unsightly, and can shorten the lifespan of the roofing membrane. To ensure adequate drainage, any flat roof should have a minimum finished fall of 1:80. In reality, this means designing for twice the minimum fall to account for building inaccuracies, roof deflection and building settlement.

Tapered Systems

Recticel Insulation's flat roofing boards are available as tapered systems. Tapered roofing insulation allows the necessary falls to be created where the roof structure does not. In refurbishment projects, it offers a simple solution to ponding issues at the same time as upgrading thermal performance.

Gradient Insulation, Recticel Insulation's sister company, are experts in flat roofing and tapered insulation and can offer advice on the surveying, design and manufacture of bespoke single layer insulation solutions – from the earliest stages of a project through to its completion. For further details please contact: enquiries@gradientuk.com.

LPCB Approval

POWERDECK F is certified to LPS 1181-1 'cladding products used for the external envelope of buildings' as follows:

Certificate No 968a for POWERDECK F thickness 30mm to 120mm: Grade EXT-B

Contact Recticel technical services for more information, or search for Recticel Insulation on www.redbooklive.com

MECHANICALLY FIXED SINGLE PLY MEMBRANE

EUROTHANE EURODECK

New Build

- Lay the specified VCL on the clean, dry deck. Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- If a fully-sealed metal deck is used, a separate VCL is not required.
- Mechanical fixing into a concrete deck may require pre-drilling of the deck.
- Install the EUROTHANE EURODECK boards in a tightly-butted brick bond pattern, mechanically fixing them using a minimum of 6 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- On a metal deck, the insulation boards should either be laid with the long edges at right angles to the troughs to ensure the short ends are fully supported, or diagonally across the deck corrugations.
- Thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners.
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. One or two fixings can be used to secure the lower boards, prior to securing the top layer with the required number of fixings.
- Lay and fix the single ply membrane in accordance with manufacturer's instructions.

Refurbishment (Insulation Overlay)

- Where insulation is to be installed over existing waterproofing, it should be clean and dry and in appropriate condition to act as a VCL.
- If the condition of the existing waterproofing is poor, a separate VCL should be loose laid. Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the EUROTHANE EURODECK boards in a tightly-butted brick bond pattern, mechanically fixing them using a minimum of 6 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- Thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners.
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. One or two fixings can be used to secure the lower boards, prior to securing the top layer with the required number of fixings.
- Lay and fix the single ply membrane in accordance with manufacturer's instructions.

ADHERED SINGLE PLY MEMBRANE

POWERDECK F

New Build

- Install the VCL on the clean, dry deck. If a fully-sealed metal deck is used, a separate VCL is not required.
- ▲ **For bonded build-ups:** bond a layer of coated roofing felt in hot bitumen, or with a proprietary adhesive. Where necessary, use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the deck and the VCL. On a timber deck, a layer of coated roofing felt can also be nailed.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control layer.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK F boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the deck. On a metal deck, the long edges should be at right angles to the troughs to ensure the short ends are fully supported, or laid diagonally across the deck corrugations.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.

Refurbishment (Insulation Overlay)

- Where insulation is to be installed over existing waterproofing, it should be clean and dry and in appropriate condition to act as a VCL.
- If the condition of the existing waterproofing is poor or adequate bond strength cannot be guaranteed, a new or separate VCL should be installed.
- ▲ **For bonded build-ups:** bond a layer of coated roofing felt in hot bitumen, or with a proprietary adhesive. Use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the existing roof and the VCL.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control layer.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK F boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the deck.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.

POUR & ROLL / BUILT-UP FELT

POWERDECK F

New Build

- Install the VCL on the clean, dry deck. If a fully-sealed metal deck is used, a separate VCL is not required.
- ▲ **For bonded build-ups:** bond a layer of coated roofing felt in hot bitumen, or with a proprietary adhesive. Where necessary, use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the deck and the VCL. On a timber deck, a layer of coated roofing felt can also be nailed.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control layer.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK F boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the deck. On a metal deck, the long edges should be at right angles to the troughs to ensure the short ends are fully supported, or laid diagonally across the deck corrugations.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.
- Venting layers should be loose-laid on the insulation boards prior to bonding the first layer of felt.

Refurbishment (Insulation Overlay)

- Where insulation is to be installed over existing waterproofing, it should be clean and dry and in appropriate condition to act as a VCL.
- If the condition of the existing waterproofing is poor or adequate bond strength cannot be guaranteed, a new or separate VCL should be installed.
- ▲ **For bonded build-ups:** bond a layer of coated roofing felt in hot bitumen, or with a proprietary adhesive. Use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the existing roof and the VCL.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control layer.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK F boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the deck.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.
- Venting layers should be loose-laid on the insulation boards prior to bonding the first layer of felt.

TORCH-ON FELT

POWERDECK U

New Build

- Install the VCL on the clean, dry deck. If a fully-sealed metal deck is used, a separate VCL is not required.
- ▲ **For bonded build-ups:** torch-apply or adhere a layer of coated roofing felt. Use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the deck and the VCL.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control layer.
- Mechanical fixing into a concrete deck may require pre-drilling of the deck.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK U boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the deck. On a metal deck the long edges should be at right angles to the troughs to ensure the short ends are fully supported, or laid diagonally across the deck corrugations.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.

Refurbishment (Insulation Overlay)

- Where insulation is to be installed over existing waterproofing, it should be clean and dry and in appropriate condition to act as a VCL.
- If the condition of the existing waterproofing is poor or adequate bond strength cannot be guaranteed, a new or separate VCL should be installed.
- ▲ **For bonded build-ups:** torch-apply or adhere a layer of coated roofing felt. Use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the existing roof and the VCL.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK U boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the deck.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.

MASTIC ASPHALT

POWERDECK F

New Build

- Install the VCL on the clean, dry deck. If a fully-sealed metal deck is used, a separate VCL is not required.
- ▲ **For bonded build-ups:** bond a layer of coated roofing felt in hot bitumen, or with a proprietary adhesive. Where necessary, use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the deck and the VCL. On a timber deck, a layer of coated roofing felt can also be nailed.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control layer.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK F boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the deck. On a metal deck, the long edges should be at right angles to the troughs to ensure the short ends are fully supported, or laid diagonally across the deck corrugations.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.

Refurbishment (Insulation Overlay)

- Where insulation is to be installed over existing waterproofing, it should be clean and dry and in appropriate condition to act as a VCL.
- If the condition of the existing waterproofing is poor or adequate bond strength cannot be guaranteed, a new or separate VCL should be installed.
- ▲ **For bonded build-ups:** torch-apply or adhere a layer of coated roofing felt. Use a primer in accordance with manufacturer's instructions to ensure an adequate bond between the existing roof and the VCL.
- ▲ **For mechanically fixed build-ups:** loose-lay the vapour control.
- Ensure all laps are minimum 150mm and well-sealed, and turn up at the edge of the roof.
- Install the POWERDECK F boards in a tightly-butted brick bond pattern, with the long edges at right angles to the edge of the roof, or laid diagonally across the roof.
- ▲ **For bonded build-ups:** mop hot bitumen over the VCL, or apply a suitable proprietary adhesive to manufacturer's instructions.
- ▲ **For mechanically fixed build-ups:** thermally broken telescopic tube fixings are recommended to reduce thermal bridging, each incorporating a 50mm square or circular washer and positioned within 50 to 150mm of board edges and corners. Use a minimum of 4 fixings per board (see 'Wind Uplift' and 'Mechanical Fixing Pattern').
- If the desired insulation thickness comprises two layers, board joints should be staggered and the thicker layer positioned outermost. Where mechanically fixing, one or two fixings can be used to secure the first layer of boards, prior to securing the top layer with the required number of fixings.
- Install the chosen waterproofing in accordance with the manufacturer's instructions and/or relevant British Standards.



Ply-faced insulation board

Warm Roof Construction and Condensation Control

Fixing insulation on top of the roof deck means no ventilation is required. And because the roof structure is maintained at the internal temperature, the risk of condensation is removed. A vapour control layer (VCL) should be provided on the warm side of the insulation, either in the form of mastic sealant or a minimum 1000g polythene sheet, depending whether the PLYLOK is fixed directly to joists or on a roof deck.

This installation advice relates to fixing PLYLOK boards directly to the top of joists. Where additional stability is desired, or where a polythene VCL is preferred, a minimum 18mm timber roof deck may be secured to the joists prior to fixing the PLYLOK and installing the waterproofing.

BS 5250:2011, the British Standard for the control of condensation in buildings, does not recommend installing insulation between timber joists as well as above the deck (a hybrid roof construction).

Thermal Bridging

For optimum thermal efficiency and reduced heat loss, it is important to ensure continuity of the insulation layer with adjacent building elements. This means careful detailing at junctions between elements to minimise or eliminate thermal bridging and 'cold spots'. For example, at the junction of the roof and wall, packing the eaves with a compressible insulation will prevent thermal bridging as well as closing the cavity.

An insulation upstand should be provided around the perimeter of the roof at parapets. It should be at least 25mm thick and minimum 300mm in height from the deck. The wall insulation should also be continued to the height of the top of the upstand.

Roof Loading and Trafficking

PLYLOK boards are suitable for loads associated with infrequent pedestrian maintenance traffic. Extra precautions should be taken in areas of heavier traffic. Take care to avoid damage to boards through impacts or concentrated loads.

Fire Performance

PLYLOK will not prejudice the fire resistant properties of the roof and adds no significant fire load to the building.

Drainage

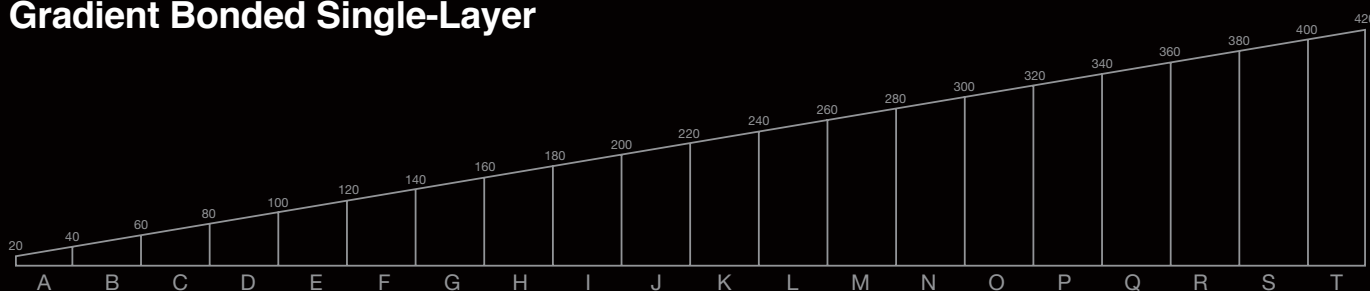
'Ponding' adds additional load to a roof, looks unsightly, and can shorten the lifespan of the roofing membrane. To ensure adequate drainage, any flat roof should have a minimum finished fall of 1:80. In reality, this means designing for twice the minimum fall to account for building inaccuracies, roof deflection and building settlement.

Installation Directly On Joists

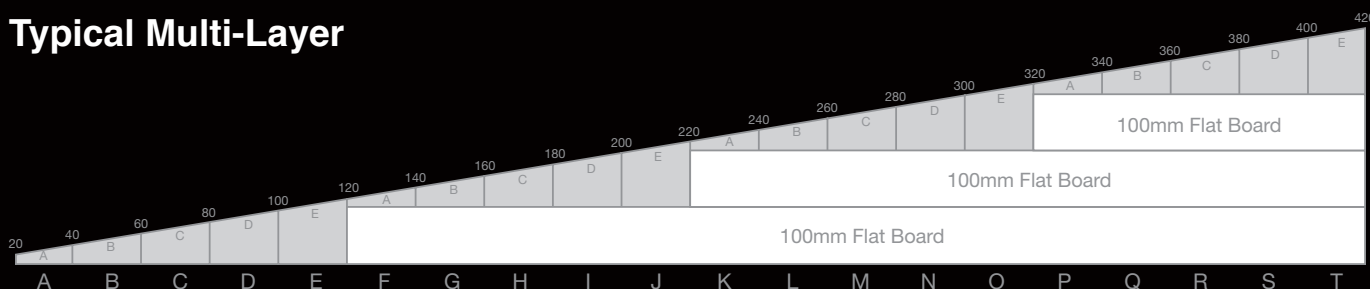
- Lay PLYLOK boards on 50mm wide joists with the plywood face up. The joists should be spaced at maximum 600mm centres, or 400mm centres where more frequent foot traffic is expected.
- Position the boards so the long edge of each board coincides with the centre of a joist, and install 50x50mm supporting noggins to support all other board edges, or where the insulation is cut to suit openings etc.
- All board edges require a minimum 20mm bearing onto the supporting timber.
- Apply water vapour resistant mastic sealant to all supporting joists and noggins prior to laying the insulation. This forms a continuous vapour control layer with the foil face of the boards.
- Secure the insulation boards with the chosen fixings. Appropriate fixings include: round-headed ring shank nails at 150mm centres along the line of each joist and noggin; oval-headed screw fixings at 200mm centres; or proprietary helical fixings at centres recommended by the manufacturer.
- Ensure the fixings penetrate the supporting timbers by at least 35mm and are positioned at least 10mm from board edges and 50mm from board corners. Where two boards are fixed on the same joist, stagger the fixings to each board.
- Finish nail and screw heads flush with the plywood surface. Do not over-drive fixings.
- The foil-faced underside of the PLYLOK boards is not intended as a ceiling finish. Underline joists with a plasterboard ceiling or similar. If exposed joists are desired then plasterboard can be installed between, fixed to battens secured to the sides of the joists and just below the insulation.
- Waterproof the roof by the chosen method. Single ply membranes should be installed in accordance with the manufacturer's instructions. Partially bonded built-up felt should be laid in accordance with BS 8217: 2005 and incorporate a 3G-type perforated base layer. Torch-on felt requires a torch-applied underlay to provide a vented layer where trapped vapour can disperse.

SINGLE LAYER TAPERED ROOF SYSTEMS

Gradient Bonded Single-Layer



Typical Multi-Layer



Example shown is Powerdeck F.

- ▲ Simplified projects - single-layer system, pre-cut and factory bonded for easy installation
- ▲ Perfect fit - factory fabricated to ensure precise tolerances are met
- ▲ Quick installation - pre-cut, accurate components allow for speedy installation
- ▲ Optimum adhesion - factory bonded to provide reliable adhesion and integrity
- ▲ Reduced maintenance - consistent, reliable performance over the life of the roof
- ▲ Less waste - single-layer boards are delivered at the right size, reducing cutting on-site



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	External 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	External 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	External 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	External 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	External 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	External 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 CO₂ 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 the BIM framework, 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.

Single Layer Tapered Roofing Systems

Gradient work closely with customers and specifiers to design, manufacture and advise on the installation of bespoke, single-layer tapered roofing solutions. It's a turnkey service that provides everything from initial consultation and design to after sales support. By controlling the whole process from start to finish, we are able to exercise control standards for design, manufacture, performance and sustainability that are unmatched in the industry. Benefits we pass on to you in the form of a better conceived, better performing, better value flat roof that complies with all the relevant legislative standards. For more information visit: www.gradientuk.com or call one of our technical support specialists on 01543 678777.

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 facility 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.

CPD Presentations

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.



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Recticel Insulation Ltd. reserves the right to amend
product specifications without prior notice. E.&O.E.