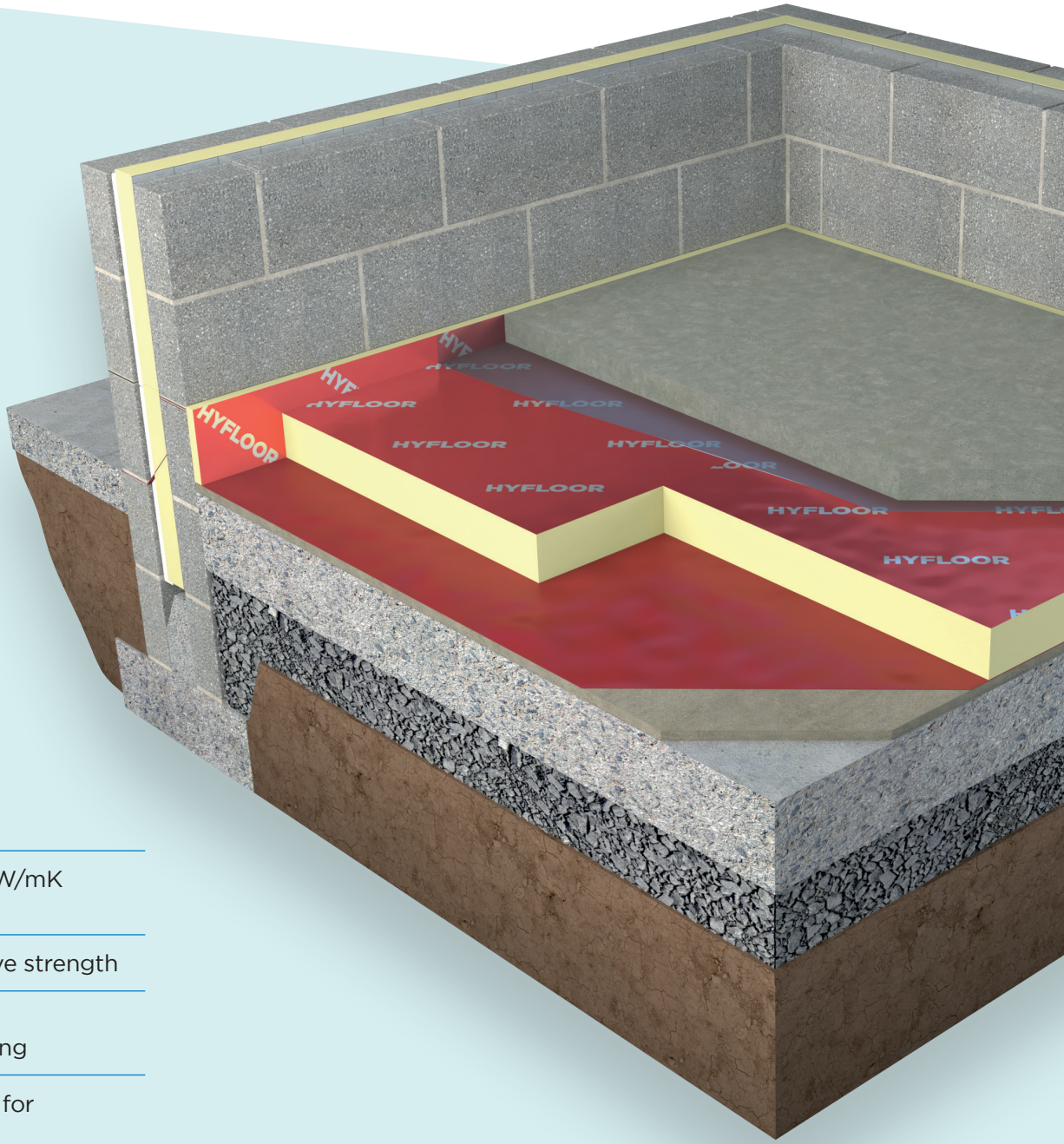
THIN-R PLUS ENHANCED PIR INSULATION

Ground Supported & Suspended Floors

XT/HYF



- Excellent 0.021 W/mK Lambda value
- High compressive strength
- Suitable for underfloor heating
- Perimeter strips for robust detailing

UNILIN INSULATION

Thinnest insulation with excellent Thermal Bridging performance

THIN-R PLUS ENHANCED PIR INSULATION

Ground Supported & Suspended Floors

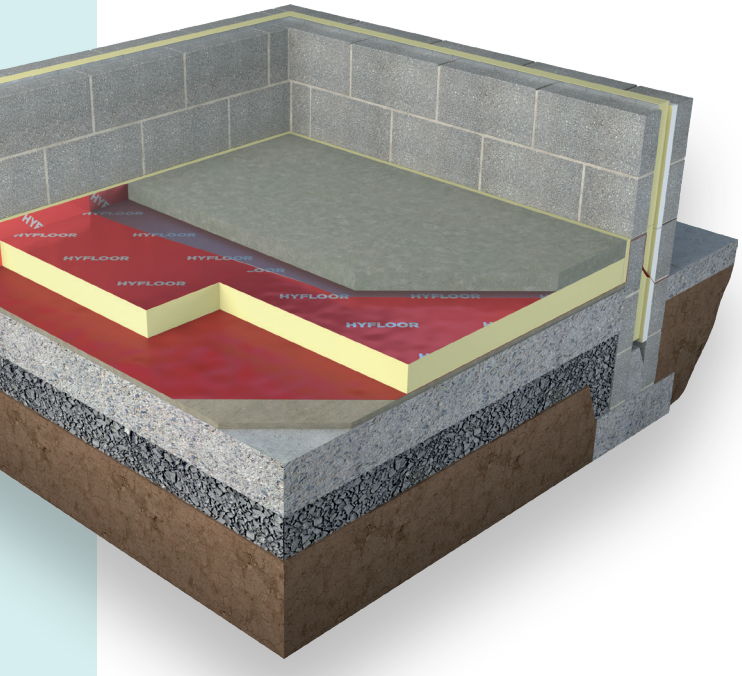
XT/HYF

The floor in any building is an area of considerable downward heat loss when not properly insulated. Unilin has developed **Hyfloor** insulation as the answer to achieve lower U-Values – in a practical and robust manner.

Hyfloor has a superior thickness to performance ratio, allowing the lower targets required under Building Regulations to be achieved with minimum thickness.

Benefits

- Excellent 0.021 W/mK Lambda value
- High compressive strength
- Suitable for underfloor heating
- Perimeter strips for robust detailing
- Reduced insulation thickness



Specification Clause

The floor insulation shall be Unilin Insulation Thin-R XT/HYF manufactured to EN 13165 by Unilin Insulation, comprising of a rigid Polyisocyanurate (PIR) core between low emissivity gas tight facings. The Thin-R Plus XT/HYF_ _ _mm with an Agrément declared Lambda value of 0.021 W/mK to achieve a U-Value of __ _ _W/m²K for the floor element. To be installed in accordance with instructions issued by Unilin Insulation.

An Environmental Product Declaration (EPD), certified by IGBC is available for this product. Please contact technical support for further details.

Refer to NBS clause M10 290, M10 40, M13 260, M13 40.

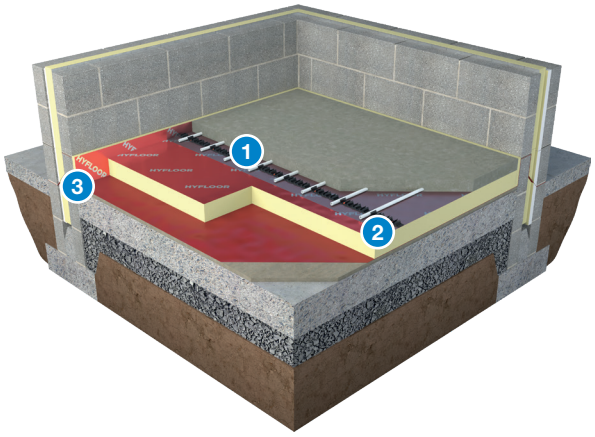
Thermal Resistances

Thickness (mm)	R-Value (m²K/W)
75	3.55
100	4.75
125	5.95
150	7.10

Resistance 'R' Values

The resistance value of any thickness of Unilin 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 75mm -> 0.075/ 0.021 -> R-Value = 3.55. In accordance with EN 13165, R-Values should be rounded down to the nearest 0.05 (m² K/W).

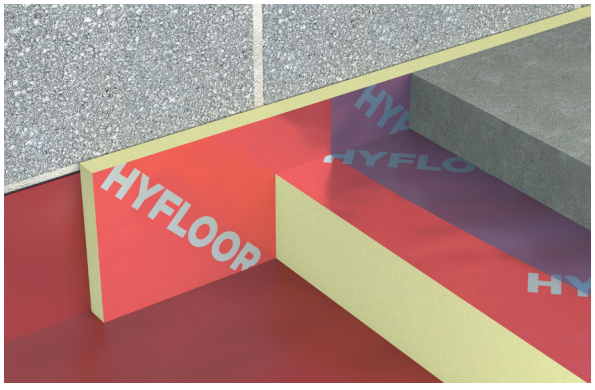
XT/HYF



1. Hyfloor is lightweight and suitable for use with underfloor heating. Thanks to its thickness to performance ratio, it allows for reduced insulation thickness. The boards should be laid staggered in a break bonded pattern and fitted tightly at edges and around any service penetrations.

2. Hyfloor provides the most efficient means of floor insulation. It has the strength and thermal properties required to reach the high performance U-Values asked for in the Building Regulations.

3. Good detailing at the wall/floor junction is essential to reduce Thermal Bridging. By placing an upstand of Unilin Perimeter strip insulation with a minimum 25mm thickness around the external and internal wall/floor junctions, a robust detail is created.



XT/HYF

Length (mm)	2400
Width (mm)	1200
Thickness (mm)	75, 100, 125, 150

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

Property & Units

Thermal Conductivity	0.021 (W/mK)
Compressive Strength	>140 (kPa)
Reaction to Fire	NPD

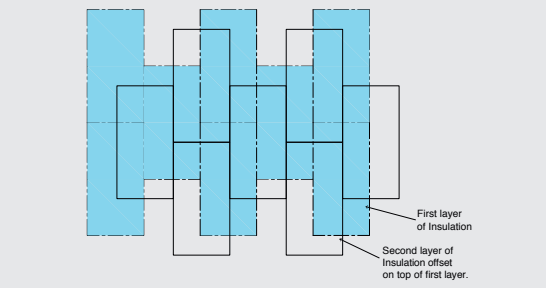
Unilin CE Declaration of Performance (DoP) for this product is available for download from our website.

INSTALLATION GUIDELINES

XT/HYF

Below Concrete Slab

1. Lay and level the hardcore in layers 150mm min/ 250mm max and compact well.
2. Sand blind base to create a level surface and to protect DPM.
3. The damp proof membrane (DPM), normally 1200g polythene or radon barrier, should be laid over the blinding, tape lapped joints to prevent passage of ground moisture. Carry DPM up to the wall to meet and seal with the DPC course. Contact the membrane manufacturer for further guidance on installation and best practice.
4. Lay the Hyfloor across the DPM. If two layers are required, lay the boards in a staggered jointed pattern. Closely butt all edges.



5. Place Unilin Perimeter Strips (XT/STR) around floor perimeter to provide robust detailing in order to reduce Thermal Bridging. Ensure top of perimeter strip is level with top of floor finish. Seal around any service penetrations.

6. Lay a thin gauge polythene sheet, to act as a separating layer, over the insulation with 150mm lap joints. VCL should be taped at the joints to ensure a continuous separating layer, as per BRE GBG 45 “Insulating Ground Floors”.
7. If underfloor heating is required, lay pipes and clip to the Hyfloor through the separating layer. Follow UFH manufacturer’s guidelines.
8. Pour and compact concrete slab to required finish floor level.

Below Floor Screed

1. Lay and level the concrete slab, allowing sufficient time to dry out, as per BS 8203.
2. Beam and block floors may need a levelling screed or grouting to ensure base level. Refer to manufacturer’s guidelines.
3. The damp proof membrane (DPM), normally 1200g polythene or radon barrier, should be laid over the blinding, tape lapped joints to prevent passage of ground moisture. Carry DPM up to the wall to meet and seal with the DPC course. Contact the membrane manufacturer for further guidance on installation and best practice.
4. Lay the Hyfloor boards across the DPM. If two layers are required, lay the boards in a staggered jointed pattern. Closely butt all edges.
5. Place Unilin Perimeter Strips around floor perimeter to provide robust detailing in order to prevent Thermal Bridging. Ensure top of perimeter strip is level with top of floor finish. Seal around any service penetrations.
6. Lay a thin gauge polythene sheet, to act as a separating layer, over the insulation with 150mm lap joints. VCL should be taped at the joints to ensure a continuous separating layer, as per BRE GBG 45 “Insulating Ground Floors”.
7. If underfloor heating is required, lay pipes and clip to the Hyfloor through the separating layer. Follow manufacturer’s guidelines.
8. Pour screed according to screed manufacturer’s guidelines.
9. Combine Hyfloor with Unilin riser panel to achieve NZEB foundation performance - see page 7 or contact Technical Support.

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

THERMAL PERFORMANCE

XT/HYF

Typical U-Values

CERTIFICATE CS/nnnn-n
U Value Competency Scheme

Table 1
U-Value calculations to EN ISO:6946
XT/HYF Insulation for Ground Supported Floors

Build up:

- 65mm screed
- Separating layer Polythene sheet
- XT/HYF with perimeter strip
- DPM 1200 gauge polythene or radon barrier
- Concrete slab

Perimeter/Area Ratio

Thickness (mm)	0.30	0.40	0.50	0.60	0.70	0.80
75mm	0.17	0.19	0.20	0.20	0.21	0.21
100mm	0.14	0.15	0.16	0.16	0.17	0.17
125mm	0.12	0.13	0.13	0.14	0.14	0.14
150mm	0.11	0.11	0.12	0.12	0.12	0.12

Table 2
U-Value calculations to EN ISO:6946
XT/HYF Insulation for Beam and Block Suspended Floor

Build up:

- 65mm screed
- Separating layer Polythene sheet
- XT/HYF with perimeter strip
- Beam and block

Perimeter/Area Ratio

Thickness (mm)	0.30	0.40	0.50	0.60	0.70	0.80
75mm	0.19	0.20	0.20	0.21	0.21	0.21
100mm	0.15	0.16	0.16	0.17	0.17	0.17
125mm	0.13	0.13	0.14	0.14	0.14	0.14
150mm	0.11	0.12	0.12	0.12	0.12	0.12

THERMAL PERFORMANCE

XT/HYF

Typical U-Values

BBA CERTIFICATE CS/nnnn-n U Value Competency Scheme

Table 3
U-Value calculations to EN ISO:6946 for IRL
XT/HYF Insulation for Hollow Core Suspended Floor

Build up:

- 65mm screed
- Separating layer Polythene sheet
- XT/HYF with perimeter strip
- Hollow core slab

Perimeter/Area Ratio

Thickness (mm)	0.30	0.40	0.50	0.60	0.70	0.80
75mm	0.18	0.19	0.19	0.20	0.20	0.20
100mm	0.15	0.15	0.16	0.16	0.16	0.16
125mm	0.13	0.13	0.13	0.13	0.14	0.14
150mm	0.11	0.11	0.11	0.12	0.12	0.12

FABRIC ENERGY PERFORMANCE
THE DIFFERENCE IS IN THE DETAIL

XT/HYF

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 (Ψ) measured in W/mK. DEAP is the software programme used to calculate a dwelling's energy rating. Within this software, Thermal Bridging through junctions is accounted for as a 'Y-Value.'

Thermal Bridging & 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^2) opening.

Y= 0.08
The equivalent of an open 'Patio Door' 2.1m x 1.8m (3.78m^2) opening.

Y= 0.03
The equivalent of an open 'Window' 1.25m x 1.25m (1.56m^2) 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 equally as important.

Good detailing delivers 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.

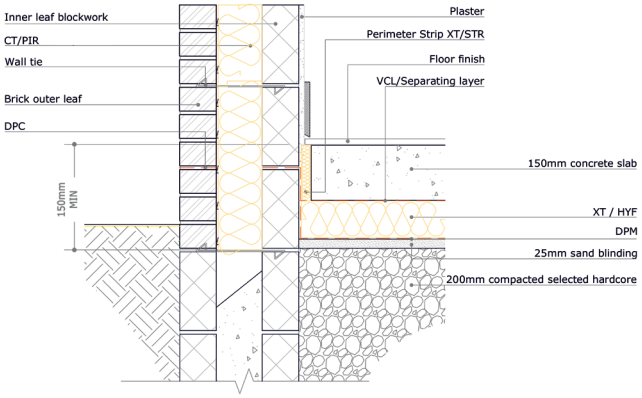
THERMAL BRIDGING

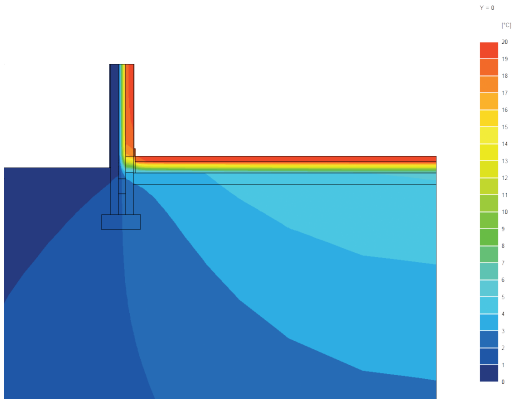
XT/HYF

To achieve good detailing, Accredited Construction Details (ACDs) should be followed during the planning, design and build process.

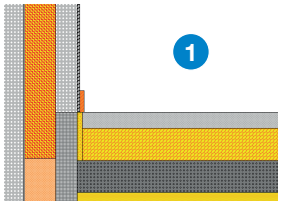
Unilin Psi Values Using ACDs

Accredited Details	Block Type	Psi
TGD L-Table D1-1.01b	Medium	0.061

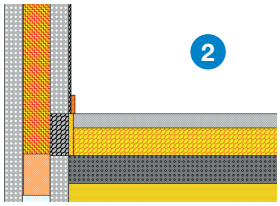




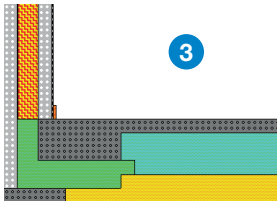
Method	Psi Value (Internal)	Strength	Engineers Calc Required
1. Hyfloor Riser Med Block 7n	0.076	7.5 N/mm²	N
2. Lightweight Block System	0.061	2.9-7.5 N/mm² (option)	Y
3. EPS Wrapped Foundation	0.105	Manufactured dependent	Y
4. HD Foamglas Break	0.056	2.9 N/mm²	Y



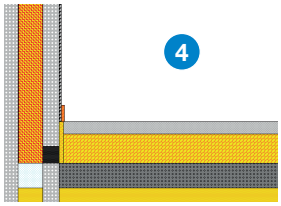
Hyfloor Riser Med Block 7n



Lightweight Block System



EPS Wrapped Foundation



HD Foamglas Break

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

Unilin has an extensive library of downloads available on our website. These include the ACDs, BIM files, CAD drawings and Agrément certificates. Unilin also offers CPD training on Thermal Bridging as well as a wide variety of building regulation topics.

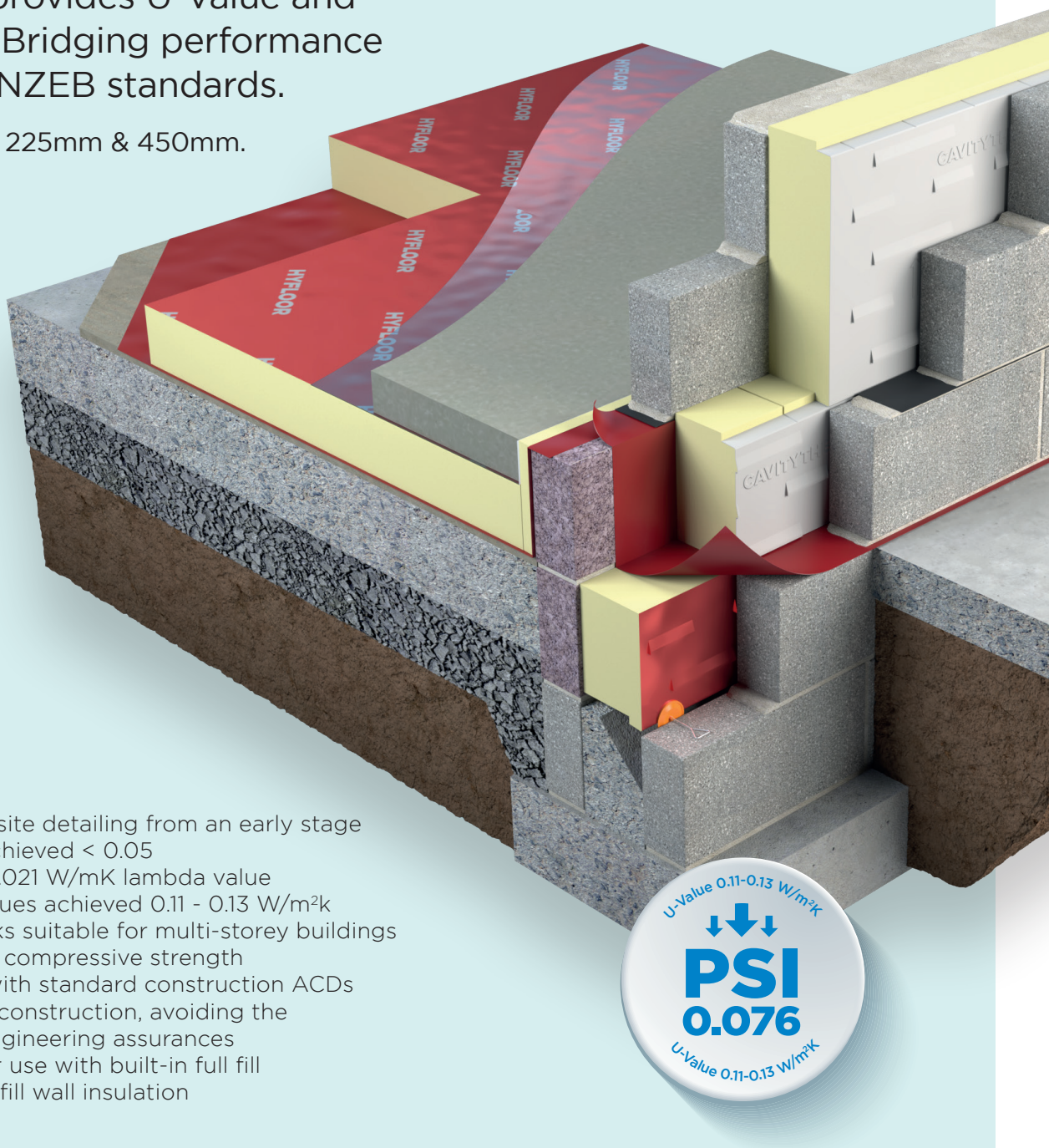
Visit unilininsulation.ie

Also Available

Hyfloor Strip Foundation System

Hyfloor Strip Foundation System provides U-Value and Thermal Bridging performance to meet NZEB standards.

Available in 225mm & 450mm.



Benefits

- Addresses site detailing from an early stage
- Y-Values achieved < 0.05
- Excellent 0.021 W/mK lambda value
- Floor U-Values achieved 0.11 - 0.13 W/m²k
- Using blocks suitable for multi-storey buildings with a high compressive strength
- Complies with standard construction ACDs
- Traditional construction, avoiding the need for engineering assurances
- Suitable for use with built-in full fill and partial fill wall insulation

HANDLING, CUTTING & STORAGE

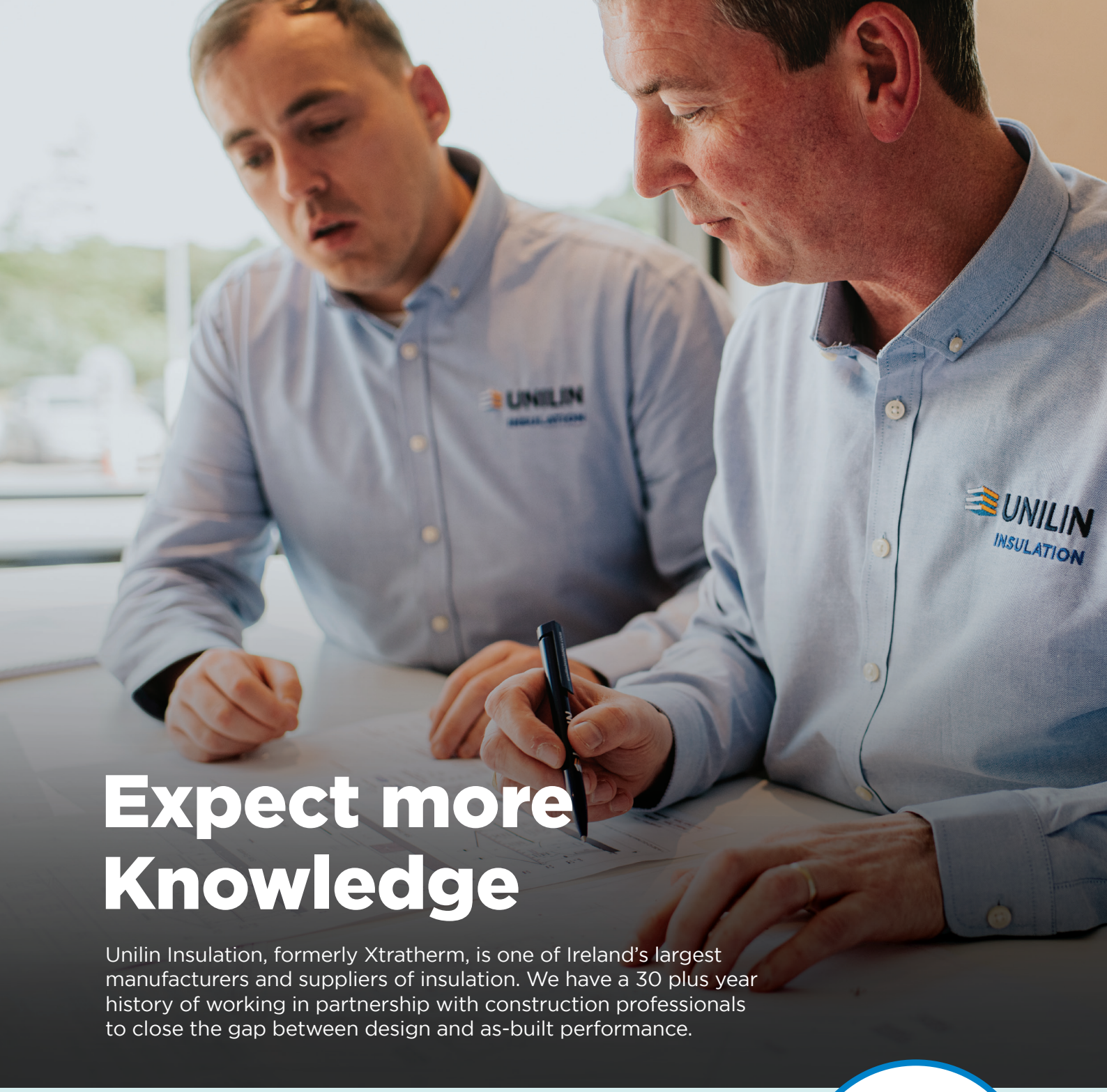
Unilin insulation should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure. Care should be taken to protect the insulation in storage and during the build process.

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

Unilin Insulation products are stable, rot proof, provide no food value to vermin and will remain effective for the lifetime 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.



Expect more Knowledge

Unilin Insulation, formerly Xtratherm, is one of Ireland's largest manufacturers and suppliers of insulation. We have a 30 plus year history of working in partnership with construction professionals to close the gap between design and as-built performance.

FREE
One-to-one advice

Higher standards of fabric performance call for greater adherence to best practice detailing. To achieve this and to 'close the gap' between design and build, we provide a dedicated Technical Team, all qualified to the highest standards of competency in U-Value calculation and condensation risk analysis.

Here to support you

- BRE listed Thermal Bridging Detailing
- BRE/NSAI Trained Modelling
- BBA/TIMSA calculation competent
- Warranted Calculations available
- Immediate technical response
- DEAP Qualified
- Insulation systems to deliver real onsite performance

Get in touch

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UNILIN INSULATION

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The Sustainable Solution

Specifying Unilin Insulation 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.

Environmental Product Declaration (EPD)

An Environmental Product Declaration or EPD for a construction product indicates a transparent, robust and credible step in the pursuit and achievement of real sustainability in practice, it is a public declaration of the environmental impacts associated with specified life cycle stages of that product. Unilin EPDs have been independently verified in accordance with EN 15804+A2:2019 and ISO 14025 accounting for stages of the LCA from A1 to A3, with options A4-A5 and modules C1-C4 and D included. The process of creating an EPD allows us to improve performance and reduce resource wastage through improvements in product design and manufacturing efficiency. They play a crucial role in manufacturing and construction and are increasingly asked for by industry.

EPDs and BREEAM

BREEAM is primarily trying to encourage designers to take EPDs into consideration when specifying products. BREEAM requires EPDs to be verified by a third-party. For the Mat 02 category, points are awarded based on whether EPDs are generic, manufacturer-specific, or product-specific. Non 3rd party verified EPDs to EN 15804 cannot be accepted. All of Unilin EPDs are externally verified.

Responsible Sourcing

Unilin 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.

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 Unilin Insulation Technical Support. Unilin technical literature, Agrément certifications and Declarations of Performance are available for download on the Unilin Insulation 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 Unilin Insulation.

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 08/4613

NSAI 08-0324

CE

ASSOCIATE MEMBER SPRA Single Ply Roofing Association

LRWA Liquid Roofing and Waterproofing Association

bre

ISO 9001 Quality Management Systems
ISO 14001 Environmental Management Systems

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