

Whether choosing an insulated foundation system or a traditional strip foundation the method of measuring heat loss and comparing performance is simple:

1. The achieved U-Value for the floor itself.
2. The PSI value for heatloss through the wall/ floor junction.
3. Adequate f factor to avoid surface condensation and mould at skirting level.

U-Values of better than 0.15 W/m²K are generally sufficient to achieve NZEB standards. The achieved U-Value from any particular thickness of insulation is dependent on the ratio between floor perimeter and area (P/A), generally 150mm of Hyfloor will achieve a U-Value between 0.11 - 0.13 W/m²K.

The PSI Value is the measurment of heatloss through 'non-repeating thermal bridges' typically the junctions between plane building elements, e.g. at wall / roof, wall / floor junctions, and around openings where the continuity of the insulation is interrupted.

How is it accounted for?

Thermal bridges are calculated as a linear thermal transmittance value - PSI (Ψ) measured in W/mK. DEAP is the software that is used to calculate a dwellings BER rating. Within DEAP Thermal bridging through junctions are accounted for as a 'Y-Value.'

Passive Haus ask for PSI values below 0.010 W/mK for all junctions, but Passive Haus takes measurements externally when calculating. Within Part L/DEAP, measurements are taken internally; although the resultant PSI values differ, heat losses when compared are very similar.

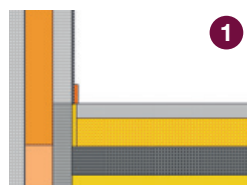
When designing to reduce heat loss at the floor junction other factors must be taken into account. Loadings, effects of ground water and build-ability are critical factors.

Hyfloor Strip Foundation System takes all these factors into consideration as part of the design delivering PSI values as low as 0.076 W/mK with the benefit of full structural capability.

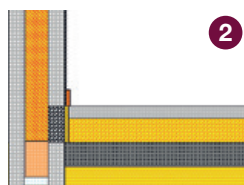
Specification Clause

The floor insulation shall be Xtratherm Hyfloor Strip Foundation System manufactured to EN 13165 by Xtratherm, comprising a rigid T&G Jointed Polyisocyanurate (PIR) core between gas tight facings. The XT/HYF (T&G) 150mm with Agrément certified Lambda value of 0.021 W/mK to achieve a U-Value of below 0.15 W/m²K for the floor element. The foundation strip insulation is to be Xtratherm Riser Panel to suitmm cavity, 225mm laid below DPC level as the riser wall is constructed. To be installed in accordance with instructions issued by Xtratherm.

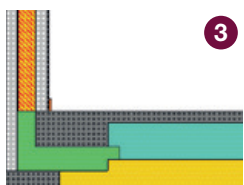
Method	PSI Value (Internal)	Strength	Engineers Calc Required
1. Xtratherm Riser Med Block 7n	0.076	7.5 N/mm²	N
2. Lightweight Block System	0.061	2.9-7.5 N/mm² (option)	Y
3. EPS Wrapped Foundation	0.105	Manufactured dependent	Y
4. HD Glasfoam Break	0.056	2.9 N/mm²	Y



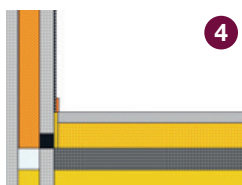
Xtratherm Riser Med Block 7n



Lightweight Block System



EPS Wrapped Foundation



HD Glasfoam Break

The Sustainable Solution

Specifying Xtratherm is a real commitment to minimising energy consumption, harmful CO² 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.



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®
More than insulation

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

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

ISO 9001|Quality Management Systems

ISO 14001|Environmental Management Systems



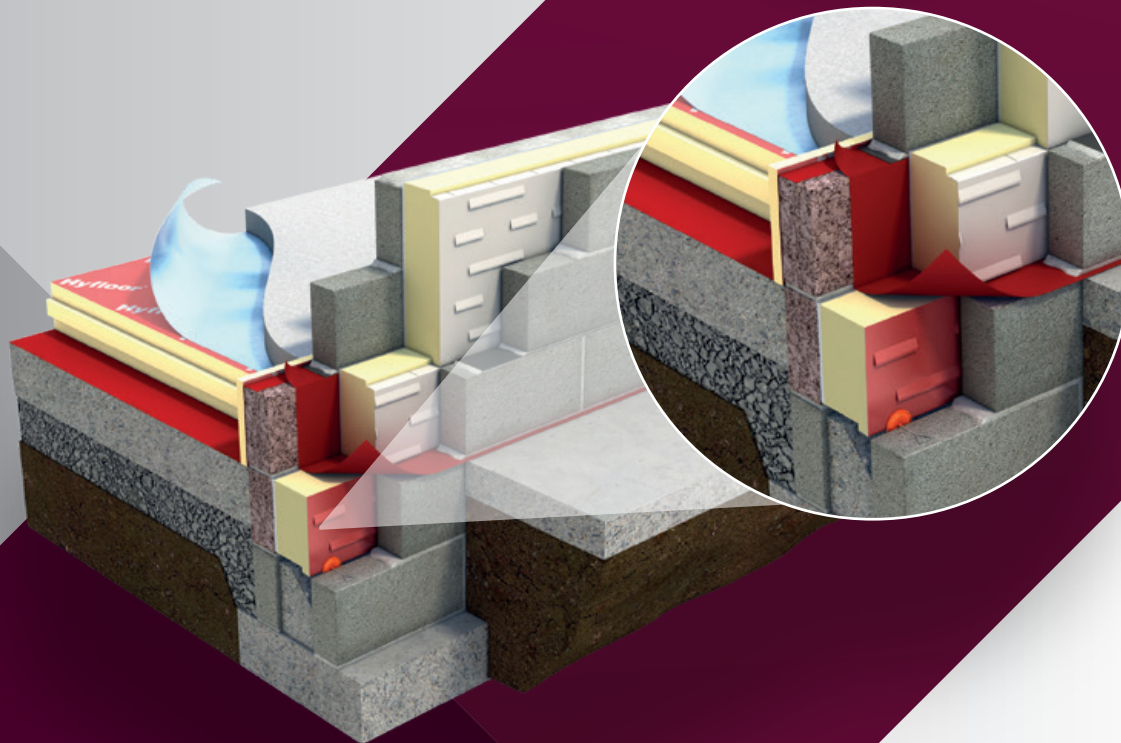
Xtratherm, part of UNILIN group.

Hyfloor Strip Foundation System

- Addresses site detailing from an early stage
- Y-Values achieved < 0.05
- Excellent 0.021 W/mK lambda value
- U-Values achieved 0.11- 0.13 W/m²k
- Using blocks suitable for multi storey buildings with a high compressive strength of 7.5 N/mm² and 13 N/mm²
- 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

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

Available: 225mm & 450mm (h)



Xtratherm®
More than insulation

For more information
contact our Technical Team

T. 046 906 6050
xtratherm.ie

IREN HYFSA4-2

Introduction

Hyfloor Strip Foundation System, combining engineered floor insulation with high performance foundation riser panels with medium density block, achieves both U-Values and PSI value detailing to achieve NZEB and passive floor performance.

Providing effective insulation, that has been detailed and installed professionally at the initial stages of any building project has multiple benefits. Detailing properly at floor level sets the standard for the thermal performances and installation accuracy of the total building envelope; get the floor right and good practice is set for the rest of the build.

Hyfloor Strip Foundation System provides U-Value and Thermal Bridging performance to meet NZEB standards along with assurance of compressive strength at foundation level.

Traditionally, insulating at floor level didn't receive the attention by designers and site operatives that is now required to meet NZEB or Passive standards; normally within a day, the insulation and all detailing are buried within the structure. The real disconnect however is the relationship between the installation of the floor insulation and

the wall insulation. Typically completed as two separate skills at different times, and often by different teams, without consideration of their effect on thermal bridging at the wall/floor junction.



Ground Supported Slab							
	0.40	0.50	0.60	0.70	0.80	0.90	
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	

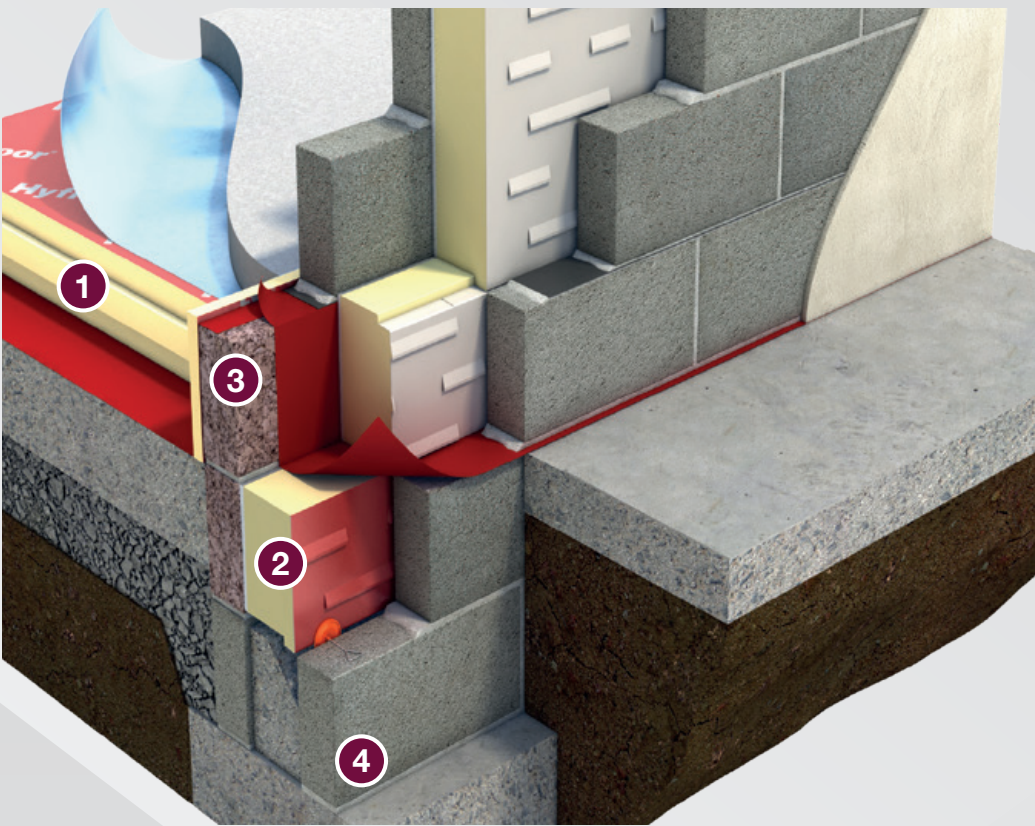
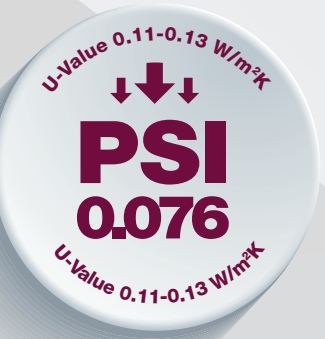
Thickness (mm)

- 65mm screed
- Separating Layer Polythene sheet
- Insulation with Perimeter strips
- DPM 1200 gauge Polythene or Radon barrier
- Concrete slab

Suspended Hollow Core floor							
	0.40	0.50	0.60	0.70	0.80	0.90	
75mm	0.19	0.19	0.20	0.20	0.20	0.21	
100mm	0.15	0.16	0.16	0.16	0.16	0.17	
125mm	0.13	0.13	0.13	0.14	0.14	0.14	
150mm	0.11	0.11	0.12	0.12	0.12	0.12	

Thickness (mm)

- 65mm screed
- Separating Layer Polythene sheet
- Insulation with Perimeter strips
- DPM 1200 gauge Polythene or Radon barrier
- 150mm Suspended Hollow Core floor



Xtratherm®

Installing the Hyfloor insulation (1) along with the foundation strip insulation (2) at ground work stage ensures a thermally efficient junction. The inclusion of a medium density block (3) provides a full 7.5 N/mm² base for loading requirements. At this stage, (before the outer leaf is built) inspection and sign off of this critical junction can ensure compliance with the ACDs.

Traditionally, block work contractors are relied upon to provide this robust detailing after riser walls (4) have been built to DPC level. This normally entails pushing insulation into a cavity from above in contravention of SR325 guidance.

Notes For Render

1. 150mm Hyfloor
2. Hyloor Foundation Strip
3. Medium Density Block
4. Riser walls

Where the DPC is folded at wall-floor junctions it doubles in thickness which pushes out the insulation and causes issues within the cavity.

Our riser board has a thicker 20mm fleece which can compensate for this while still maintaining the thermal efficiency of the insulation and integrity of the cavity offering a simple solution to a typically complicated problem.

Thermal Bridging, the Y Value & NZEB

It might help to view the Y-Value that is used in DEAP to measure the effectiveness of detailing at junctions (basically how continuous the insulation system is) as a PENALTY U-Value. This U-Value is spread over the buildings to account for additional heat loss at junctions. Lets say you design your building element to achieve an average U-Value of 0.15 W/m²K. The default Y-Value when using the government published Acceptable Details is 0.08 W/m²K, bringing your average U-Value to 0.023 W/m²K Xtratherm Detailing including the Xtratherm Riser can achieve Y-Value of <0.03. - The typical target to achieve NZEB.

Xtratherm's Floor & Foundation system supplies the designer with a traditional system that provides the thermal performance and detailing, using traditional materials to meet NZEB and Passive standards in Irish floor constructions.

Making use of readily available medium density block that reaches the 7.5 N/mm² requirement within Irish Building Regulations Technical Guidance Document A.

Threshold

Detailing at thresholds offers particular issues in achieving the continuity of insulation. Avoiding thermal bridging, whilst maintaining level thresholds and avoiding water damage and degradation needs careful detailing.

Xtratherm have solutions using Perinsul by Foamglas to achieve passive levels for this difficult junction.

Contact Xtratherm for literature and CPD.

