

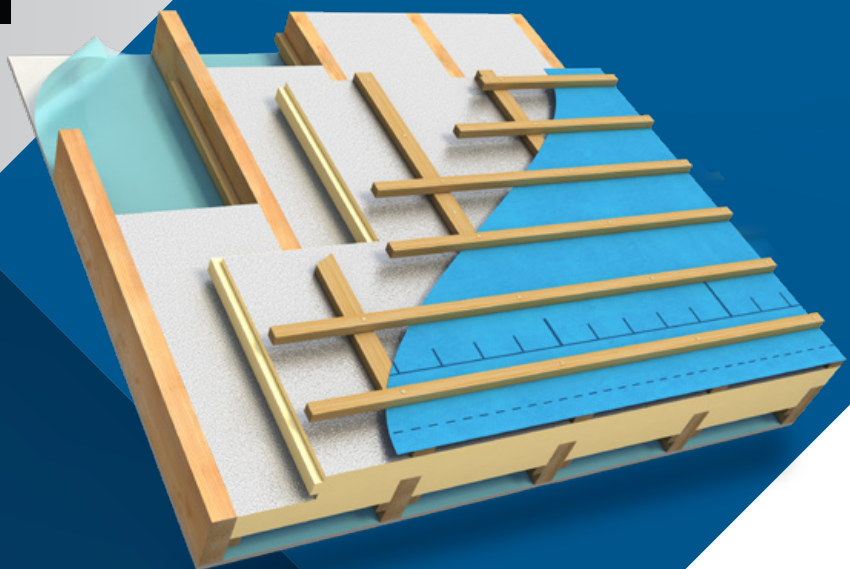
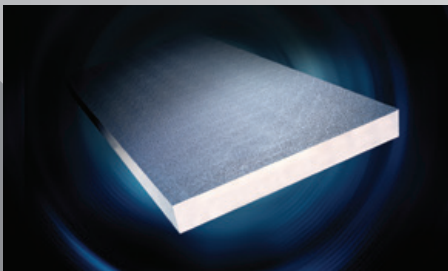
# XtroLiner

## Superior Performance PIR Insulation



### Roofs

**XO/SK (T&G)**  
Insulation for  
Sarking Warm Roof Construction



# Xtratherm<sup>®</sup>

More than insulation

# XtroLiner

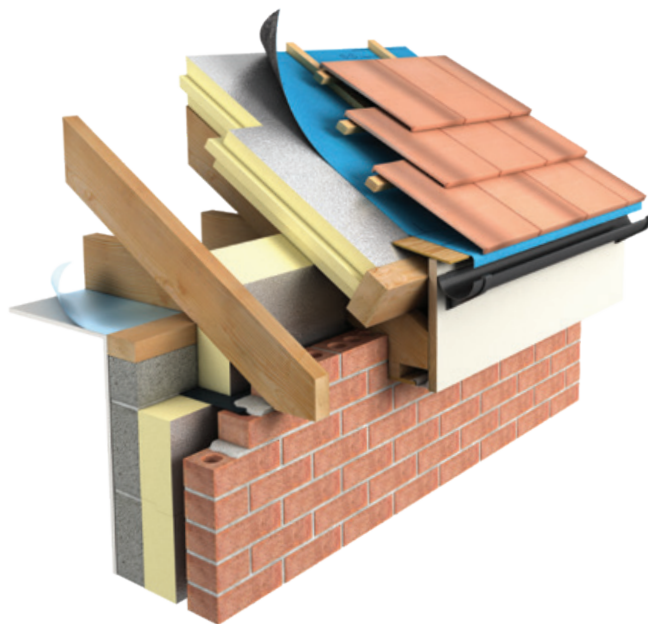
Superior Performance PIR Insulation

## XO/SK (T&G)

Insulation for  
Sarking Warm Roof Construction

**XtroLiner Sarking is an engineered tongue and grooved external roof insulation system with robust facings which meets the passive U-Value of 0.15 W/m<sup>2</sup>K. Using this product improves detailing, speeds up the installation process and provides a uniform plane to detail more effectively.**

Creating a warm roof reduces the normal amount of junctions prone to thermal bridging greatly improving the thermal performance of the roof.



### Specification Clause

The pitched roof Sarking insulation shall be Xtratherm XtroLiner XO/SK (T&G) manufactured to EN 13165 by Xtratherm, comprising a rigid modified Polyisocyanurate (PIR) core with textured robust low emissivity foil facings and engineered T&G jointing. The XO/SK (T&G) \_\_\_ mm with Agrément certified Lambda value of 0.021 W/mK to achieve a U-Value of \_\_\_ W/m<sup>2</sup>K for the roof element. To be installed in accordance with instructions issued by Xtratherm.

Xtratherm PIR achieves an A+ rating under the BRE Green Guide.



Refer to NBS clause P10 140, K11 695, K11 55

NBS Plus

### Thermal Resistances

Thickness (mm)	R-Value (m <sup>2</sup> K/W)
50	2.35
75	3.55
100	4.75
125	5.95

### Resistance 'R' Values

The resistance value of any thickness of Xtratherm insulation can be ascertained by simply dividing the thickness of the material (in metres) by its agrément declared lambda value, for example: Lambda 0.021 W/mk and thickness 125mm -> 0.125/ 0.021 -> R-Value = 5.95. In accordance with EN 13165, R-values should be rounded down to the nearest 0.05 (m<sup>2</sup>K/W).

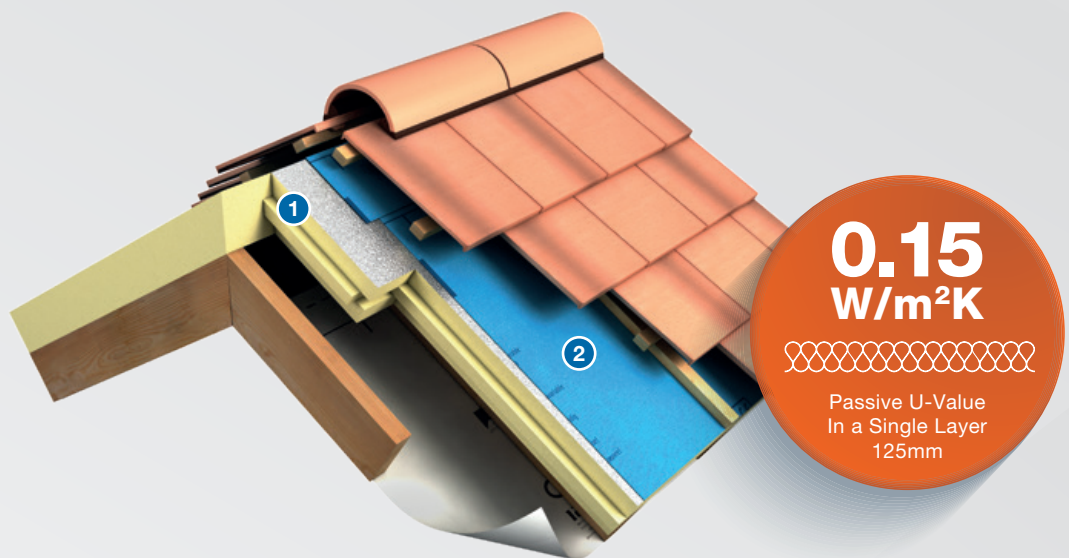
Robust Tongue & Groove Jointing

Reduced Risk of Condensation

Avoids Intrusion into Living Area

Excellent U-Value in roofs

Reduced Thermal Bridging



### 1

The XtroLiner Sarking tongue and groove jointing offers a practical on-site solution that results in a more robust continuous layer of insulation, minimising the threat of thermal bridging and improving the overall U-Value of the roof.

### 2

Detailing with vapour permeable membranes and vapour control membranes can be more accurately achieved with insulation in a single plane.

### Note:

Adding an additional layer of Xtratherm XO/PR between the counter battens minimises fixing length and improves the overall U-Value of the roof.

#### XO/SK

Length (mm)	2400
Width (mm)	1200
Thickness (mm)	50, 75, 100, 125

Other thicknesses may be available depending on minimum order quantity and lead time.

#### Property & Units

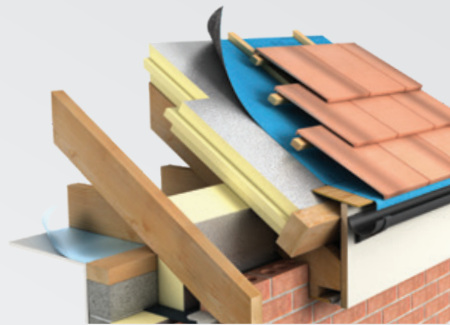
Thermal Conductivity	0.021 (W/mK)
Compressive Strength	>150 (kPa)
Reaction to Fire	Euroclass C-s2, d0

Xtratherm CE Declaration of Performance (DoP) for this product is available for download from our website.

# Installation Guidelines

## Warm Roof

1. Ensure cavity wall insulation has continued to roof height to meet with the roof insulation.
2. Fix a treated timber stop rail to the end of the rafter at the eaves.
3. Lay XO/SK over the rafters ensuring the tongued and grooved edges of the boards are fully engaged and positioned in a staggered pattern. Joints should be fully supported by rafters. Fill any gaps with expanding foam. Use large headed clout nails to hold boards temporarily in place until they are secured by the counter battens.



4. Fix 38mm x 50mm counter battens with approved helical type fixings through the XO/SK into the rafter. The amount of fixings is determined by the fixing manufacturer who can also provide wind load calculations.
5. A breathable sarking membrane should be fitted; refer to manufacturer's Agrément certification. Ventilation may have to be provided subject to that certification and minimises the risk of interstitial condensation forming on the underside of the membrane. Providing an unventilated void under the membrane can improve the thermal performance.

6. Secure 50mm x 25mm tiling battens through the counterbatten and XO/SK to the rafter.
7. If an additional layer of insulation is required, XO/PR can be fixed between the rafters.



8. Cut XO/PR with fine toothed saw to fit tightly between rafters, flush with the top of the rafter. Allow slight oversize of cut to achieve 'friction fit' and seal any gaps with expanding foam.
9. Provide a separate vapour control layer to the warm side of the insulation.
10. Finish with plasterboard fixed with drylining screws. Screw fix every 150mm, 12mm from edge of boards ensuring a minimum 30mm penetration into the rafter.

## Handling, Cutting and Storage

# Xtratherm®

Xtratherm insulation should be stored off the ground, on a clean flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure. Care should be taken to protect the insulation in storage and during the build process.

The insulation boards can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for within the ACDs. Appropriate PPE should be worn when handling insulation. Please refer to Health & Safety datasheets on our website.

The boards are wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack.



## Durability

Xtratherm products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation.



## Typical U-Values

**Table 1**

U-Value calculations to EN ISO:6946

**XO/SK** Insulation for Sarking Warm Roof Construction



- Warm Roof:**
- Breather Membrane
  - XO/SK over Rafters to reduce thermal bridging
  - XO/PR between Rafters
  - Vapour Control
  - Plasterboard

Warm Roof

U-Value	Over rafters	Between rafters
<b>0.11</b>	100mm	100mm
<b>0.15</b>	125mm	-
<b>0.15</b>	75mm	75mm
<b>0.15</b>	50mm	100mm

Rafters taken at 400mm centres

## Fabric Energy Performance

The difference is in the detail

**Fabric Energy Efficiency is based on 3 main principles:**

1. U-Values
2. Thermal Bridging
3. Air tightness

### What is Thermal Bridging?

Thermal bridging occurs in small areas where the insulation level is reduced significantly compared with the remainder of the element. They may be 'Repeating,' 'Random,' or 'Non-Repeating.'

### How is thermal bridging measured?

Thermal bridges are calculated as a linear thermal transmittance value - PSI ( $\Psi$ ) measured in W/mK. SAP and DEAP are the software program used to calculate a dwelling's energy rating. Within this software, thermal bridging through junctions is accounted for as a 'Y-value.'

## Thermal Bridging and Airtightness

A comparison between the Y-value and a hole in the construction



**Y= 0.15**

The equivalent of an open 'Garage Door' 2.1m x 3.3m (6.93m<sup>2</sup>) opening.



**Y= 0.08**

The equivalent of an open 'Patio Door' 2.1m x 1.8m (3.78m<sup>2</sup>) opening.



**Y= 0.03**

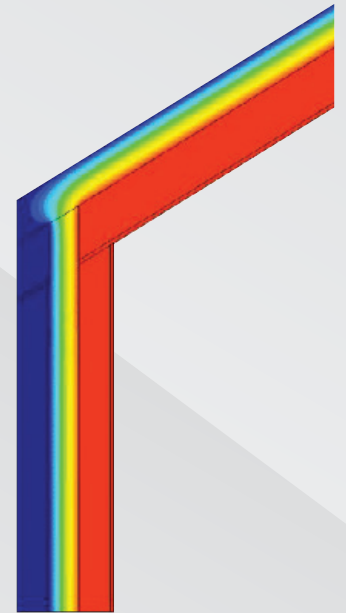
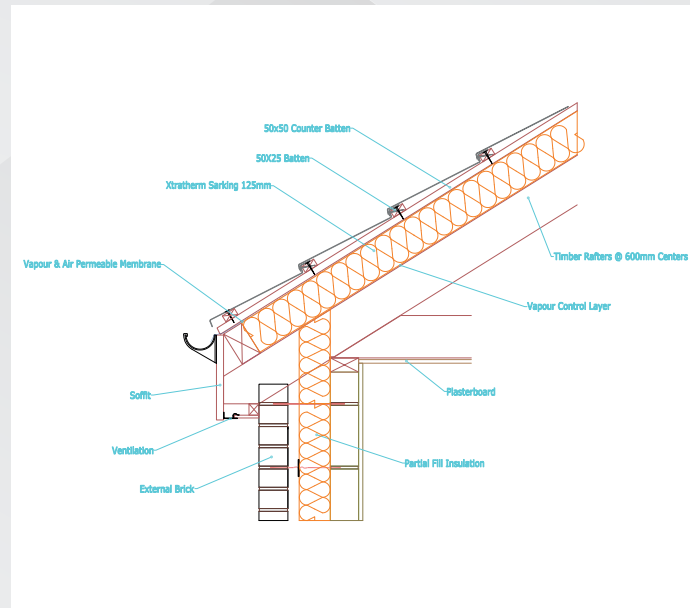
The equivalent of an open 'Window' 1.25m x 1.25m (1.56m<sup>2</sup>) opening

**Our innovative range of insulation products deliver the U-Value requirements to meet Passive standards and building regulations, but it's not just about U-Values any longer.**

How the system builds, how it interconnects at junctions and how it is witnessed and confirmed on site is as equally important. Good detailings deliver benefits:

- + More energy efficient building with lower running costs.
- + Less chance of condensation and mould forming at poorly detailed junctions.
- + A more cost effective method of achieving a low energy building.










To achieve good detailing, the Construction Details (ACDs) as per TGD Part L should be followed during the planning, design and build process.



For further information on this topic: Xtratherm has published Thermal Bridging guidance, request your copy from our technical department. Further certificates are also available for download from our website.

**Xtratherm has an extensive library of downloads available on our website.**

These include the ACDs, BIM files, CAD drawings and Agrément certificates. Xtratherm also offers CPD training on thermal bridging as well as a wide variety of building regulation topics.

- |  |   |   |
|--|---|---|
|  <p><b>Brochures</b><br/>—<br/>Download brochures for all Xtratherm products.</p>                               |  <p><b>Certs &amp; DOPs</b><br/>—<br/>See facts &amp; figures on how Xtratherm performs.</p>   |  <p><b>CPD Presentations</b><br/>—<br/>Find out more about Xtratherm CPD offerings in the Xi Academy.</p>                |
|  <p><b>ACDs (PDF)</b><br/>—<br/>Download Xtratherm's Accredited/Acceptable Details for Construction (ACDs).</p> |  <p><b>Packing Lists</b><br/>—<br/>Get size and dimension specifications</p>                   |  <p><b>Education</b><br/>—<br/>Xtratherm have developed educational resources for secondary and third level colleges</p> |
|  <p><b>ACDs (CAD)</b><br/>—<br/>Download CAD files of Xtratherm Products and Accessories.</p>                   |  <p><b>BIM Files</b><br/>—<br/>Download BIM objects of Xtratherm Products and Accessories.</p> |  <p><b>Sustainability</b><br/>—<br/>Find out more about Xtratherm's Corporate Sustainability Strategy</p>                |



# Expect More **KNOWLEDGE**

At Xtratherm we understand the importance of giving our customers the best technical advice.

We have taken the unique industry step of training every one of our technical team that deals directly with our customers, to the highest industry standards of competency in U-value calculation and condensation risk analysis. We have Thermal Bridging covered also under the BRE/NSAI Thermal modelling competency scheme, using the most comprehensive 3D software available.

**Our team and products are certified in the UK and Ireland and through the following certifications bodies:**

- BRE Thermal bridging modelling competency certification
- NSAI Thermal modelling competency scheme
- TIMSA-BBA competency scheme for U-value calculation and condensation risk analysis
- BBA and NSAI certification of the Xtratherm insulation boards
- SAP and DEAP energy assessment

**Our technical team can also provide:**

- Thermal calculations
- Technical advice on building regulations in the UK and Ireland
- Technical papers on a variety of topics
- Certified CPDs
- BIM modelling
- NBS Specifications
- Educational resources for technical secondary and tertiary colleges

**Please refer to the Resources section of our website for more details**



The **Xtratherm** Innovation Centre

The Xtratherm exhibition space and training academy has been developed to assist construction professionals in understanding the principles of specifying and achieving on-site, best practice insulation standards for new dwellings, commercial envelope solutions and refurbishment projects.



**Get in touch**

Dedicated  
Technical Team:  
**UK : 0371 222 1055**  
**ROI: 046 906 6050**

Thermal Calculations, Technical  
Advice or to arrange a technical visit:  
**info@xtratherm.com**

Request a CPD:  
**cpd@xtratherm.com**

# Xtratherm®

More than insulation

## The Sustainable Solution

Specifying Xtratherm is a real commitment to minimising energy consumption, harmful CO<sup>2</sup> emissions and their impact on the environment. Using our products is one of the most effective ways to reduce energy consumption – in fact, after just eight months the energy they save far outweighs the energy used in their production. In addition, our manufacturing facilities operate to an ISO 14001 certified Environmental Management System.

## The BRE Green Guide

The 2008 Green Guide to Specification produced by the BRE gives Xtratherm Insulation products a rating of A or A+. Green Guide ratings are used to gain credits in BREEAM (BRE Environmental Assessment Method) for non-residential buildings, and under 'Mat 4 – Insulation' the first credit requires the building to have an Insulation Index of 2 or greater – only achievable if the weighted average rating of the insulation is A or A+. This shows that all our products have been made with materials that have been responsibly sourced. The standard sets out organisational governance, supply chain management and environmental and social aspects that are verified and ensure responsible sourcing of materials.

## Responsible Sourcing

Xtratherm has BES 6001 certification for responsible sourcing. The second BREEAM credit under that category is based on responsibly-sourced materials – at least 80% of the total insulation used in roofs, walls, ground floors and services must meet any of tier levels 1 to 6 in the BREEAM table of certification schemes. Our Environmental Management System is certified under EN ISO 14001, and our raw materials come from companies with similarly-certified EMS (copies of all certificates are available for BREEAM assessments). This level of responsible sourcing meets tier level 6 in the BREEAM table.

## Global Warming and Ozone Depletion

All Xtratherm Insulation products use CFC- and HCFC-free materials, and are manufactured using a blowing agent with a low GWP and zero ODP.

Good workmanship and appropriate site procedures are necessary to achieve expected thermal and airtightness performance. Installation should be undertaken by professional tradespersons. The example calculations are indicative only, for specific U-Value calculations contact Xtratherm Technical Support. Xtratherm technical literature, Agrément certifications and Declarations of Performance are available for download on the Xtratherm website. The information contained in this publication is, to the best of our knowledge, true and accurate at the time of publication but any recommendations or suggestions which may be made are without guarantee since the conditions of use are beyond our control. Updated resources may be available on our websites. All images and content within this publication remain the property of Xtratherm.



PLATINUM  
SERVICE

Specifying products supported by the Xtratherm Platinum Service gives you the highest level of assistance from design stage to delivery of real performance on site, through the assurance of a validation process from calculation to installation.

## Xtratherm UK Limited

Park Road Holmewood  
Chesterfield, Derbyshire  
United Kingdom  
S42 5UY

T + 44 (0) 371 222 1033  
F + 44 (0) 371 222 1044

info@xtratherm.com

## xtratherm.com

## Xtratherm Limited

Liscarton Industrial Estate  
Kells Road, Navan  
Co. Meath, Ireland  
C15 NP79

T +353 (0)46 906 6000  
F +353 (0)46 906 6090

info@xtratherm.ie

## xtratherm.ie

ISO 9001 | Quality Management Systems

ISO 14001 | Environmental Management Systems



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