

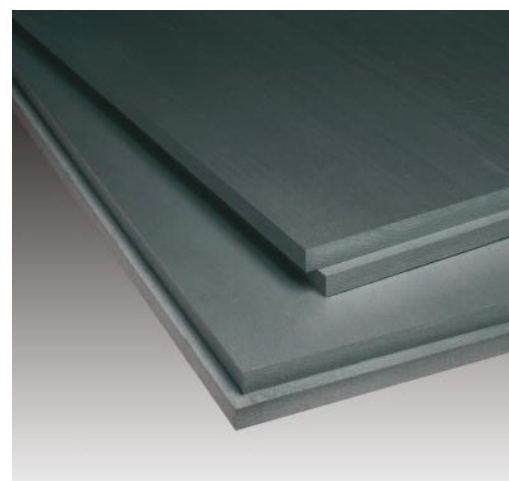
# Product Data Sheet

## **HYTHERM ECO XPS** Insulation for Inverted Roofs

**Hytherm ECO XPS is a lightweight, durable, rigid extruded polystyrene XPS insulation board, designed specifically for inverted roofing applications in conjunction with Axter's Water Flow Reducing Layer. With excellent lambda insulation performance, a GWP <5, and a BREEAM Green Guide Rating A+ it enables the construction of energy efficient buildings.**

**This multi-purpose board provides thermal insulation and frost protection of inverted flat, green and blue roofs. It is available in a range of thicknesses to meet the performance requirements of specific applications.**

The insulation boards are grey with a smooth skin on both surfaces. Infra-red particles are finely dispersed and incorporated into the extruded cell walls. These lead to reduced heat transfer to keep a building warm in winter and cool in summer.



## Key benefits

- Low thermal conductivity, minimising board thickness needed to achieve a specific U-value and increasing design flexibility, including lower parapet heights.
- High compressive strength: closed cell structure gives greater rigidity and high resistance to compression
- Low water absorption: natural resistance to rain, snow, frost and water vapour, makes Hytherm ECO XPS an exceptionally stable material retaining its initial insulation performance and physical integrity in exposed conditions over a long period.
- High resistance to temperature fluctuations and repeated freeze/thaw cycles.
- Flame retarded, enhancing safety and protection on construction projects.
- Rigid boards provide firm base for ballast layer (gravel or concrete slabs).
- Low susceptibility to rot, resulting in minimised mould or fungal growth.
- User-friendly: easy to install with hand tools, odourless and dust-free.
- Manufactured in accordance with BS EN 13164, ISO 14001 and ISO 9001. BBA approved.
- Environmental Product Declaration: EPD-EXI-20190112-IBE1-EN.
- BRE Green Guide Rating A+. Ref: [www.greenbooklive.com](http://www.greenbooklive.com) BRE Certificate of Validation No. ENP508e.
- GWP (Global Warming Potential) = <5; ODP (Ozone Depletion Potential) = zero.
- Hytherm Eco XPS is tested to ETAG 031 and can be used in a green roof application.
- Achieves CE marking, and satisfies the relevant requirements set out in the NHBC Standards 2021, Chapter 7.1

## Use

Hytherm ECO XPS is designed for use as insulation on inverted roofs with zero falls or slopes of 1:80 and 1:6. The insulation satisfies thermal performance and strength requirements of demanding project specifications for the lifetime of the structure. It can be used on untrafficked flat roofs as well as balconies and terraced roofs with pedestrian access only.

The boards are robust and highly resistant to the conditions often present on a flat roof, including wide temperature fluctuations and repeated freeze/thaw cycles.

Hytherm ECO XPS is intended for use on heavyweight decks such as reinforced concrete with a ballast layer of gravel or concrete slab. It can also be used on metal or timber decks. Concrete, metal or timber roofs should be designed in accordance with the relevant provisions of BS 6229:2018, BS 8217:2005 and BS 8218:1998, particularly to accommodate the weight of the ballast layer.

Hytherm ECO XPS must be overlaid with Axter filter/water flow reducing layer which acts as a filter layer preventing fines and other debris from passing through and also as a water flow reducing layer minimising cold rainwater flow between the insulation and roof waterproofing with consequent heat loss. This membrane must be laid with 300mm laps and covered with a gravel ballast or paving finish. Hytherm ECO XPS should be laid in a brick-bond pattern. It is essential that all joints between boards are tight and that no gaps exist when meeting rooflights, edge details and other services which perforate the roof deck.

Hytherm ECO XPS has attained a Green Guide Rating A+ by BREEAM and provides insulation that enables the constructions of energy efficient buildings.

These insulation boards are compatible with most construction materials, e.g. lime, cement, plaster, solvent-free bituminous compounds, water-based preservatives, anhydrous gypsum, alcohols, acids and alkalis. The use of solvent-free adhesives is advised; please contact Axter Ltd for more information on compatibility. Certain organic materials such as solvent-based wood preservatives, coal tar and derivatives (creosote), paint thinners and common solvents (acetone, ethyl acetate, petrol, toluene and white spirit for example) will attack Hytherm ECO XPS which could lead to loss of performance through softening, shrinkage and possible dissolution.

## **Durability**

When properly installed with the water flow reducing layer in place, Hytherm ECO XPS boards will remain an effective insulant for at least 25 years.

## **Environmental**

Hytherm ECO XPS is non bio-degradable and does not present an environmental hazard. The material can be recycled, disposed of as landfill or incinerated to recover the energy content.

## **Fire**

Hytherm ECO XPS contains a flame retardant additive to inhibit accidental ignition from a small fire source. However, it is combustible and if exposed to an intensive fire may burn rapidly. During shipment, storage and installation and use, therefore, Hytherm Eco XPS should not be stored close to open flames or other ignition sources or come into contact with volatile organic compounds and chemicals such as solvents. During installation Hytherm ECO XPS products should be protected from direct exposure to fire.

Hytherm ECO XPS achieves Euroclass E (reaction to fire) to standard BS EN 13501-1:2018 Fire classification of construction products and building elements. Classification using test data from reaction to fire tests.

Fire classification is based on small scale tests which may not reflect the reaction of the product in its end use state under actual fire conditions.

When ballasted with aggregate (minimum 50mm depth) or fully supported cast stone or mineral slabs (minimum 40mm thickness), the roof may be considered to be unrestricted by the national Building Regulations. Other roof coverings should be confirmed as required.

## **Handling and Storage**

Hytherm ECO XPS is lightweight and easy to handle and install. The product must be protected from prolonged exposure to sunlight to prevent degradation of the surface of the board.

### Axter Water Flow Reducing Layer (WFRL)

The Axter Water Flow Reducing Layer is a high performance spun bonded polyethylene geotextile, which helps to minimise heat loss caused by rainwater cooling and consequently the thickness of insulation required.

$f_x = 0.001$  drainage correction for the system incorporating the Axter WFRL

Nominal characteristics	
Roll size	Length 100m   Width 3m (300m <sup>2</sup> *) or Length 50m   Width 1.5m ( 75m <sup>2</sup> )
Water vapour resistance (MN.s.g-1)	0.17
Head of water test	No penetration
Mass per unit area (g.m-2)	60
Lap joints unsealed	300mm

\* not allowing for overlap (300mm)

### Hytherm Eco XPS – Product Data

Thickness	Declared thermal resistance	Length	Width	Compressive strength
(mm)	(RD) - m <sup>2</sup> K/W	(mm)	(mm)	(kPa)
200	6.45	1250	600	300
180	5.80	1250	600	300
160	5.15	1250	600	300
140	4.50	1250	600	300
130	4.20	1250	600	300
120	3.85	1250	600	300
100	3.20	1250	600	300
80	2.60	1250	600	300
50	1.65	1250	600	300

Hytherm ECO XPS is supplied as a lap jointed board

**Hytherm Eco XPS – Product Data – Cont'd**

Properties	Measure unit	Value	Standard	EN code
<b>Dimensions and tolerances</b>				
Length	mm	1250	BS EN 822	
Width	mm	600	BS EN 822	
Thickness	mm	50, 80, 100, 120, 130, 140, 160, 180, 200	BS EN 823	T1
<b>Mechanical Properties</b>				
Compressive strength or compressive stress at 10% deformation	kPa	300	BS EN 826	CS(10\Y)
Compressive creep max after 50 yrs <2% deformation under stress	kPa	110	BS EN 1606	CC(2/1.5/50) $\sigma_c$
<b>Hygrometric properties</b>				
Long term water absorption by total immersion	Vol-%	$\leq 0.7$	BS EN 12087	WL(T)
Water pick up by diffusion	%	$< 2$ 50 <80mm $< 1$ $\geq 80$ mm	BS EN 12088	WD(V)
Water pick up after Freeze Thaw	%	$\leq 1$	BS EN 12091	FTCD
<b>Thermal Conductivity</b>				
Design thermal conductivity Thickness: 50mm 80 – 200mm	W/mK	0.030 <60mm 0.031 $\geq 60$ mm	BS EN 13164 BS EN 13164 BS EN 13164	$\lambda_D$

Thermal resistance - thickness dependant.  
 $1\text{N/mm}^2 = 103\text{kPa} = 1\text{MPa}$

Properties	Measure unit	Value	Standard	EN code
Other properties				
Reaction to fire	-	E	BS EN 13501-1	Euroclass
Linear thermal expansion coefficient (typical)	mm/m.K	0.07		
Temperature limits	°C	-50/+75		
Dimensional stability 70°C & humidity 90%rh	%	<5	BS EN 1602	
Colour		Grey		
Surface finish		Skin		
Edge profile		Ship lap		

EN designation code: T1-CS(10\Y)300-CC(2/1.5/50)110<sup>2</sup>-WL(T)0.7-WD(V)1,2<sup>2</sup>-FCTD1-DS(70,90)-DLT(2)5

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