FOR FLAT ROOFS

EcoTherm Insulation

Eco-Bond

Flat roof insulation for use beneath fully adhered and mechanically fixed single-ply waterproofing membranes

Fibre-free rigid polyisocyanurate (PIR) insulation core with a coated glass tissue facing on both sides

Issue 12 I January 2025

Eco-Bond

Description

Eco-Bond comprises a fibre-free rigid polyisocyanurate (PIR) insulation core with a coated glass tissue facing on both sides.

Applications

Eco-Bond is flat roof insulation available in flat boards, for use on new roofs, refurbished roofs or for upgrading the thermal performance of existing roofs. Eco-Bond is suitable for fully adhered single ply waterproofing systems as well as mechanically fixed systems on concrete, timber or metal decks. For advice on how Eco-Bond can suit your application, please contact EcoTherm.

Product properties

DIMENSIONS

Eco-Bond is available in the following standard sizes:

Thickness	Width	Length	Area
25mm*	1200 mm	600 mm	0.72 m^2
50-160 mm*	1200 mm	1200 mm	1.44 m^2

* Greater thicknesses of insulation may be achieved with two layers of insulation boards

THERMAL CONDUCTIVITY

Eco-Bond thickness and thermal resistances:

Thickness (mm)	Lambda/λ-value
25-79	0.027 W/mK
80-119	0.025 W/mK
120+	0.024 W/mK

Eco-Bond lambda/ λ-values quoted in this datasheet are quoted in accordance with BS EN 13165: 2012 +A2: 2016 (Thermal insulation products for buildings. Factory made rigid polyurethane foam (PU) products. Specification).

COMPRESSIVE PERFORMANCE

The average compressive stress of Eco-Bond exceeds 150 kPa at 10% compression, when tested to BS EN 826: 2013 (Thermal insulating products for building applications. Determination of compression behaviour).

RESISTANCE TO SOLVENTS, FUNGI & RODENTS

Eco-Bond resists attack from alkalis, dilute acids, mineral oil and petrol. The insulation is not resistant to ketonic solvents.

The insulation core and facings of Eco-Bond resist attack from mould and microbial growth and do not provide any food value to vermin.

DURABILITY

When correctly installed, Eco-Bond will remain effective for the life of the building. 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.

WATER VAPOUR RESISTANCE

EcoTherm recommends a Condensation Risk Analysis (CRA) be completed for each project.

The insulation boards should be installed over a Vapour Control Layer (VCL) or sealed metal deck.

Consideration should be given to BS 5250: 2021 (Management of moisture in buildings. Code of practice) and BS 6229: 2018. (Flat roofs with continuously supported flexible waterproof coverings. Code of practice).

FIRE PERFORMANCE

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-Bond has a Euroclass rating of F.

Additional materials can be placed above the insulation layer within a roofing system including, but not limited to, waterproofing materials, reinforcement layers, primers and carrier membranes. These additional materials complete the roofing system. As such, the fire performance of a roofing system is predominantly determined by these finishes.

Compliance for meeting the fire safety requirements of the Building Regulations/Standards can be evaluated by testing the fire performance of the roofing system. The most commonly used route to compliance involves testing the full roofing system and uses test method DD CEN/TS 1187: 2012 (Test methods for external fire exposure to roofs). External roof exposure testing is typically carried out by the waterproofing manufacturer/system supplier, due to thecomplexities of the roofing system.

NB Test evidence to demonstrate compliance with the fire safety requirements of the Building Regulations/Standards incorporating Eco-Bond within a roof system would be required to be provided from the chosen waterproofing system supplier. Without the required classification for the proposed roof system, achieved through either an external roof exposure test or an overlay of inorganic material, the use of Eco-Bond must be restricted to at least 20 metres in England and 24 metres in Scotland, or more from any point of the relevant boundary.

Further details on the fire performance may be obtained from Ecotherm Technical Services (see rear cover for details).

FOR FREE TECHNICAL ADVICE
Tel: +44 (0) 1544 387 325
Email: ecothermtechnical@kingspan.com

ROOF LOADING

Eco-Bond is suitable for roof decks which are exposed to limited maintenance foot traffic, depending on the waterproofing system being used. For roofs which require regular pedestrian access, a walkway should be provided. The roof should be boarded out with protective boarding whenever site work is to take place after the roofboard has been laid and the roof made watertight.

ROOF WATERPROOFING SYSTEM

Eco-Bond is suitable for use with fully adhered and mechanically fixed waterproofing systems (PVC, TPO, EVA, EPDM etc). Please contact the waterproofing manufacturer to check the compatibility of the waterproofing system with Eco-Bond. Eco-Bond is also suitable for use with mastic asphalt, partially bonded built up felt and some liquid applied waterproofing systems. Please contact EcoTherm for more information on these applications.

DESIGN CONSIDERATIONS

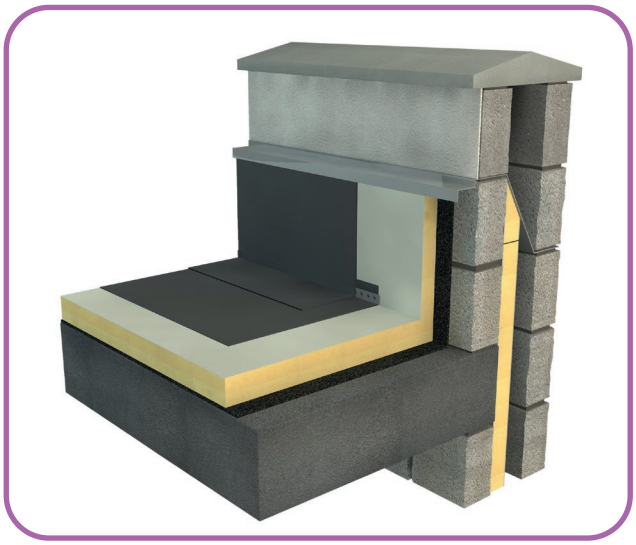
Consideration should also be given to BS 5250: 2021 and BS 6229: 2018.

STANDARDS AND APPROVALS

The use of Eco-Bond (in thicknesses of 25 - 160 mm), produced at the Pembridge (Herefordshire) and Selby (North Yorkshire) manufacturing facilities, is covered by BBA no. 24/7272.

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), ISO 50001: 2018 (Energy Management Systems) and ISO 37301: 2021 (Compliance Management Systems).

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



CONSTRUCTION CONSIDERATIONS

Consideration should be given to the recommendations and best practice guidance of SPRA (Single Ply Roofing Association), LRWA (Liquid Roofing and Waterproofing Association) and the IMA (Insulation Manufacturers Association).

WIND LOADING

Wind loadings should be assessed in accordance to BS EN 1991-1- 4:2005 + A1:2010 (Eurocode 1. Actions on structures. General Actions, Wind Actions) and the UK National Annex. EcoTherm recommend contacting the waterproofing manufacturer for a project specific wind uplift calculation.

INSTALLATION

The roof deck should be clean, dry, smooth, secure and free from frost and contaminants before installation of Eco-Bond boards. Voids , cracks and holes must be repaired and hollows, depressions and deflections must be made good before application of the new waterproof system.

- The Eco-Bond insulation must be installed over the AVCL according to the specifications, which will determine if the board should be bonded or mechanically fastened.
- When bonding the insulation, it is important to follow the manufacturer's guidelines on the correct adhesive to be used. A single-part polyurethane adhesive (PU) is the most common practice.
- It is important to follow the waterproofing manufacturers guidelines regarding the application of the waterproofing membrane.
- The waterproofing will continue to the vertical as a separate detail and finish 150mm above the finished roof level. The AVCL will run behind any installed insulation.

BONDING

Eco-Bond insulation should be sufficiently bonded to the AVCL using a single-part polyurethane adhesive. Please follow the waterproofing manufacturer's guidance on using polyurethane adhesive and adhesion centers. Alternatively, hot bitumen could be used.

Alternatively, the insulation boards should be secured to the deck using mechanical fixings e.g. telescopic tube fasteners (see 'Mechanical fixing').

In cases where multiple layers of insulation are being used to create higher thicknesses, PU Adhesive can also be used to bond the layers to one another.

The waterproofing membrane is installed in accordance with the membrane manufacturer's instructions, over the whole insulated area including any insulation upstands, as soon as possible after laying the insulation boards.

Eco-Bond

FOR FLAT ROOFS

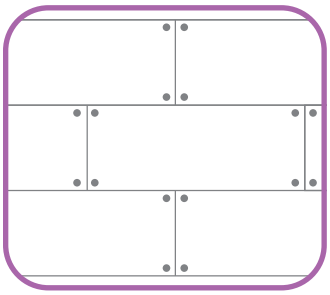
MECHANICAL FIXINGS

Mechanical fixings should be used as recommended in IMA information document ID/1/2009 (Mechanical fixings for rigid polyisocyanurate (PIR) and polyurethane (PUR) roofboards beneath single-ply waterproofing membranes).

Where the specified vapour control layer is not a bitumen membrane, eg polyethylene, any fixings which penetrate the vapour control layer should be telescopic tube fastenings.

The number of mechanical fixings required to fix Eco-Bond will vary with the geographical location of the building, the topographical data, and the height of the roof concerned. The requirement for additional fixings should be assessed in accordance BS / I.S. EN1991-1-4: 2005 + A1: 2010 (National Annex to Eurocode 1. Actions on structures. General Actions. Wind Actions). It is essential that the EcoTherm Eco-Bond is restrained over its full surface area. When installing 2.4 x 1.2 m boards a minimum of 6 mechanical fixings should be placed within the individual board area and be sited adjacent to the corners of the board. When using 1.2 x 0.6 m boards a minimum of 4 mechanical fixings should be used. Any additional fixings needed should be evenly distributed over the full area of the board. Each fixing should incorporate a minimum 50 mm diameter counter sunk washer. Fixings at board edges must be more than 50 mm but less than 150mm away from the edge or corner of the board. EcoTherm advises where possible, thermally broken tube fixings should be used.

LAYING PATTERN



Boards should be laid with edges butted and in a break bonded pattern laid at right angles to the edges of the roof or diagonally across the roof. The board is suited to a variety of laying patterns. However, it is recommended that whatever pattern is employed joints are always break-bonded and taped. On metal decks the long edges should be laid at right angles to the corrugations. All board joints should be fully supported by the deck.

HANDLING

- Do not drop boards
- To cut use a 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.
Ensure accurate trimming to achieve close butt joints and continuity of insulation.

STORAGE

Store boards in a flat, dry area off the ground away from mechanical and water damage.

If temporary outdoor storage cannot be avoided then they must be completely protected by use of an opaque polythene sheet or tarpaulin.

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

HEALTH & SAFETY

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

For the most up-to-date version of this brochure, please scan or click here.

To access pre-existing product information or information relating to previously sold/ discontinued products please email **literature@kingspaninsulation.co.uk.**

Kingspan Insulation Ltd.
Pembridge, Leominster, Herefordshire HR6 9LA.
tel: +44 (0) 1544 387 325
www.ecotherm.co.uk email: ecotherminfo@kingspan.com

EcoTherm Technical Services:
ecothermtechnical@kingspan.com