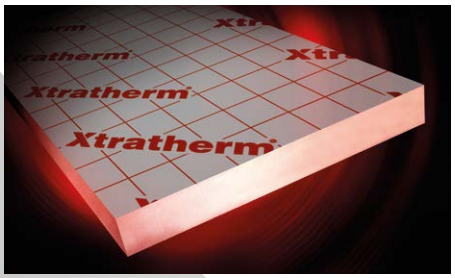
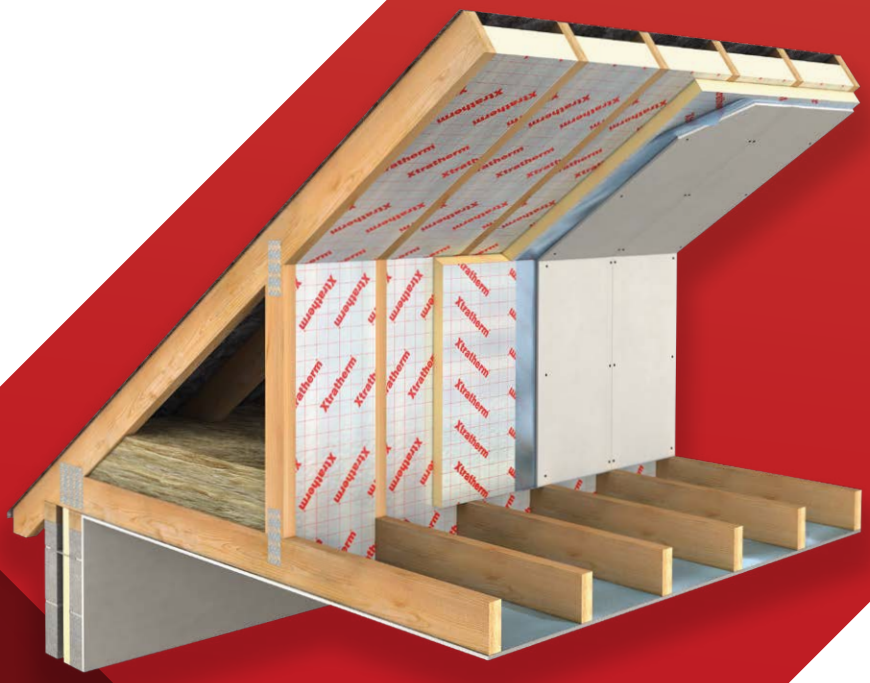
Thin-R

PIR Insulation

Roofs

XT/PR
Insulation for
Pitched Roof





Xtratherm®
More than insulation

BBA APPROVAL INSPECTION TESTING CERTIFICATION
08/4613

NSAI
03/0183

Data Sheet

Thin-R PIR Insulation

XT/PR

Insulation for Pitched Roofs

Thin-R Pitched Roof XT/PR on sloped roofs (ventilated, hybrid or warm) provides the most efficient U-values with minimal intrusion into valuable living space. The roof construction is a critical element in the building fabric and is an area at high risk of heat loss. Using XT/PR will reduce heat loss while also delivering excellent thermal bridging details.

Warm Roof construction is a particularly effective way of insulating complex roofs. Insulating above - or above and between - the roof timbers ensures that the structure is kept at or near the internal environmental conditions, reducing thermal stress and condensation risk.

Specification Clause

The pitched roof insulation shall be Xtratherm Thin-R XT/PR manufactured to EN 13165 by Xtratherm, comprising a rigid Polyisocyanurate (PIR) core between low emissivity foil facings. The XT/PR_ _ _mm with Agrément certified Lambda value of 0.022 W/mK to achieve a U value of _ _ _W/m²K 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.

BRE ENP 336-415-429 ENVIRONMENTAL RATING

Refer to NBS clause P10 140, K11 695, K11 55, P10 15, P10 50

NBS Plus

Thermal Resistances

Thickness (mm)	R-Value (m²K/W)
25	1.10
30	1.35
40	1.80
50	2.25
60	2.70
70	3.15
75	3.40
80	3.60
90	4.05
100	4.50

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 0.022 W/mk and thickness 50mm -> 0.050/ 0.022 -> R-Value = 2.25. In accordance with EN 13165, R-values should be rounded down to the nearest 0.05 (m²K/W).

Xtratherm®

Avoids Intrusion into Living Area

Reduced Risk of Condensation

Low Emissivity Foil Facings

Lightweight and Easy to Install

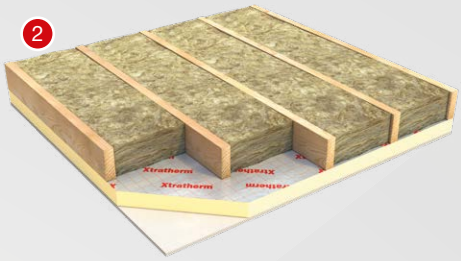
Reduced Thermal Bridging

1

In a conventional ventilated roof a 50mm clear ventilation gap should be maintained between the insulation and the roofing felt. In certain instances where a vapour permeable membrane is used instead of standard roofing felt, the ventilation gap may be dispensed with. Refer to manufacturer's guidelines.

Note

Alternatively, a layer of insulation - covered with chipboard - can also be placed over the joists. Xtratherm Walk-R offers a ready made solution for this application.



2

In a ceiling, typically fibre glass is placed between and over the joists – this hides the top of the joist and may lead to health and safety concerns when the roof space is being accessed. The thermal bridge which occurs through the joists can be addressed by placing a layer of XT/PR to the underside, before the plasterboard is fixed. Xtratherm XT/TL Drylining boards can also be used. This allows for the roof space to be accessed in a safe manner leaving the top of the joists exposed, which allows the roof space to be used for storage.

XT/PR	
Length (mm)	2400
Width (mm)	1200
Thickness (mm)	25, 30, 40, 50, 60, 70, 80, 90, 100

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

Property & Units	
Thermal Conductivity	0.022 (W/mK)
Compressive Strength	>150 (kPa)
Reaction to Fire	No performance declared

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

"In every roof space where cold water tanks or other fitted appliances or services occur, the Contractor must construct a permanent boarded walkway from the roof access point to the tank ball valve position and / or the appliance location. This walkway should be supported above the first layer of insulation to prevent any compaction of insulation below the walkway."

Installation Guidelines

Ventilated Roof

1. Fix positioning battens to inner face of rafters, flush with the top edge of the timber.
2. Allow for ventilation gaps, normally 50mm. (May be reduced depending on breather membrane certification).
3. Cut boards with a fine toothed saw to fit tightly between rafters, flush with the bottom of the rafter. Allow slight oversize of cut to achieve 'friction fit' and seal any gaps with expanding foam.
4. An additional second layer is required, this should be fixed to the underside of the rafter. Run second layer transverse to the first with joints tightly butted. Fix with nails to hold insulation in place until plasterboard is installed.
5. Provide a separate vapour control layer between insulation and plasterboard or alternatively, tape the joints of the insulation with an aluminium foil tape.
6. Finish with plasterboard fixed with drylining screws. Screw fix every 150mm, 12mm from edge of boards ensuring a minimum 30mm penetration into the rafter.

Alternatively the second layer can be achieved with XT/TL Xtratherm Drylining board. Repeat steps 1 to 3 and replace second layer with XT/TL, a ready made PIR insulation board bonded to plasterboard. Where joints between sheets of XT/TL are unsupported by the rafters, timber noggins should be installed. Seal and tape the joints of the plasterboard in accordance with Standard Drylining Practice.

Hybrid Roof

Follow the same procedure as a ventilated roof except an approved Vapour Permeable underlay is used above the rafter allowing the 50mm ventilation space to be dispensed with. Typically, a 25mm unventilated void is to be maintained; Agrément certification covering the membrane should be consulted.

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 XT/PR staggered jointed over the rafters. Ensure joints are tightly butted and fill any gaps with expanding foam. Joints should be fully supported by rafters. Boards can be temporarily fixed with nails.
4. Fix 38mm x 50mm counter battens with approved fixings through the XT/PR 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 counterbatten and XT/PR to the rafter.
7. If an additional second layer is required, this should be fixed between the rafters.
8. Cut boards with a 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 between the bottom of rafter and plasterboard.
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.

ACDs must be followed to ensure that installation is in accordance with current Building Regulations and accounted for in the energy calculation.

Handling, Cutting and Storage

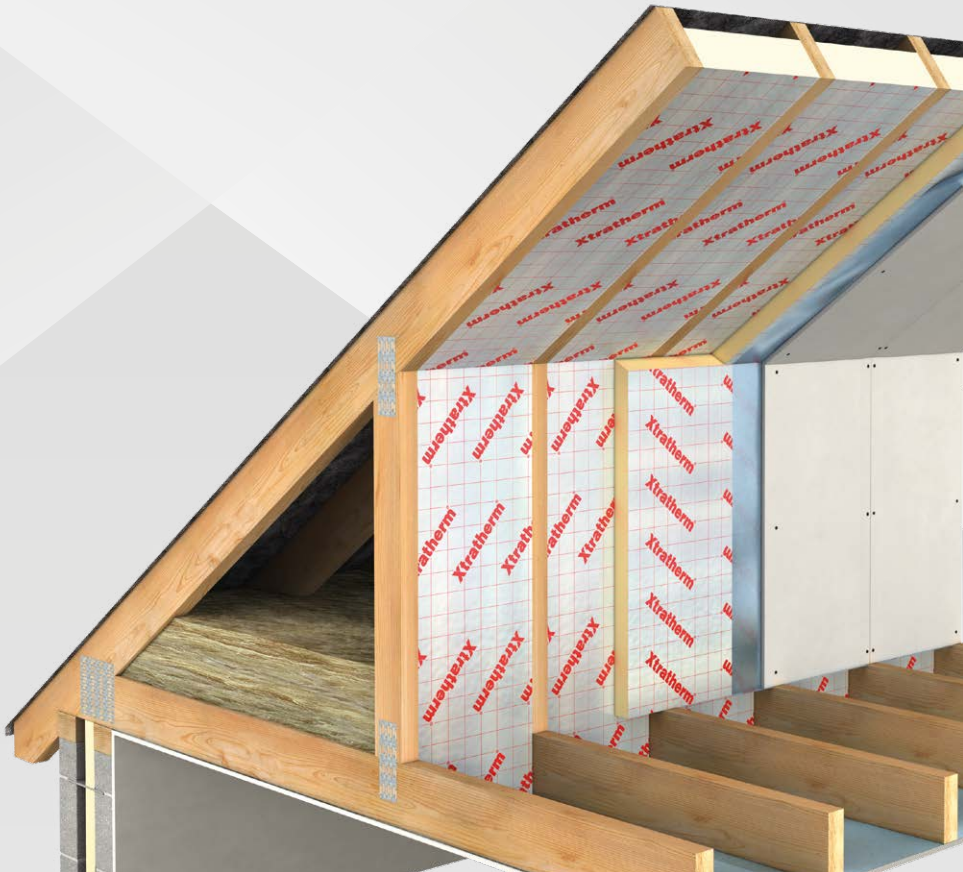
Xtratherm insulation should be stored off the ground, on a clean flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure. Care should be taken to protect the insulation in storage and during the build process.

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 data sheets 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.



Thermal Performance

Typical U-Values

Table 1

U-Value calculations to EN ISO:6946
XT/PR Insulation for Pitched Roofs

BBA CERTIFICATE CS/nnnn-n U Value Competency Scheme

Hybrid Roof:

- Approved Breather Membrane 25mm Void
- XT/PR between Rafters
- XT/PR under Rafters to reduce thermal bridging
- Vapour Control Layer
- Plasterboard

Thin-R Thickness		Rafter Centres	
Between	**Under**	**600mm**	**400mm**
120mm	25mm*	0.17	0.18
120mm	40mm*	0.15	0.16
125mm	60mm*		0.13
125mm	50mm*	0.13	

* Insulation thickness only

Table 2

U-Value calculations to EN ISO:6946
XT/PR Insulation for Pitched Roofs

Warm Roof:

- Breather Membrane
- XT/PR over Rafters to reduce thermal bridging
- XT/PR between Rafters
- Vapour Control
- Plasterboard

Thin-R Thickness		Rafter Centres	
Between	**Over**	**600mm**	**400mm**
N/A	110mm	0.17	0.17
N/A	125mm	0.16	0.16
75mm	75mm	0.15	0.15
75mm	100mm	0.12	0.13

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

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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^2 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.

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ISO 9001 | Quality Management Systems

ISO 14001 | Environmental Management

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