



FOR WALLS

Eco-Cavity Full Fill



Full Fill Cavity Wall Insulation



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



Eco-Cavity Full Fill



Description

Eco-Cavity Full Fill comprises of a fibre free rigid polyisocyanurate (PIR) insulation core with a low emissivity composite aluminium foil on both sides.

Applications

Eco-Cavity Full Fill is suitable for full fill cavity wall applications, whilst maintaining a residual 10 mm cavity. The residual cavity helps resist moisture transfer, aids installation and accommodates mortar squeeze. The tongue and groove edges ensure a continuous layer of insulation which increases protection from wind driven rain and also aids installation. Eco-Cavity Full Fill boards are conveniently sized to co-ordinate with standard brick and block dimensions allowing easy insertion of wall ties into the construction at the appropriate spacing.



Product properties

DIMENSIONS

Eco-Cavity Full Fill is available in the following standard sizes:

Width: 450 mm

Length: 1200 mm

Standard Thicknesses: 90, 115 & 140 mm

Weight: See Table 1 for board weights

STANDARDS AND APPROVALS

Eco-Cavity Full Fill (in the manufactured thicknesses of 90, 115 and 140 mm), produced at the Selby (North Yorkshire) manufacturing facility, is covered by BBA Agrément Certificate No 14/5157.



EcoTherm PIR Insulation is manufactured under a management system certified to ISO 9001: 2015 (Quality management systems), ISO 14001: 2015 (Environmental management systems), ISO 45001: 2018 (Occupational health and safety management systems) and ISO 50001: 2018 (Energy management systems).

All available certificates can be downloaded from www.ecotherm.co.uk.

THERMAL PROPERTIES

The low emissivity surface of the reflective foil can cut radiated heat transfer across an adjoining air-space.

Eco-Cavity Full Fill has a thermal conductivity (λ -value) of 0.022 W/mK. The thermal resistance (R-value) of Eco-Cavity Full Fill varies with the thickness (see Table 1).

EcoTherm PIR insulation λ and thermal resistance values stated in this datasheet are in accordance with BS EN 13165: 2012 + A2: 2016 (Thermal insulation products for buildings. Factory made rigid polyurethane foam (PU) products. Specification).

FIRE PERFORMANCE

There are potential restrictions placed upon this product which vary dependant on building type, height, construction and location in Great Britain. For guidance regarding the routes to compliance for meeting fire safety requirements please refer to the relevant Building Regulations/ Standards for England, Wales and Scotland.

Under System 4 AVCP, Eco-Cavity Full Fill has a Euroclass rating of F.

Further details on the fire performance may be obtained from EcoTherm Technical Services.

COMPRESSIVE STRENGTH

The compressive strength of Eco-Cavity Full Fill typically exceeds 140 kPa when tested to BS EN 826: 2013 (Thermal insulating products for building applications. Determination of compression behaviour).

DURABILITY

When correctly installed, Eco-Cavity Full Fill can have an indefinite life. Its durability depends on the background/supporting structure and conditions of its use. It should not be used to isolate dampness or be used in continuously damp/humid conditions.

RESISTANCE TO SOLVENTS, FUNGI & RODENTS

Eco-Cavity Full Fill resists attack from alkalis, dilute acids, mineral oil and petrol, however it is not resistant to ketonic solvents. The insulation core and facings resist attack from mould and microbial growth and do not provide any food value for vermin. Damaged boards should not be used.

The use of EcoTherm Eco-liner (insulated plasterboard) on the inside of external walls should be considered to achieve improved target U-values in a wall construction.





Table 1 Eco-Cavity Full Fill typical weights, thermal resistances & U-values

Thickness (mm)	Weight per board (kg)	R-value (m ² K/W)*	Typical U-values (W/m ² K)**				
			Brick & light block	Brick & medium block	Brick & dense block	Light block & dense block	Medium block & dense block
90	1.72	4.05	0.18	0.19	0.20	0.18	0.20
115	2.14	5.20	0.15	0.16	0.16	0.15	0.16
140	2.56	6.35	0.13	0.14	0.14	0.13	0.14

* Thermal resistances are rounded down to the nearest 0.01 (m²K/W).

** The internal wall finish is taken to be a 3 mm skim coated 12.5 mm plasterboard on dabs. The U-values are valid for constructions with a 10 mm clear residual cavity between the outer surface of the insulation and the inner face of the outer masonry leaf.

When calculating U-values to BS EN ISO 6946: 2017 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods), the type of wall tie used may change the thickness of insulation required. For cavity widths ≤125 mm, calculations assume a stainless steel flexible tie with 2.5 ties per m² and a cross-sectional area of 12.50 mm². For cavity widths >125 mm, calculations assume a stainless steel flexible tie with 2.5 ties per m² and a cross-sectional area of 23.4 mm².

For the purposes of these calculations the standard of workmanship has been assumed good, and therefore the correction factor for air gaps has been ignored.

The figures quoted are for guidance only. A detailed U-value calculation and a condensation risk analysis should be completed for each project.

If your construction is different from those specified, and/or to gain a comprehensive U-value calculation along with a condensation risk analysis of your project, please contact EcoTherm Technical Services (see rear cover for details).

The calculations are based on the following lambda values: Brick 0.77 W/mK | Dense Block 1.13 W/mK | Medium Block 0.51 W/mK | Lightweight Block 0.11 W/mK.



Design considerations

ENVIRONMENTAL

An Environmental Product Declaration (EPD), certified to EN 15804:2013+A2:2019 (Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products), has been created for Eco-Cavity Full Fill produced at the Pembridge (Herefordshire) and Selby (North Yorkshire) manufacturing facilities. Please visit the Eco-Cavity Full Fill web page at www.ecotherm.co.uk for more information.

EcoTherm Insulation is manufactured under a management system certified to ISO 14001: 2015.

RESIDUAL CAVITY WIDTH

A 10 mm residual cavity width is recommended between the insulation and the outer leaf for wall heights up to 25 metres. For further details please refer to current BBA Certificate 14/5157.

The NHBC accepts the use of Eco-cavity Full Fill, other than in very severe exposure locations with fair faced masonry, provided it is installed, used and maintained in accordance with the BBA certificate, in relation to NHBC standards, chapter 6.1 External masonry walls.

WALL TIES

Wall ties should have a retaining clip/disc for securing the insulant to the masonry plane. Ideally they should be BBA/NSAI approved and conform to BS EN 845-1: 2013 + A1: 2016 (Specification for ancillary components of masonry. Wall ties, tension straps, hangers and brackets), BS EN 1996-1-1: 2005 + A1: 2012 (Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures), BS EN 1996-2: 2006 (Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry), BS EN 1996-3: 2006 (Eurocode 6. Design of masonry structures. Simplified calculation methods for unreinforced masonry structures) and PD 6697: 2019 (Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2).

MOISTURE TOLERANCE

When the product is used in situations where it bridges the Damp Proof Course (DPC) in walls, dampness from the ground will not pass through to the inner leaf provided the cavity wall is detailed in accordance with Building Regulations/Standards.

The tongue and groove edges of Eco-Cavity Full Fill helps increase protection from wind driven rain.

Eco-Cavity Full Fill may be used in any exposure zone provided the appropriate construction, external finish or facing masonry and joints are carried out. However, some warranty providers or local authority building control will not accept the use of full fill cavity wall insulation in very severe exposure zones to driving rain. Where buildings are subject to such, the requirements of the specific warranty provider or local authority building control must be met. Checks with the relevant parties must be completed before building works commence.

THERMAL BRIDGING

Careful consideration should be given to junctions between elements (corners, floors and openings) in order to reduce linear thermal bridging. Heat loss is represented by the junction's psi (ψ) value. The psi (ψ) values of all the linear thermal bridges in a building are used in whole building CO₂ emissions calculation software. Standard details are available from the Eco-Cavity Full Fill product page at www.ecotherm.co.uk.

TYPICAL U-VALUES

Eco-Cavity Full Fill achieves typical U-values as shown in Table 1.

Project specific U-value and Condensation Risk Analysis (CRA) calculations are available from EcoTherm Technical Services on request (see rear cover for details).

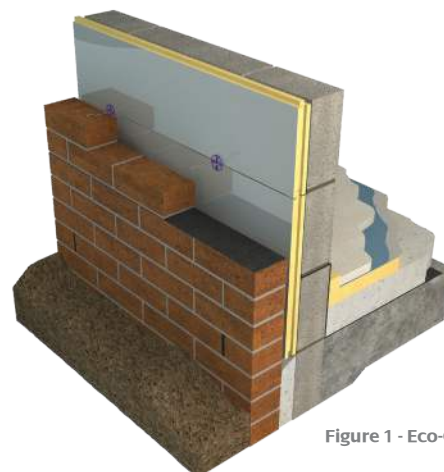


Figure 1 - Eco-Cavity Full Fill



FOR WALLS

FOR FREE TECHNICAL ADVICE

Call: 01268 597 213

Email: technical@ecotherm.co.uk



Sitework

HANDLING

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

Cutting with power tools generates 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 149:2001+A1:2009 (Respiratory protective devices. Filtering half masks to protect against particles. Requirements, testing, marking) should be worn.

HEALTH & SAFETY

Eco-Cavity Full Fill is chemically inert and safe to use. Product safety information is available to download from www.ecotherm.co.uk

STORAGE

Ideally boards should be stored inside in a flat, dry area, clear of the ground away from mechanical damage and sources of ignition. If however, temporary outdoor storage cannot be avoided then the boards should be stacked clear of the ground and protected by an opaque polythene sheet or weatherproof tarpaulin.

Boards that have been allowed to get wet should not be used.

FIXING DETAILS

- All boards should be fitted or butted together with vertical joints staggered.
- Excess mortar should be cleaned from the cavity face of the internal wall leaf before the installation of the each run of Eco-Cavity Full Fill boards.
- EcoTherm Insulation recommend the use of a cavity board (i.e. timber boarding) and cavity timber stop (i.e. 10 mm plywood) to protect the Eco-Cavity Full Fill boards and to help keep the cavity clean as each section of wall leaf is built.
- EcoTherm Insulation recommend the use of insulated cavity closers at door and window openings.
- The boards can be cut to fit openings, (i.e. around windows, doors and airbricks). The tongue and groove edge should be trimmed so that a tight butt edge is formed at opening interfaces. To ensure a continuous layer of insulation is maintained, it is essential to cut boards accurately and that cut pieces completely fill the spaces and are adequately secured.
- Where openings such as doors and windows are in close proximity, it is recommended that a continuous lintel and/or cavity tray is used. Individual lintels or cavity trays should have stop ends and be adequately drained.
- Corner details are formed by cutting the boards squarely and closely butting the two Eco-Cavity Full Fill boards. Alternatively, board ends can be cut at a 45° angle to create a mitred joint. All corner details, internal and external, are to incorporate a vertical DPC or self-adhesive vertical DPC overlapping beyond the board ends (at all courses).
- At gable walls Eco-Cavity Full Fill should be continued no less than 200 mm beyond the top storey ceiling and a cavity tray installed to protect the top of the Eco-Cavity Full Fill boards.
- Exposed areas of board should always be covered at the end of a day's work or in driving rain.

- A 10 mm residual cavity should always be maintained between Eco-Cavity Full Fill insulation board and external wall leaf.
- Install the first row of wall ties at 600 mm horizontal centres (2 per board) at a minimum of one course of blockwork below the DPC. Wall ties should not be placed directly on the DPC. The insulation boards should commence at least 150 mm below the DPC to provide edge insulation for the floor, but not be in contact with the ground.
- Construct the internal wall leaf up to 450 mm (2 block courses) and install wall ties at 900 mm horizontal centres.
- Install the first row of Eco-Cavity Full Fill boards between the 2 rows of wall ties, tightly to the internal wall leaf, with the tongue and grooved edges tightly interlocked to form a closely jointed run, and secure in place with a retaining clip/disc on each tie.
- Each board should be secured at a minimum of three points. Additional ties may also be required to satisfy the structural requirements of BS EN 845-1: 2013 + A1: 2016, BS EN 1996-1-1: 2005 + A1: 2012, BS EN 1996-2: 2006, BS EN 1996-3: 2006, PD 6697: 2019 and/or to ensure adequate retention of boards or cut pieces.
- Construct the external wall leaf to meet the top of the Eco-Cavity Full Fill boards and repeat the process up to the required height (wall ties spaced at 450 mm vertical centres and 900 mm horizontal centres).

For further guidance, standard details are available from the Eco-Cavity Full Fill product page at www.ecotherm.co.uk.

Figure 2 - Use of Eco-Cavity Full Fill when installing the inner wall leaf



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