

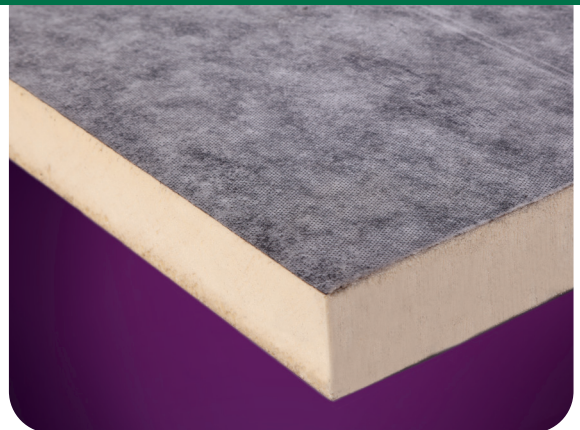


FOR FLAT ROOFS

# Eco-Torch



Flat roof insulation for use with hot applied roofing systems or adhered single-ply systems



Fibre free rigid polyisocyanurate (PIR) insulation core faced with coated glass tissue on one side and bitumenised glass tissue with polypropylene fleece on the other





## Description

Eco-Torch comprises a fibre free rigid polyisocyanurate (PIR) insulation core with glass tissue facing on one side and bitumenised glass tissue with polypropylene fleece facing on the other. The PIR fibre free insulation core can withstand the application of hot bitumen and asphalt to the surface up to 230 °C.

## Applications

Eco-Torch is suitable for use with torch-on and pour & roll felt systems, mastic asphalt and fully adhered single-ply systems. It is suitable for new-build and for upgrading the thermal performance of existing roofs. Eco-Torch provides a cost effective means of reducing CO<sub>2</sub> emissions and achieving compliance with UK Building Regulations/Standards.



## Product properties

### DIMENSIONS

Eco-Torch is available in the standard sizes below:

**Width:** 600 mm

**Length:** 1200 mm

**Area:** 0.72 m<sup>2</sup>

**Thickness:** 30 - 150 mm\*

**Weight:** See Table 1 for board weights

### STANDARDS AND APPROVALS

Eco-Torch is manufactured in accordance with the requirements of BS EN 13165: 2012 + A2: 2016 (Thermal insulation products for buildings. Factory made rigid polyurethane foam (PU) products. Specification).



Eco-Torch is an Energy Savings Trust (EST) endorsed product.

EcoTherm Insulation is manufactured under a management system certified to ISO 9001: 2015 (Quality Management Systems. Requirements), ISO 14001: 2015 (Environmental Management Systems. Requirements), ISO 45001: 2018 (Occupational Health and Safety Management Systems. Requirements with guidance for use) and ISO 50001: 2018 (Energy Management Systems. Requirements with guidance for use). All certificates are available for download from [www.ecotherm.co.uk](http://www.ecotherm.co.uk)

### THERMAL PERFORMANCE

The thermal conductivity (lambda/λ-value) of Eco-Torch varies by thickness as follows:

30 to 79 mm = 0.027 W/mK

80 to 119 mm = 0.025 W/mK

120 + mm = 0.024 W/mK

The thermal resistance (R-value) of Eco-Torch varies with thickness (see Table 1).

EcoTherm PIR insulation lambda 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).

**Table 1 Typical weights, thermal resistances & U-values**

Thickness (mm)	Weight per board (kg)	R-value (m <sup>2</sup> K/W) **	Typical U-values (W/m <sup>2</sup> K) ***		
			Metal deck	Concrete deck	Timber deck
80	2.1	3.20	0.29	0.26	0.26
90	2.3	3.60	0.26	0.24	0.24
100	2.5	4.00	0.24	0.22	0.22
110	2.8	4.40	0.22	0.20	0.20
120	3.0	5.00	0.19	0.18	0.18
130	3.2	5.41	0.18	0.17	0.17
140	3.4	5.83	0.17	0.16	0.15
150	3.7	6.25	0.16	0.15	0.15
160*	-	-	0.15	0.14	0.14
170*	-	-	0.14	0.14	0.13
180*	-	-	0.14	0.13	0.13
190*	-	-	0.13	0.12	0.12
200*	-	-	0.12	0.12	0.12

\* Requirements for board thicknesses over 150 mm can be fulfilled with two layers of insulation boards.

\*\* This sum is rounded down to the nearest 0.01 m<sup>2</sup>K/W.

\*\*\* Typical U-value calculations are based on:

Metal deck: profiled metal deck, vapour control layer, Eco-Torch insulation board, 3 layer build-up felt.

Concrete deck: 3 mm skim coated 12.5 mm plasterboard fixed to timber battens at 600 mm centres, 150 mm concrete deck, 50 mm screed laid to falls, vapour control layer, Eco-Torch insulation board, 3 layer built-up felt.

Timber deck: 3 mm skim coated 12.5 mm plasterboard, 50 x 150 mm timber joists at 600 mm centres, 18 mm plywood deck, vapour control layer, Eco-Torch insulation board, 3 layer built-up felt.

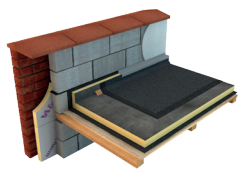
The U-values quoted above are for guidance only. Detailed U-value calculations should be completed for each project by EcoTherm Technical Services (see rear cover for details). For instant U-value calculations 24/7 visit EcoTherm's online U-value calculator at [www.ecotherm.co.uk](http://www.ecotherm.co.uk)

### FIRE PERFORMANCE

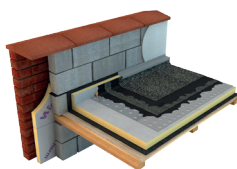
For guidance regarding the routes to compliance for meeting fire safety requirements please refer to the relevant Building Regulations / Standards for England, Wales and Scotland.

Under System 4 AVCP, Eco-Torch has a Euroclass rating of F.

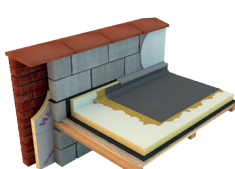
Additional materials can be placed above the insulation layer within a roofing system including, but not limited to, waterproofing materials, reinforcement layers, primers and carrier membranes. These additional



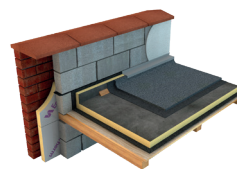
• TORCH-ON FELT



• POUR & ROLL FELT



• SINGLE-PLY



• MASTIC ASPHALT



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 the complexities of the roofing system.

**NB** Test evidence to demonstrate compliance with the fire safety requirements of the Building Regulations/Standards incorporating Eco-Torch 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-Torch 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).

#### COMPRESSIVE STRENGTH

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

#### DURABILITY

When correctly installed, Eco-Torch will remain an effective insulation system for at least the lifetime of the waterproofing system. Its durability depends on the method of application, the supporting structure and the conditions of use. It should not be used to isolate dampness or be used in continuously damp/humid conditions.



## Design considerations

#### RESISTANCE TO SOLVENTS, FUNGI & RODENTS

Eco-Torch resists attack from alkalis, dilute acids, mineral oil and petrol, however it is not resistant to ketonic solvents. It is rot proof and resists attack from mould and microbial growth and will not provide any food value to vermin. Damaged boards should not be used.

#### ENVIRONMENTAL

The core of Eco-Torch 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).

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

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

#### CONSTRUCTION CONSIDERATIONS

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 coverings. Code of practice).

Consideration should be given to the recommendations and best practice guidance of SPRA (Single Ply Roofing 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 (National Annex to Eurocode 1 Actions on Structures. General Actions. Wind Actions). EcoTherm recommend contacting the waterproofing manufacturer for a project specific wind uplift calculation.

#### ROOF LOADING

Depending on the waterproofing system, Eco-Torch is suitable for use on access roof decks that are subject to maintenance foot traffic. Where inappropriate foot traffic is liable to occur, it is recommended that the roof is protected by specially constructed walkways. The roof should be protected with protective boarding whenever site work is to take place after Eco-Torch has been installed and the roof made watertight.

#### ROOF WATERPROOFING SYSTEM

Eco-Torch is suitable for use with most torch-on and pour & roll felts, mastic asphalt and fully adhered single-ply waterproofing systems. Seek specific advice from the felt/waterproofing manufacturer who may offer their own proprietary system and refer to BS 8217: 2005 (Reinforced bitumen membranes for roofing. Code of practice).

For torch-applied systems, torch apply with minimum heat at all times onto the polypropylene fleece side.

In the event of any doubt, please contact EcoTherm Technical Services (see rear cover for details) to check compatibility of the system.



Figure 1 - Install with polypropylene fleece exposed for torch-on felt and mastic asphalt systems.

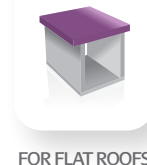


Figure 2 - Install with glass tissue exposed for single-ply adhered and pour & roll felt systems.

#### TYPICAL U-VALUES

Eco-Torch achieves typical U-values as shown in Table 1.

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



## INSTALLATION

Ensure the roof deck is clean and dry before installing of Eco-Torch boards. The roof deck should be constructed/laid to a fall to all rainwater outlets. Alternatively, a tapered insulation system can be used - contact our tapered insulation partner Building Innovation Ltd at [www.building-innovation.co.uk](http://www.building-innovation.co.uk) for further details.

When installing Eco-Torch over an existing roof, the condition of the existing waterproofing system must be assessed to ensure it is in good condition and water tight. If the waterproofing system is deemed not water tight, a Vapour Control Layer (VCL) should be installed before installing the insulation boards.

If the insulation boards are to be bonded down to a concrete deck, to ensure an adequate bond between the VCL and deck, the surface should be suitably primed, in accordance with the primer manufacturer's instructions.

Install a VCL to the deck, ensuring a 150 mm minimum overlap occurs at the VCL edges, and that the VCL is turned up at the edge of the roof to the height specified by the membrane manufacturer. If the boards are to be mechanically fixed to the deck, the VCL underneath should be loose laid and fixings must incorporate a square/circular 50 mm thermally broken washer.

A 25 mm minimum upstand of the insulation board should be installed around the roof perimeter and approved angle fillets should be used at upstands or kerbs.

## BONDING ECO-TORCH TO ROOF DECK

- Fully bond Eco-Torch to the VCL or sealed metal deck, with hot bitumen (max. 230°C) or with PU adhesive. Eco-Torch can be mechanically fixed (see below).
- Follow manufacturer's guidelines for the application of the waterproofing system.
- Apply torch with minimum heat.
- Continue the waterproofing vertically at upstands, to a minimum of 150 mm above the top of the horizontally laid insulation or 300 mm above the deck.

## MECHANICALLY FIXING ECO-TORCH TO ROOF DECK

Mechanical fixings should be used as recommended in the IMA information document ID/1/2009 (Mechanical fixings for rigid polyisocyanurate (PIR) and polyurethane (PUR) roofboards beneath single-ply waterproofing membranes). The suitability of the substrate to accept and retain mechanical fixings must be checked prior to the work commencing.

- Fix Eco-Torch to the deck with the appropriate number of fixings (a minimum of 6 per board) – this should be assessed in accordance to BS EN 1991-1-4: 2005 + A1: 2010 as this will depend on building height and location.
- A square/circular 50 mm countersunk washer should be used with each fixing.
- Fixings at board edges must be more than 50 mm but less than 150 mm away from the edge or corner of the insulation board.

- Follow manufacturer's guidelines for the application of the waterproofing system.
- Continue the waterproofing vertically at upstands, to a minimum of 150 mm above the top of the horizontally laid insulation or 300 mm above the deck.

## MASTIC ASPHALT

Mastic asphalt waterproofing should be laid, where applicable, in accordance with BS 8218: 1998 (Code of practice for mastic asphalt roofing). Mastic asphalt should always be laid over an isolating layer of loose-laid Type 4A sheathing felt to BS EN 13707: 2013 (Flexible sheets for waterproofing. Reinforced bitumen sheets for roof waterproofing. Definitions and characteristics).

The exposed face of insulation upstands, at parapets and abutments, must be lined with 18 mm exterior grade plywood, prior to the mastic asphalt waterproofing being laid. The plywood is used as an anchor point for the expanded metal substrate onto which the vertical mastic asphalt is laid. When Eco-Torch is to be used to insulate balconies, waterproofed with mastic asphalt with a porous promenade tile overlay, a 20 mm cork roofboard should be bitumen bonded to the Eco-Torch prior to laying the Type 4A sheathing felt and mastic asphalt.

## LAYING PATTERN

Boards should be laid with edges butted and in a break bonded, staggered pattern laid at right angles to the edges of the roof or diagonally across the roof. Always ensure all joints are supported by deck crowns or metal profiles.

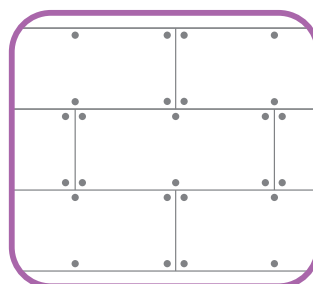


Figure 3 - Eco-Torch Joints Supported

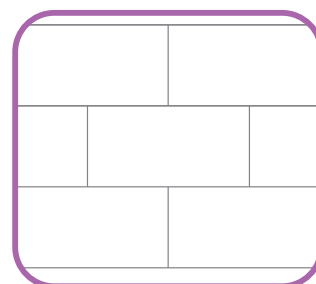


Figure 4 - Eco-Torch Laying Pattern with Deck Crowns



## Site work

### 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.

Ensure accurate trimming to achieve close butt joints and continuity of insulation, particularly around projections through the roof.

### HEALTH & SAFETY

Eco-Torch is chemically inert and safe to use. Product safety information is available to download from [www.ecotherm.co.uk](http://www.ecotherm.co.uk)

### STORAGE

Store boards in a flat, dry area off the ground away from mechanical damage and sources of ignition. If temporary outdoor storage cannot be avoided then the boards must be stacked clear of the ground, protected from prolonged exposure to sunlight and completely protected by use of an opaque polythene sheet or weatherproof tarpaulin. Whenever work is interrupted, a night joint must be made to prevent water penetration.

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