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 (WFRL). Hytherm ECO XPS insulation uses carbon dioxide as a blowing agent, which gives it an ozone depleting potential (ODP) of zero and a Global Warming Potential (GWP) of less than 5.

This multi-purpose board provides thermal insulation and frost protection for inverted flat, living 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. Infrared particles are finely dispersed and incorporated into the extruded cell walls. These scatter and reflect heat radiation, helping to reduce heat transfer to keep a building warm in winter and cool in summer.

Key benefits

- Declared thermal conductivity of 0.030 W/m.K for thicknesses up to and including 120mm and 0.031 W/m.K for thickness's above this.
- GWP = <5; ODP = zero.
- Closed cell structure for load-bearing applications, rated for;
  - 300 kPa compressive stress (according to EN 826).
  - 130 kPa compressive creep (2% deformation after 50 years according to EN 1606).
- Has low water absorption (<0.7% according to EN 12087), is temperature stable from -50 to 75°C, and <5% dimensional stability (according to EN 1604).
- Can be cut using hand tools.
- BBA certified by manufacturer for use within an inverted roof system.
- Achieves CE marking, and satisfies the relevant requirements set out in the NHBC Standards 2021, Chapter 7.1.1

Use

Hytherm ECO XPS is designed for use as insulation on inverted roofs. 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 (subject to consideration for external fire spread regulations) and terraced roofs with pedestrian access only.

In comparison to most other typical roof insulation types, 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 BS 6229, BS 8217 and BS 8218, particularly to accommodate the weight of the ballast layer.

Hytherm ECO XPS must be overlaid with Axter filter/water flow reducing layer (WFRL) which acts as a filter layer preventing fines and other debris from passing through and also reducing the amount of rainwater flow into the insulation layer voids adversely affecting the overall thermal performance of the insulation layer. 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.

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. Therefore, during shipment, storage, installation and use, 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.

When covered with 4mm-32mm aggregate (minimum 50mm depth) or 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.

Hytherm ECO XPS – Product Characteristics

Thermal Resistance[1)]

Thickness (mm)	50	80	100	115	120	130	140	145	160	165	175	180	190	195	200
R_d m².K/W(mm)	1.65	2.65	3.3	3.8	4.0	4.15	4.5	4.65	5.15	5.3	5.6	5.8	6.1	6.25	6.45

1) Thickness dependant.
Hytherm ECO XPS is supplied as a lap jointed board.

Properties	Measure unit	Value	Standard	EN code
Dimensions and tolerances				
Length	mm	1250	BS EN 822	
Width	mm	600	BS EN 822	
Thickness tolerences	Class	1	BS EN 823	T
Mechanical Properties				
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	130	BS EN 1606	CC(2/1.5/50)σ
Hygrometric properties				
Long term water absorption by total immersion	Vol-%	<0.7	BS EN 12087	WL(T)
Water pick up by diffusion	%	2 <80mm 1 ≥80mm	BS EN 12088	WD(V)
Water pick up after Freeze Thaw	%	<1	BS EN 12091	FTCD
Thermal Conductivity				
Thermal Conductivity Declared	W/m.K	0.030 ≤120mm 0.031 >120mm	BS EN 13164	λ_D
Other properties				
Reaction to fire classification	-	E	BS EN 13501-1: 2018	Euroclass
Linear thermal expansion cooefficient (typical)	mm/(m.K)	0.07		
Temperature limits	°C	-50/+75		
Dimensional stability under specified temperature (70°C) and humidity conditions (90%rh)	%	< 5	BS EN 1602	DS(70,90)

Properties	Measure unit	Value	Standard	EN code
Colour		Grey		
Surface finish		Skin		
Edge profile		Ship lap		
EN designation code: XPS-EN 13164-T1-CS(10\Y)300-CC(2/1.5/50)130-DS(70,90)-DLT(2)5-WL(T)0.7- WD(V)1,2,3(1)-FTCD1				

1 N/mm^2 = 1000 kPa = 1 MPa

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