



FOR FLAT ROOFS

# Eco-Torch



Flat roof insulation 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





## Applications

For use with torch on and roll and pour felt systems, mastic asphalt and fully adhered single ply systems.

Used 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 for compliance with UK Building Regulations/Standards. Eco-Torch achieves high performance insulation for metal, concrete or timber decks.



## Product properties

### DIMENSIONS

**Width:** 600mm

**Length:** 1200mm

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

**Thickness:** 30 to 150mm\*

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

### DURABILITY

PIR insulation is rot proof and durable, stable (will not sag or shrink), resists attack by mould and microbial growth and will not provide any food value to vermin. It will remain effective as an insulation system for at least the lifetime of the waterproofing covering.

Please note, durability is dependent on the method of application, the supporting structure and conditions of use.

### COMPRESSIVE STRENGTH

Eco-Torch typically exceeds 150 kPa at 10% compression when tested to BS EN 826: 1996 (Thermal insulating products for building applications. Determination of compression behaviour).

### RESISTANCE TO SOLVENTS

Eco-Torch resists attack from dilute alkalis and acids, mineral oil and petrol. The insulation is not resistant to ketonic solvents. Damaged boards should not be used.

### THERMAL CONDUCTIVITY

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

30 to 79mm = 0.026 W/mK

80 to 119mm = 0.025 W/mK

120 + mm = 0.024 W/mK

Typical U-values within given constructions are shown in table 1 - based on a torch on felt application. 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.

### WATER VAPOUR RESISTANCE

Eco-Torch has a typical water vapour resistance of 40MNs/g and will, therefore, provide resistance to water vapour transmission. This will minimise both surface and interstitial condensation.

EcoTherm recommends a Condensation Risk Analysis (CRA) be completed for each project. On new build roofs, the insulation boards should be installed over a Vapour Control Layer (VCL) or sealed metal deck.

## Description

EcoTherm 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 is temperature tolerant and withstands the application of hot bitumen and asphalt to the surface at up to 230 °C.

**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
30	1.0	1.15	0.63	0.59	0.57
40	1.2	1.50	0.50	0.48	0.47
50	1.4	1.90	0.42	0.41	0.40
60	1.6	2.30	0.36	0.35	0.35
70	1.9	2.65	0.32	0.31	0.31
80	2.1	3.20	0.27	0.27	0.26
90	2.3	3.60	0.25	0.24	0.24
100	2.5	4.00	0.22	0.22	0.22
110	2.8	4.40	0.21	0.20	0.20
120	3.0	5.00	0.18	0.18	0.18
130	3.2	5.40	0.17	0.17	0.17
140	3.4	5.80	0.16	0.16	0.16
150	3.7	6.25	0.16	0.16	0.15
160*	-	6.65	0.15	0.14	0.14
170*	-	7.05	0.14	0.14	0.14
180*	-	7.50	0.13	0.13	0.13
190*	-	7.90	0.12	0.12	0.12
200*	-	8.30	0.12	0.11	0.11

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

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

Metal deck: profiled metal deck, vapour control layer, Eco-Torch insulation board, waterproofing system.

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

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

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

### ENVIRONMENTAL

EcoTherm 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-Torch is available with a BRE Global Green Guide rating of A on request.

EcoTherm Insulation is manufactured under an ISO 14001 Environmental Management System. EcoTherm Eco-Torch is approved as an Energy Savings Trust (EST) Listed product.

**FOR FREE TECHNICAL ADVICE**  
**Call: 01268 597 213**  
**Email: [technical@ecotherm.co.uk](mailto:technical@ecotherm.co.uk)**



• TORCH ON FELT



• ROLL & POUR FELT



• SINGLE PLY



• MASTIC ASPHALT



## Design considerations

### DESIGN CONSIDERATIONS

Consideration should be given to BS 5250: 2011 Code of Practice for control of condensation in buildings and BS 6229: 2003 Code of Practice for flat roofs with continuously supported coverings.

### 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.

### FIRE

The fire rating of any roof containing the boards will depend heavily on the type of deck and the nature of the roof waterproof covering.

The designation of the roof covering must meet or satisfy the requirements of the national Building Regulations.

Finished with 3 layer built-up felt and chippings, the roof will attain an FAA rating when tested to BS 476-3: 2004 Fire tests on building materials and structures, classification and method of test for external fire exposure to roofs.

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

### ROOF LOADING

Depending on the chosen waterproofing system, Eco-Torch is suitable for use on roof decks that are subject to limited maintenance foot traffic. Walkways should be provided on roofs requiring regular pedestrian access.

The roof should be boarded out with protective boarding whenever site work is to take place after the roof board has been laid and the roof made watertight.

### ROOF WATERPROOFING SYSTEM

Eco-Torch is suitable for use with most torch-on and roll & pour 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 - 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 to check compatibility of the system.



Lay with polypropylene fleece side up for torch-on felt and mastic asphalt systems.



Lay with buff coloured glass tissue facing side up for single ply adhered and roll and pour felt systems.

### SPANNING METAL-DECKS

On metal decks the long edges should be at right angles to the corrugations. All board joints should be fully supported by the deck.

Please refer to BS 4841-4: 2006 Specification for laminated insulation boards (roofboards) with auto-adhesively or separately bonded facings for use as roofboard thermal insulation under non-bituminous single-ply roofing membranes for details of thickness of board over metal trough openings.

Trough opening (mm)	Minimum roofboard thickness (mm)
<75	25
≥75 and ≤100	30
>100 and ≤125	35
>125 and ≤150	40
>150 and ≤175	45
>175 and ≤200	50
>200 and ≤225	55
>225 and ≤250	60

### SPECIFICATION CLAUSE

The insulation shall be EcoTherm Eco-Torch \_ mm thick - Fibre free rigid polyisocyanurate (PIR) insulation core with coated glass tissue on one side and bitumenised glass tissue with polypropylene fleece on the other. It shall be manufactured in accordance to Quality Management System ISO 9001: 2008, Environmental Management System ISO 14001: 2004 and Occupational Health & Safety Management System BS OHSAS 18001: 2007. EcoTherm Eco-Torch must be installed in accordance with instructions issued by EcoTherm Insulation UK Limited.

### STANDARDS AND APPROVALS

Eco-Torch is compliant with BS 4841-4: 2006 Specification for laminated insulation boards (roofboards) with auto-adhesively or separately bonded facings for use as roofboard thermal insulation under non-bituminous single-ply roofing membranes.

The use of Eco-Torch as a thermal insulation layer with single ply, felt and mastic asphalt waterproofing systems is covered by LABC Registered Details certificate number EW547A. Registered Details can be found at [www.labc.co.uk](http://www.labc.co.uk). All certificates are available to download from [www.ecotherm.co.uk](http://www.ecotherm.co.uk).

Consideration should be given to the recommendations of SPRA (Single Ply Roofing Association) and BRUFMA (British Rigid Urethane Foam Manufacturers' Association).

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

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](http://www.ecotherm.co.uk)

All EcoTherm insulation products have a CE Declaration of Performance available for download from [www.ecotherm.co.uk](http://www.ecotherm.co.uk)

### TYPICAL U-VALUES

EcoTherm Eco-Torch gives typical U-values as shown in table 1.

Specific project U-value calculations and condensation risk calculations are available free from EcoTherm Technical Services on request.



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## INSTALLATION

Roof deck should be clean and dry before installation of Eco-Torch boards. Roof deck should be constructed/laid to 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 VCL to deck, ensuring a minimum 150mm overlap occurs at 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 50mm thermally broken washer.

A minimum 25mm 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 insulation boards to the VCL or sealed metal deck, with hot bitumen (max 230°C) or with PU adhesive. Boards 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 150mm above the top of the horizontally laid insulation or 300mm above the deck.

## MECHANICALLY FIXING ECO-TORCH TO ROOF DECK

Mechanical fixings should be used as recommended in BRUFMA 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 the insulation boards to the deck with the appropriate number of fixings (a minimum of 6 per board) – this should be assessed in accordance to BS 6399-2:1997 (Loadings for buildings. Code of practice for wind loads) as this will depend on building height and location.
- A square/circular 50mm countersunk washer should be used with each fixing.
- Fixings at board edges must be more than 50mm but less than 150mm away from the edge or corner of the board.
- Follow manufacturer's installation guidelines of the waterproofing membrane.
- Continue the waterproofing vertically at upstands, to a minimum of 150mm above the top of the horizontally laid insulation or 300mm above the deck.

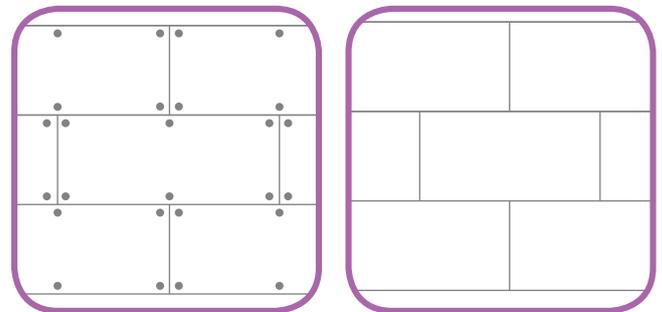
## MASTIC ASPHALT

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 747: 2000 (Reinforced bitumen sheets for roofing. Specification).

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.



## 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 dust so should be kept to a minimum. Ideally all operations which produce dust should be carried out in well ventilated conditions; a dust mask selected in accordance with BS EN 149 should be worn.

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

## STORAGE

At no time should the insulation boards be left exposed to rain. Whenever work is interrupted, a night joint must be made to prevent water penetration. Packs are stretch wrapped in recyclable polythene. Store boards in a flat, dry area off the ground away from mechanical damage and sources of ignition. Boards should be completely covered with weatherproof sheeting. The boards must be kept dry at all times. The boards must be protected from prolonged exposure to sunlight and should be stored either under cover or covered with opaque polyethylene sheets.

## 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)

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