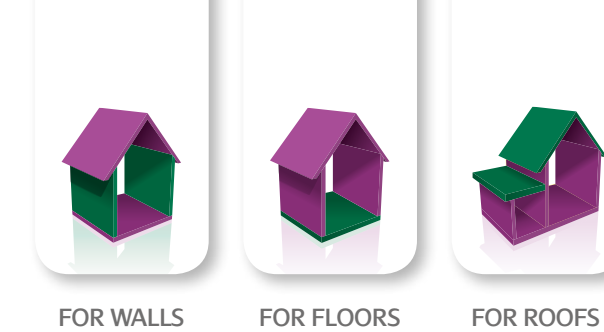
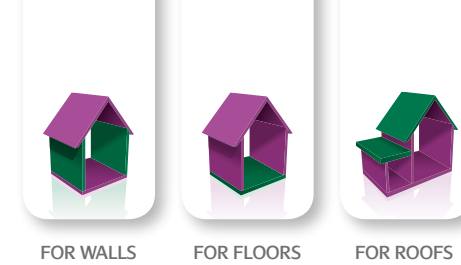


Eco-Versal The 5 in 1 solution



For floors

MOISTURE TOLERANCE
The fibre free PIR core of Eco-Versal has a low moisture absorption capacity in a floor construction. The product must be used above the damp proof membrane (DPM) and must not be used where it may come into contact with moisture from the ground.

MEMBRANE
In applications where a concrete slab is specified or exists, EcoTherm Eco-Versal should be overlaid with protective membrane of minimum 500 gauge prior to application of the screed.

FLOOR LOADING
The typical compressive strength of Eco-Versal is 140 kPa when tested at 10% compression. For a permanent dead load, the boards are capable of resisting a uniformly distributed load (UDL) of 30kN/m². The boards are therefore suitable for category A1 and A2 (in domestic situations), B2 (office situations) and C33 (non-domestic situations) as defined in BS EN 1991-1-1: 2002 Eurocode 1. Actions on structures, General actions.

4 fixing methods for floors



Table 4 Typical U-Values for Floors

Eco-Versal thickness (mm)	Typical U-values (W/m ² K)		
	Solid concrete slab/INS/screed	Suspended beam & block	Suspended timber (150mm deep timbers)
45	0.26	0.29	0.36
50	0.25	0.27	0.34
60	0.22	0.24	0.31
65	0.21	0.23	0.30
70	0.20	0.22	0.28
75	0.19	0.21	0.27
80	0.18	0.20	0.26
90	0.17	0.18	0.24
100	0.16	0.17	0.23
110	0.15	0.16	0.21
120	0.14	0.15	0.20
130	0.13	0.14	0.19
140	0.12	0.13	0.18
150	0.12	0.12	0.17
160	0.11	0.12	0.16*
170	0.11	0.11	0.16*
180	0.10	0.10	0.15*
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.

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
 - Wear suitable hand protection.

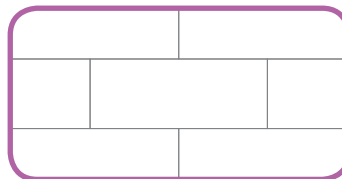
Cutting with power tools generates non-hazardous dust, so should be kept to a minimum. Ideally all operations which produce dust should be carried out in well ventilated conditions; where possible a dust mask selected in accordance with BS EN 149 should be worn.

HEALTH AND SAFETY
Eco-Versal is chemically inert and safe to use, product safety information is available to download from www.ecotherm.co.uk

STORAGE
Store boards in a flat, dry area off the ground away from mechanical and water damage and sources of ignition.
The boards must be protected from prolonged exposure to sunlight and should be stored either under cover or covered with opaque polyethylene or tarpaulin.
Keep boards dry at all times.

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

LAYING PATTERN/FLOORS
On solid floors lay Eco-Versal closely butted with staggered joints.



Eco-Versal

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



Fibre free rigid polyisocyanurate (PIR) insulation core with aluminium foil composite facing to both sides

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Please consult EcoTherm for details of BBA certificate numbers for specific products
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Eco-Versal The 5 in 1 solution

Description

Eco-Versal comprises a fibre free rigid polyisocyanurate (PIR) insulation core with aluminium foil composite facings on both sides.

Applications

Applications include both new build and upgrading the thermal performance of existing building elements, providing a cost effective means of reducing CO₂ emissions and for compliance with Building Regulations/Standards. Ideal for use in:

- Floors
- Solid walls
- Pitched roofs
- Dormer cheek
- Cold flat roofs
- Ceilings
- Timber frame walls
- Room-in-the-roof applications



Product properties

DIMENSIONS

Eco-Versal is available in the following standard sizes:

Width (mm): 1200
Length (mm): 2400
Thickness: 25mm - 200mm
Area: 2.88m²
Weight: As displayed in table 1

THERMAL PERFORMANCE

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

DURABILITY

When correctly installed, 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.

FIRE PERFORMANCE

EcoTherm Eco-Versal achieves BS476-7: 1997 Class 1 rating.

The specific fire resistance of the system will depend upon the conditions of use. For advice on the correct specification please contact EcoTherm Technical Services.

RESISTANCE TO SOLVENTS

PIR insulation resists attack from alkalis, dilute acids, mineral oil and petrol. The fibre free insulation core is not resistant to ketonic solvents.

ENVIRONMENTAL

EcoTherm PIR insulation is manufactured with a blowing agent that is CFC/HCFC free and has zero Ozone Depletion Potential (ODP) with a low Global Warming Potential (GWP).

Eco-Versal corresponds to the BRE Global Green Guide generic specification which achieves a summary rating of A. Eco-Versal with a certified BRE Global Green Guide rating of A+ is available subject to enquiry.

EcoTherm Eco-Versal is approved as an Energy Savings Trust (EST) Listed product.

Eco-Versal is not classified as a dangerous substance, so no special provisions are required regarding carriage. The fibre free insulation core and facings resists attack by mould and microbial growth and do not provide any food value to vermin.

STANDARDS AND APPROVALS

EcoTherm Insulation is manufactured under an ISO 9001 Quality Management System (LPCB certificate 388 – 7QMS), ISO 14001 Environmental Management System (LPCB certificate - 388 – 7EMS) and BS OHSAS 18001 Occupational Health and Safety Management System (LPCB certificate 388 – 7HS). All certificates are available for download from www.ecotherm.co.uk.

Eco-Versal is covered BBA Agrément Certificate No 99/3569.



EcoTherm PIR insulation lambda and thermal resistance values stated in this datasheet are in accordance with BS EN 13165: 2012 Thermal insulation products for buildings – Factory made rigid polyurethane foam products – Specification.

All EcoTherm insulation products have a CE Declaration of Performance available for download from www.ecotherm.co.uk



Design considerations

TYPICAL U-VALUES

EcoTherm Eco-Versal achieves typical U-values as shown in tables 2, 3 and 4. In a floor application the U-value will be dependant on the P / A ratio (exposed Perimeter / Area).

WATER VAPOUR RESISTANCE

Eco-Versal has an integral vapour control layer to minimise the risk of interstitial condensation. The foil facings have a high water vapour resistance and will, therefore, provide a significant resistance to water vapour transmission.

If required, 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).

COMPRESSIVE STRENGTH

The typical compressive strength of Eco-Versal is 140 kPa when tested at 10% compression to BS EN 826: 1996 Thermal Insulating Products for Building Applications – Determination of Compression Behaviour.

SPANNING

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

Table 1 Typical Weights and Thermal Resistances

Thickness (mm)	Weight per board (kg)	Thermal Resistance / R-value (m ² K/W)
25	3.38	1.136
30	3.83	1.364
35	4.28	1.591
40	4.72	1.818
45	5.17	2.045
50	5.62	2.273
55	6.06	2.500
60	6.51	2.727
65	6.96	2.955
70	7.40	3.182
75	7.85	3.409
80	8.29	3.636
85	8.74	3.864
90	9.19	4.091
95	9.63	4.318
100	10.08	4.545
110	10.97	5.000
120	11.87	5.455
130	12.76	5.909
140	13.65	6.364
150	14.54	6.818
160	15.44	7.273
170	16.33	7.727
180	17.22	8.182
190	18.12	8.636
200	19.01	9.091

For roofs

BREATHABLE MEMBRANE

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.

VAPOUR CONTROL

In most cases there is no need to use a vapour control layer below the insulation; however in areas of high humidity it may be required.

VERTICAL BATTENS

In all over-rafter applications EcoTherm Eco-Versal 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 an insulated plasterboard, such as Eco-Liner, to the underside of the rafter.

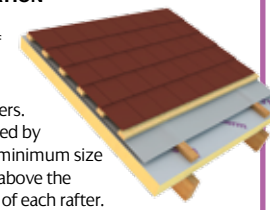
3 fixing methods for roofs

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

1

OVER RAFTER INSULATION

Eco-Versal boards are placed covering the roof area lightly butted with the joints break bonded and positioned over rafters. 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.

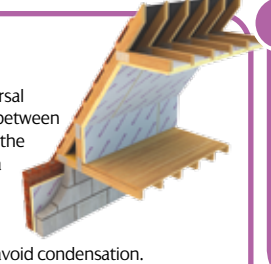


The insulation is secured by fixing through both the vertical batten and the board. Install the breathable membrane as per manufacturer's instructions. The horizontal battens form the base for the fixing of the tile or slate laths.

2

BETWEEN & UNDER RAFTER INSULATION

Cut and install the Eco-Versal insulation boards tightly between the rafters and flush with the bottom of the rafters. In a ventilated pitched roof a 50mm cavity is required above the insulation and below the sarking felt to avoid condensation.

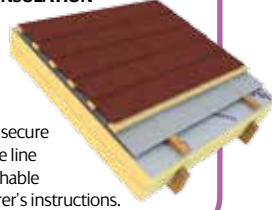


Fix a secondary thinner layer of Eco-Versal insulation to the underside of the rafter and cover with 12.5mm plasterboard or use EcoTherm's insulated plasterboard, Eco-Liner.

3

BETWEEN & OVER RAFTER INSULATION

Cut the Eco-Versal insulation tight, push up between to the top the rafters and secure in place with timber noggins. 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 manufacturer's instructions.



Consider Eco-Liner in combination with Eco-Versal between rafters to achieve lower U-values plus insulate and dry line in one application. Further details are available from EcoTherm Technical services or at www.ecotherm.co.uk

Table 2 Typical U-Values for Pitched Roofs

Eco-Versal thickness (mm)	Typical U-values (W/m ² K)		
	Single layer over rafters	Between & 25mm under rafters	Between & 100mm over
90	0.20	0.20	0.13
100	0.18	0.19	0.11
110	0.17	0.18	0.11
120	0.16	0.18	0.10
130	0.15	0.17	0.10
140	0.14	0.16	0.09
150	0.13	0.16	0.09
160	0.12	0.14	-
170	0.12	0.14	-
180	0.11	0.13	-
190	0.10	0.13	-
200	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 or head to www.ecotherm.co.uk to use EcoTherm's online U-value calculator.

For walls

BREATHABLE MEMBRANE

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

VAPOUR CONTROL

In order to control the risk of condensation, a vapour control layer should be installed behind the plasterboard.

Table 3 Typical U-Values for Timber Frame Walls

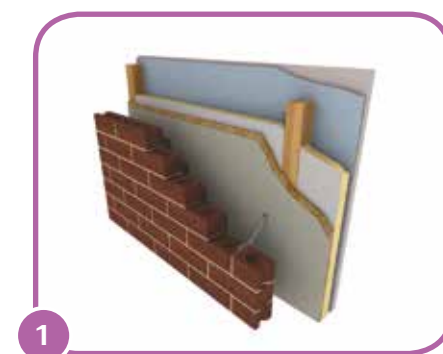
Eco-Versal thickness (mm)	Typical U-values (W/m ² K)	
	Between Studs	Between & inside using 37.5mm Eco-Liner
65	0.31	-
70	0.30	-
75	0.29	-
80	0.28	-
90	0.26	-
100	0.25	0.19
110	0.24	0.18
120	0.23	0.17

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, 9mm ply, 140mm Timber Frame, 12.5mm plasterboard/37.5mm Eco-Liner, plaster skim. Assumes 15% thermal bridging at timber studs.

For alternative wall constructions/applications please contact EcoTherm Technical Services to obtain a U-value calculation or head to www.ecotherm.co.uk to use EcoTherm's online U-value calculator.

2 fixing methods for timber frame

INSULATION BETWEEN TIMBER STUDS



Eco-Versal can be installed inside the timber studs in addition to between them to reduce the cold bridging effect and further improve the thermal performance of the wall. Insulated plasterboard such as Eco-Liner can be used as an alternative inside the timber studs helping to reduce installation time. When fixed to timber framing, the maximum board span should be 600mm. The insulation board must be installed flush with the stud and there should be no gap between insulation layers.

Install Eco-Versal tightly between the studs and pushed against the OSB/ply sheathing. Use timber stop battens

INSULATION BETWEEN AND INSIDE TIMBER STUDS



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.