SLIMLINE

FOR WALLS

BASELINE

FOR FLOORS

TOPLINE

FOR ROOFS

EcoTherm insulation

Eco-Versal

A universal solution for insulating pitched roofs, floors, walls, dormer cheeks & ceilings

Polyisocyanurate (PIR) foam core with aluminium foil composite to both sides

Eco-Versal The 5 in 1 solution

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Description

Eco-Versal is rigid polyisocyanurate foam with aluminium foil composite on both sides. It is a universal high performance insulation used for pitched roofs, floors, walls, dormer cheeks and ceilings.

Applications

Applications include upgrading the thermal performance of existing building elements, providing a cost effective means of reducing CO_2 emissions and for compliance with Building Regulations. Ideal for:

- Floors
- Pitched roofs/Cold flat roofs
- Timber frame walls
- Walls
- Room-in-the-roof applications
- Both new build and renovations

Design considerations

BREATHABLE MEMBRANE

FOR ROOFS

A breathable membrane should be fixed in accordance with the manufacturer's instructions. Generally for a pitched roof, the membrane should be laid over the rafters and be secured by the use of tile or slate laths. The membrane should not be allowed to sag between the rafters.

FOR TIMBER FRAME WALLS

Please consult appropriate professional body guidelines i.e. TRADA, NHBC to determine the requirement and position of a breather membrane within a timber frame construction.

ENVIRONMENTAL

PIR foam is CFC/HCFC free and has zero Ozone Depletion Potential (ODP) with a Global Warming Potential (GWP) of 3, less than the target value of 5. It has BRE Green Guide rating of A.

FIRE

When properly installed the insulation will not contribute to the development of a fire or present a smoke or toxic hazard as the fire develops.

Further details on the fire performance of Eco-Versal may be obtained from EcoTherm Technical Services.

Achieves BS476-7: 1997 Class 1 rating.

STANDARDS AND APPROVALS

PIR foam is produced according to BS EN 13165: 2008 Thermal insulation products for buildings – Factory made rigid polyurethane foam products – Specification.

Covered by BBA Agrément Certificate No 99/3569.

SPANNING SUSPENDED FLOORS

When fixed to timber framing, metal channels, rafters or battens, the maximum board span should be 600mm.

TYPICAL U-VALUES

EcoTherm Eco-Versal gives typical values as shown in tables 1, 2 and 3. In a floor application the U-value will be dependant on the P / A ratio (Perimeter / Area).

VAPOUR CONTROL

FOR PITCHED ROOFS

In most cases there is no need to use a vapour control layer below the insulation. However in areas of very high humidity it may be required. Typically a 50mm clear ventilation gap should be maintained between the insulation and the roof tile underlay.

Consider Eco-Liner in combination with Eco-Versal between rafters to achieve desired U-values. Further details are available from EcoTherm Technical services.

Product properties

COMPRESSIVE STRENGTH

Typical compressive strength for the foam exceeds 140kPa when tested to BS EN 826: 1996 Thermal Insulating Products for Building Applications – Determination of Compression Behaviour.

FLOOR LOADING

For domestic applications, when covered with a suitable floor covering, the boards are capable of resisting a uniformly distributed load of < 1.5 kN/m² and a concentrated load of < 1.4 kN. Further assessment is necessary in the case of heavy duty walkways and floors subject to physical activities.

THERMAL CONDUCTIVITY

The thermal conductivity (λ value) of the board is 0.022W/mK. The thermal resistances of the Eco-Versal range are shown in table 1. The low emissivity surface of the reflective foil can cut radiation heat transfer across an adjoining air-space.

TYPICAL WEIGHT

100mm board is 10 Kg per board

DENSITY

- PIR foam has a typical density of 30 kg/m³

DURABILITY

Eco-Versal has an indefinite life and its durability depends on the background/supporting structure and conditions of its use. It should not be used to isolate dampness nor be used in continuously damp/humid conditions.

RESISTANCE TO SOLVENTS

PIR foam resists attack from alkalis, dilute acids, mineral oil and petrol. The foam core is not resistant to ketonic solvents. Damaged boards should not be used.

MOISTURE TOLERANCE

The PIR core of EcoTherm Insulation boards has a low moisture absorption capacity in a floor construction. The product must be used above the dpm and must not be used where it may come into contact with moisture from the ground. For floors subject to national Building Regulations, construction should be as detailed or designed in accordance with Approved Documents / Mandatory Standards.

WATER VAPOUR RESISTANCE

Eco-Versal has an integral vapour control layer to minimise the risk of interstitial condensation.

Foil facings have a high water vapour resistance and will, therefore, provide a significant resistance to water vapour transmission.

Apply proprietary self adhesive foil tape at board joints to complete the vapour control layer and to maximise thermal performance.

The requirement for a vapour control layer should be assessed to BS5250: 2002 (Code of Practice for control of condensation in buildings)

BBA BRITISH BOARD OF AGREMENT

Cert 99/3569

FOR FREE TECHNICAL ADVICE
Call: 01268 597 212/213
Email: technical@ecotherm.co.uk

Site work

HANDLING

- Do not drop boards
- To cut use a sharp knife or fine tooth saw
- Wear eye protection
- Damaged boards should not be used

Cutting with power tools generates non-hazardous dust, so should be kept to a minimum. Ideally all operations which produce dust should be carried out in well ventilated conditions; where possible a dust mask selected in accordance with BS EN 149 should be worn.

HEALTH AND SAFETY

This PIR product is chemically inert and safe to use, COSHH information is available on request.

STORAGE

Store boards indoors in a flat, dry area off the ground and away from mechanical damage and sources of ignition. If temporary outdoor storage cannot be avoided, boards should be completely covered with weatherproof sheeting.

VERTICAL BATTENS

FOR ROOFS

In all over-rafter applications the EcoTherm Eco-Versal insulation boards should be fixed by the use of vertical battens. These allow an additional space to be formed which separates the breathable membrane from the board. It allows the membrane to be stretched across and between the battens, avoiding contact with the board. Counter battens allow slate and tile laths to be fixed in the traditional manner.

LAYERS

Where very low U-values are required, it may be more practical to layer the insulation between the rafters and use a thermal laminate to the underside of the rafter.

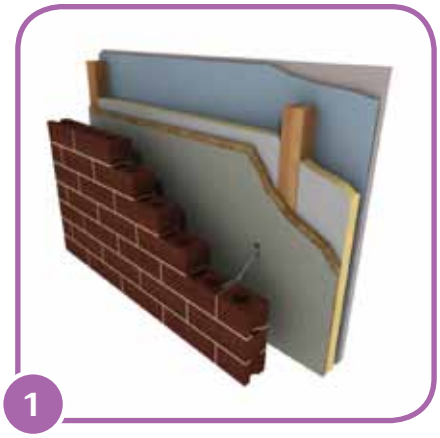
Eco-Versal is available in the following standard sizes:

Width (mm): 1200 **Length (mm):** 2400

Thickness: 25mm - 200mm

2 fixing methods for Timber Frame

INSULATION BETWEEN TIMBER STUDS



INSULATION BETWEEN AND OVER TIMBER STUDS

Eco-Versal can be installed over the timber studs to reduce the cold bridging effect and further improve the thermal performance of the wall. Eco-Liner Fix can be used as an alternative over the timber studs helping to reduce installation time. When fixed to timber framing, the maximum board span should be 600mm.

Install EcoTherm Eco-Versal insulation tightly between the studs pushed against the OSB/ply sheathing. Use timber stop battens to prevent the insulation boards from moving and provide the specified air cavity within the frame if required. This cavity may be used as a service void.

Board joints should be butted to maintain continuity of insulation and joints can be taped using a 50mm wide aluminium foil tape. Sealant can be used around all perimeter abutments to help further maintain the vapour seal.

Table 1 **Applications to timber frame walls**

Thickness (mm)*	R Value (m^2k/W)	Typical U-value (W/m^2k)
50	2.27	0.35
55	2.50	0.33
60	2.73	0.32
65	2.96	0.31
70	3.18	0.30
75	3.41	0.29
80	3.64	0.28
90	4.09	0.26
100	4.55	0.25
110	5.00	0.24
120	5.46	0.22

* All calculations based on: Eco-Versal between 140mm deep studs, min 20mm non-vented cavity. Wall make up of - 103mm brickwork, 50mm cavity, Breather Membrane, 12mm ply, 140mm Timber Frame, 12.5mm plasterboard, plaster skim.

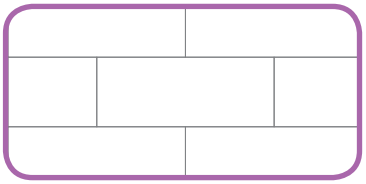
Assumes 15% thermal bridging at timber studs.

For alternative wall constructions/applications please contact Technical Services to obtain a U-value calculation.

Eco-Versal The 5 in 1 solution

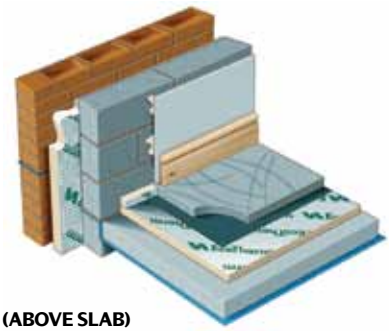
4 fixing methods for floors

Eco-Versal is suitable for use above or below ground supported concrete slabs, suspended block and beam floors and timber floors between joists.



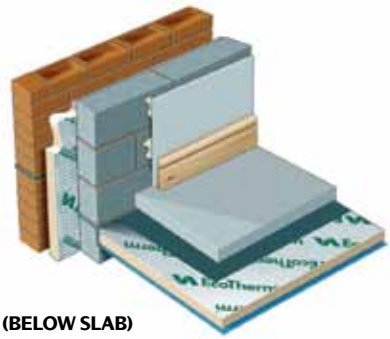
LAYING PATTERN/FLOORS

1



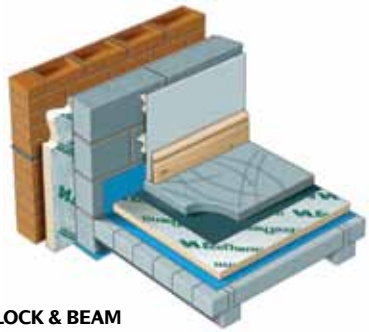
SOLID FLOOR (ABOVE SLAB)

2



SOLID FLOOR (BELOW SLAB)

3



SUSPENDED BLOCK & BEAM

4

SUSPENDED TIMBER

Table 2 **Applications to floors**

Thickness (mm)*	Typical U-value Solid concrete slab/INS/screed	Typical U-value Suspended Beam + Block	Typical U-value Suspended timber
25	0.36	0.40	0.39
30	0.33	0.37	0.36
35	0.31	0.34	0.34
40	0.28	0.31	0.32
45	0.27	0.30	0.30
50	0.25	0.27	0.29
60	0.22	0.24	0.26
65	0.21	0.23	0.25
70	0.20	0.22	0.25
75	0.19	0.21	0.24
80	0.19	0.20	0.23
90	0.17	0.18	0.22
100	0.16	0.17	0.21
110	0.15	0.16	0.20
120	0.14	0.15	0.19
130	0.13	0.14	0.18
140	0.12	0.13	0.18
150	0.12	0.12	0.17
160	0.11	0.12	0.15*
170	0.11	0.11	0.15*
180	0.10	0.10	0.14*
190	0.10	0.10	0.14*
200	0.09	0.10	0.14*

*All calculations based on a P/A ratio of 0.5

* 200mm deep timbers

The figures quoted are for guidance only and based upon typical constructions. A detailed U-value calculation should be completed for each individual project by EcoTherm Technical Services.

Use EcoTherm UFH board in conjunction with screeds and under-floor heating systems, visit **www.ecotherm.co.uk** for further details.

3 fixing methods for roofs

Dependent on the U-value required and the roof design, different approaches can be taken.

OVER RAFTER INSULATION

The boards are placed covering the whole roof area with the joints staggered and lightly butted. The insulation is then fixed by use of a vertical batten (minimum size 50mm x 25mm) placed above the insulation down the line of each rafter. The boards are secured by fixing through both the vertical battern and the EcoTherm Eco-Versal board. Install the breathable membrane as per manufacturer's instructions. The counter battens form the base for the fixing of the tile or slate laths.

Fix using proprietary fixings .

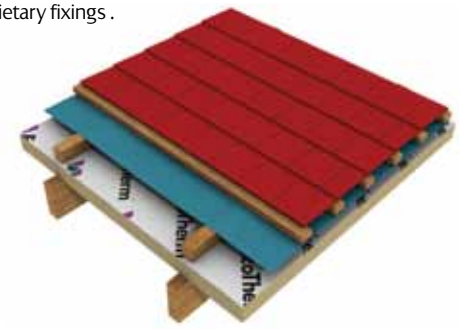


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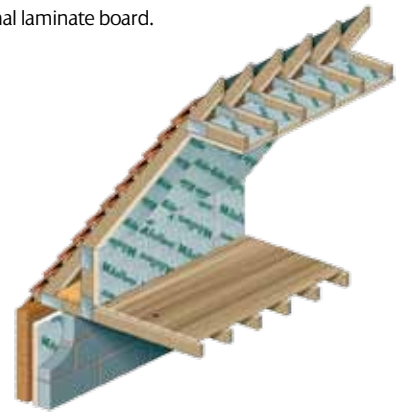
Table 3 **Applications to pitched roofs**

Thickness (mm)*	R Value (m^2k/W)	Typical U-value single layer over rafters (W/m^2k)	Typical U-value between and 25mm under rafters (W/m^2k)
25	1.14	0.60	0.37
30	1.36	0.52	0.34
35	1.59	0.47	0.32
40	1.82	0.42	0.30
45	2.05	0.39	0.29
50	2.27	0.36	0.27
60	2.73	0.31	0.24
65	2.96	0.29	0.23
70	3.18	0.27	0.22
75	3.41	0.25	0.21
80	3.64	0.24	0.21
90	4.09	0.22	0.19
100	4.55	0.20	0.18
110	5.00	0.18	0.18
120	5.46	0.17	0.17
130	5.91	0.15	0.16
140	6.36	0.14	0.15
150	6.82	0.14	0.15
160	7.27	0.13	0.14
170	7.73	0.12	0.13
180	8.18	0.11	0.13
190	8.64	0.11	0.13
200	9.09	0.10	0.12

* The figures quoted are for guidance only and based upon typical constructions. A detailed U-value calculation should be completed for each individual project by EcoTherm Technical Services.

BETWEEN & UNDER RAFTER INSULATION

Cut the insulation tight between the rafters leaving a 50mm clear cavity above the insulation and below the breathable membrane. Fix a secondary layer of Eco-Versal to the underside of the rafter and cover with 12.5mm plaster board or use EcoTherm's Eco-Liner Fix thermal laminate board.



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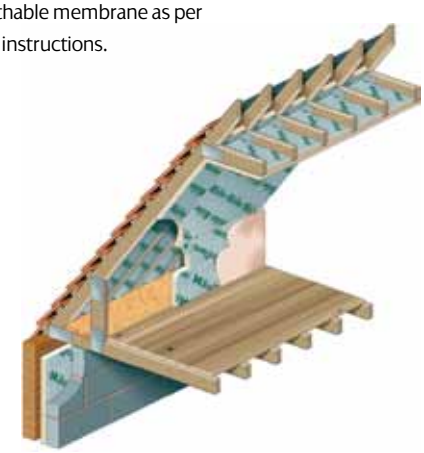
BETWEEN & OVER RAFTER INSULATION

Cut the insulation tight and push up between the rafters. Install the other-thicker-layer of insulation over the top and secure with a vertical batten down the line of each rafter.
Install the breathable membrane as per manufacturers instructions.



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