

Product Data Sheet

HYTHERM ECO XPS

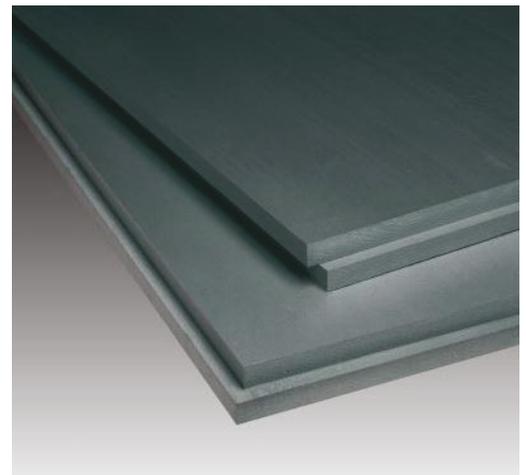
Insulation for Inverted Roofs

Axter Hytherm ECO XPS is a lightweight, durable, rigid extruded polystyrene XPS insulation board, designed specifically for roofing applications and used in conjunction with the Axter water flow reducing layer. 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.
- BRE Green Guide Rating A+. Ref: www.greenbooklive.com BRE Certificate of Validation No. 508.
- 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.

Use

Hytherm ECO XPS is designed for use as insulation on inverted roofs and to satisfy thermal performance and strength requirements of demanding project specifications for the lifetime of the structure.

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 with a vapour permeable separation layer and this combination helps to minimize the heat loss due to rainwater cooling and therefore the amount of insulation required.

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, Hytherm ECO XPS boards have a service life similar to that of the building or structure.

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: 2007+A1: 2009: 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.

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.

| Nominal characteristics | |
|------------------------------------|---|
| Roll size | Length 100m Width 3m 300m ² * |
| 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 ² K/W | (mm) | (mm) | (kPa) |
| 205* | 6.60 | 1250 | 600 | 300 |
| 200 | 6.45 | 1250 | 600 | 300 |
| 180 | 5.80 | 1250 | 600 | 300 |
| 160 | 5.15 | 1250 | 600 | 300 |
| 140 | 4.50 | 1250 | 600 | 300 |
| 120 | 3.85 | 1250 | 600 | 300 |
| 100 | 3.20 | 1250 | 600 | 300 |

| Thickness | Declared thermal resistance | Length | Width | Compressive strength |
|-----------|-----------------------------|--------|-------|----------------------|
| (mm) | (RD) - m ² K/W | (mm) | (mm) | (kPa) |
| 80 | 2.60 | 1250 | 600 | 300 |
| 50 | 1.65 | 1250 | 600 | 300 |

Hytherm ECO XPS is supplied as a lap jointed board.
*Contact Axter for availability of 205mm thickness insulation board.

| Properties | Measure unit | Value | Standard | EN code |
|---|--------------|---|-------------|---------------------------------------|
| Dimensions and tolerances | | | | |
| Length | mm | 1250 | BS EN 822 | |
| Width | mm | 600 | BS EN 822 | |
| Thickness | mm | 50, 80,100, 120,130,140, 160, 180, 200, 205 | BS EN 823 | T1 |
| Mechanical Properties | | | | |
| Compressive strength or compressive stress at 10% deformation (90 days) | kPa | 300 | BS EN 826 | CS(10\Y) |
| Compressive creep (design load) max 2% deflection after 50 years ² | kPa | 110 | BS EN 1606 | CC(2/1.5/50) _{o_c} |
| Hygrometric properties | | | | |
| Long term water absorption by immersion (28 days) | Vol-% | ≤0.7 | BS EN 12087 | WL(T) |
| Long term water absorption by diffusion d _N ≥50mm to <80mm | Vol-% | ≤2 | BS EN 12088 | WD(V) |

| Properties | Measure unit | Value | Standard | EN code |
|---|-------------------|----------------|---------------|-----------|
| $d_N \geq 80\text{mm}$ | Vol-% | ≤ 1 | BS EN 12088 | WD(V) |
| Freeze/thaw after 300 cycles | Vol-% | ≤ 1 | BS EN 12091 | FTCD |
| Thermal Conductivity | | | | |
| Declared thermal conductivity ¹ Thickness: <60mm $\geq 60\text{mm}$ | W/mK | 0.030 0.031 | BS EN 13164 | AD |
| Other properties | | | | |
| Reaction to fire | - | E | BS EN 13501-1 | Euroclass |
| Linear thermal expansion coefficient | mm/m.K | 0.07 | | |
| Maximum service temperature | °C | +75 | | |
| Capillarity | | 0 | | |
| Density (typical) | kg/m ³ | 34 | BS EN 1602 | |
| Colour | | Grey | | |
| Surface finish | | Skin | | |
| Edge profile | | Shiplap | | |
| EN designation code: T1-CS(10\Y)300-CC(2/1.5/50)110 ² -WL(T)0.7-WD(V)1,2 ³ -FCTD1-DS(70,90)-DLT(2)5 | | | | |

| Thickness (mm) | 50 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 205 |
|--------------------------------------|------|------|------|------|------|------|------|------|------|
| R _D [m ² .K/W] | 1.65 | 2.60 | 3.20 | 3.85 | 4.50 | 5.15 | 5.80 | 6.45 | 6.60 |

¹ Declared thermal conductivity according to EN 13164 (§ 4.2.1:Annex A; Annex C.2 and C.4.1)

² For thickness $\geq 80\text{mm}$

³ Varies with thickness

For further information, contact Axter Ltd.

The manufacturer reserves the right without prior notice to modify the composition of these products. Characteristics provided in this publication derive from data obtained under controlled test conditions. Axter Ltd makes no warranties, express or implied, as to the properties and performance under any variations from such conditions in actual construction.