

# XTROLINER

SUPERIOR PERFORMANCE  
PIR INSULATION

## Partial Fill Cavity Walls

XO/CW (T&G)

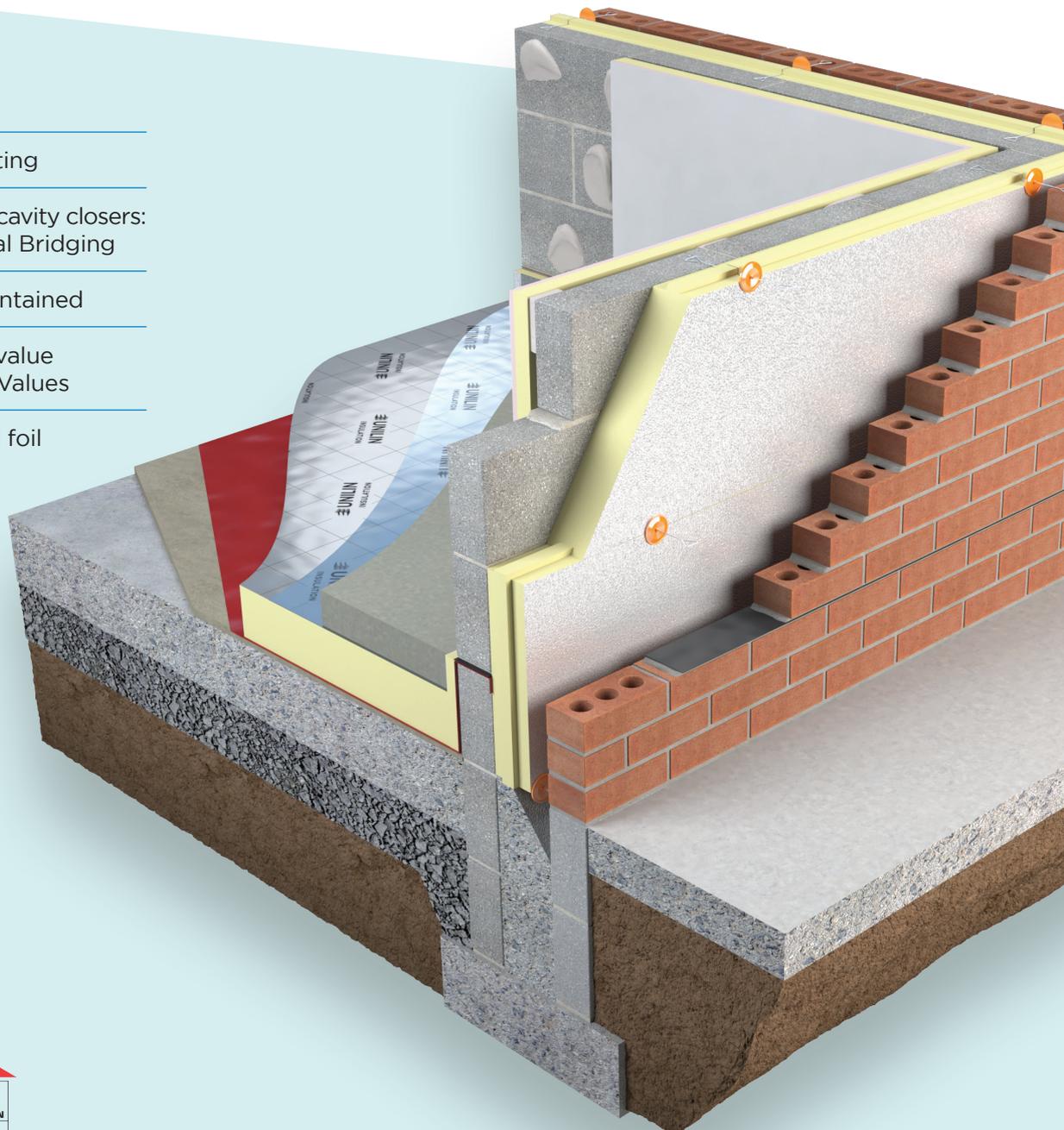
Engineered jointing

Corner panels & cavity closers:  
Reduced thermal Bridging

Clear cavity maintained

Lower Lambda value  
for improved U-Values

Robust textured foil



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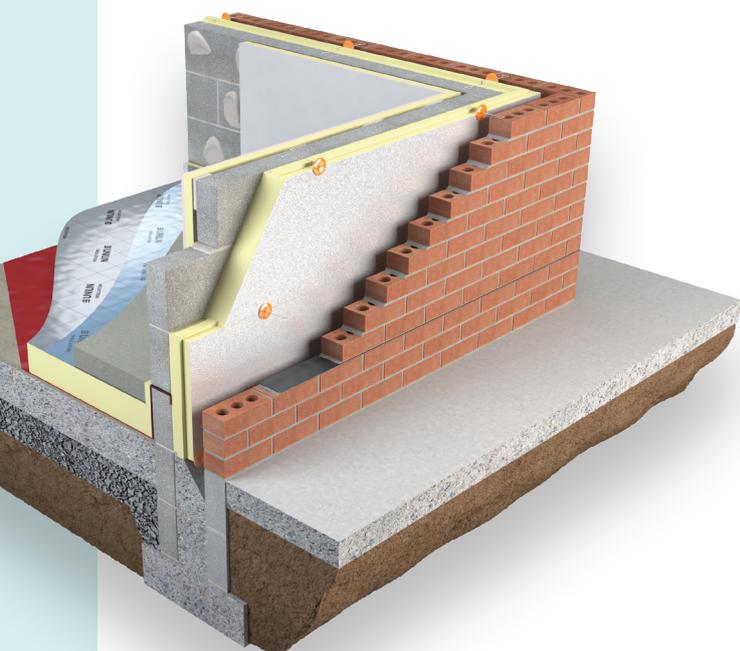
## XO/CW (T&amp;G)

**XO/CW (T&G)** is an innovative partial fill wall insulation system incorporating robust facings, engineered jointing details, performed corners and a certified lambda of 0.021 W/mK.

This lower lambda improves U-Values and meets Future Homes standards, proving an excellent choice for passive and low energy builds. XO/CW (T&G) can achieve a passive U-Value of 0.15 W/m<sup>2</sup>K in a traditional cavity wall. When building with XO/CW (T&G), a residual cavity is maintained, offering excellent protection against wind driven rain.

**Benefits**

- Engineered jointing
- Corner panels & cavity closers:  
Reduced thermal Bridging
- Clear cavity maintained
- Lower Lambda value for improved u-values
- Robust textured foil

**Specification Clause**

The partial fill cavity wall insulation shall be Unilin Insulation XO/CW (T&G) manufactured to EN 13165 by Unilin Insulation, comprising a rigid modified Polyisocyanurate (PIR) core with textured robust low emissivity foil facings and engineered jointing. XO/CW (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 wall 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 F30 155, F30 12.

**Thermal Resistances**

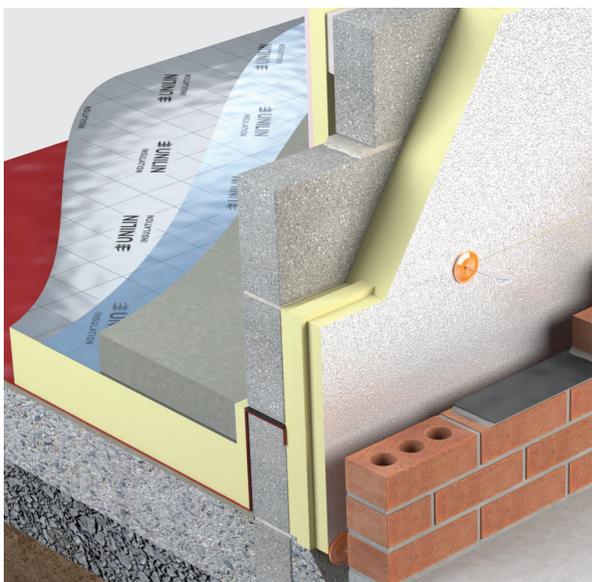
Thickness (mm)	R-Value (m <sup>2</sup> K/W)
50	2.35
60	2.85
75	3.55
80	3.80
100	4.75

**Resistance 'R' Values**

The resistance value of any thickness of Unilin Insulation 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 50mm -> 0.050/0.021 -> R-Value = 2.35. In accordance with EN 13165, R-values should be rounded down to the nearest 0.05 (m<sup>2</sup>K/W).



## XO/CW (T&G)



1. The Unilin Insulation Cavity Wall System includes an optional pre-formed corner panel (XO/CRN) that folds to 90 degrees to effectively insulate a corner junction that is normally vulnerable to thermal bridging and cold spots.
2. The XO/CW (T&G) 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 wall.
3. The low emissivity foil facing on XO/CW (T&G) improves the thermal performance of the wall. The residual cavity is the most effective method of preventing wind-driven rain penetrating a wall from the outside.

## XO/CW (T&G)

Length (mm)	1200
Width (mm)	450
Thickness (mm)	50, 60, 75, 80, 100

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

## Property & Units

Thermal Conductivity	0.021 (W/mK)
Compressive Strength	>120 (kPa)
Reaction to Fire	Euroclass C-s2, d0

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

A residual cavity is the air space that remains when XO/CW (T&G) is placed against the inner leaf of the cavity of a wall. The recommended residual cavity width required is 50mm in accordance with agrément certification, however a reduced cavity may be permissible in certain circumstances.

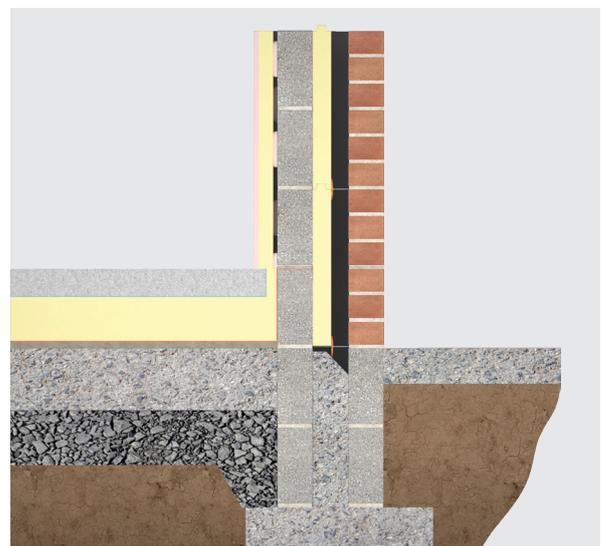
# INSTALLATION GUIDELINES

## XO/CW (T&G)

1. Under PD 6697:2019 Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2, it is recommended that no more than four courses of block are laid on the preceding skin before installation of the insulation. This allows for wall ties to be inserted accurately and without bending and thus distorting the physical characteristics of the wall ties. Ensure the wall is level and free of any protrusions before installing the insulation with all edges tightly interlocked.
2. Mortar should be struck from the inner cavity face of the block to ensure mortar squeeze is minimised on the cavity side. The inner and outer courses can then be built.
3. Insert wall ties maximum 600mm centres one block course below DPC. Wall ties should incorporate retaining clips and be agrément approved.
4. Secure cavity boards tight against inner leaf with retaining clip on wall ties. Boards should be installed with the tongue uppermost and joints should be tightly butted.
5. Ensure a minimum 150mm overlap with the floor insulation. The receiving block should be plumb to provide a flat surface to accept the insulation. As with setting out, installation should commence from adjacent corners using the XO/CRN pre-formed corner boards. Alternate corner boards will achieve the offset break bonded pattern for the insulation.
6. Maintain a 50mm residual cavity to suit all exposure zones. In isolated circumstances where the cavity is obstructed, a minimum 25mm residual cavity should always be maintained and extra consideration should be given to fixings and weatherproofing. Any reduction in cavity width should be agreed with Building Control.
7. Place wall ties at maximum 900mm x 450mm centres, securing with a minimum of 3 wall ties per board.
8. Ensure block joints are fully bonded with

unbroken mortar. Fix wall ties 225mm vertically and 150mm horizontally from face of unbonded jambs. Ensure wall ties and cavity are kept clean of mortar. Wall ties should be sloped downwards towards outer leaf.

9. A cavity board should be used to keep the cavity clean. XO/CRN corner boards and cavity closers may be fitted to provide robust detailing.
10. Newly erected masonry should be covered to protect the insulation and to prevent the mortar being washed out of the joints by rain. Walls should be prevented from becoming saturated by covering the top of the wall with waterproof sheets; this is particularly important to minimise the incidence of efflorescence and lime bloom. When any working platform is not in use, the inner board should be turned away from the wall to prevent the splashing of the wall face.



# THERMAL PERFORMANCE

## XO/CW (T&G)

### Typical U-Values



**Table 1**

U-Value calculations to EN ISO:6946  
 XO/CW (T&G)  
 Partial Fill Cavity Walls

#### Cavity Wall Partial Fill:

- Plasterboard on dabs
- 100mm Inner Leaf Blockwork
- XO/CW (T&G)
- Low E Unventilated Cavity
- Brick

Wet plaster finish: increase insulation thickness by 5mm  
 Wall ties taken as S/S wire at 2.5 ties per m<sup>2</sup>

Thickness (mm)

	50mm	60mm	75mm	80mm	100mm
<b>0.11</b>	0.23	0.21	0.18	0.17	0.15
<b>0.15</b>	0.24	0.22	0.19	0.18	0.15
<b>0.46</b>	0.26	0.23	0.20	0.19	0.16
<b>1.13</b>	0.27	0.24	0.21	0.20	0.17

Block Lambda

# 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 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= 0.20**

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 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.

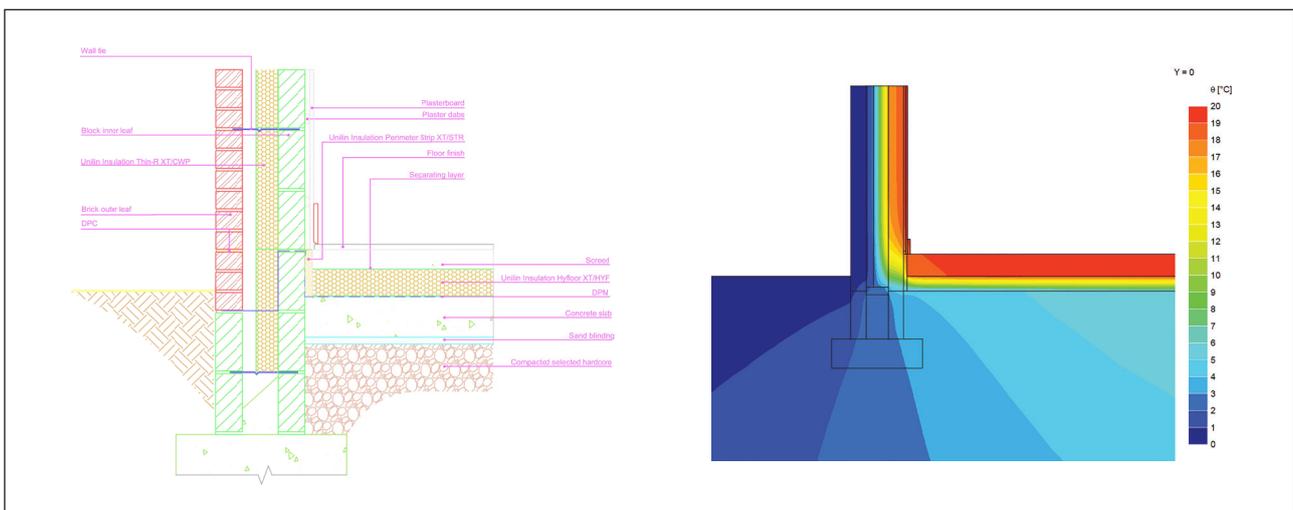
# THERMAL BRIDGING

## XO/CW (T&G)

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

## Unilin Psi Values Using Accredited Details

Accredited Details	Block Type	75mm Psi ( $\psi$ )	100mm Psi ( $\psi$ )	Unilin Certificate Reference
E2 (MCI-WD-02) - Lintel	Dense 1.13	0.024	0.027	UI-CWP-E2-WD-02 V1
E2 (MCI-WD-02) - Lintel	Med 0.31	0.024	0.027	UI-CWP-E2-WD-02 V1
E2 (MCI-WD-02) - Lintel	Light 0.15	0.025	0.028	UI-CWP-E2-WD-02 V1
E3 (MCI-WD-04) - Sill	Dense 1.13	0.021	0.024	UI-CWP-E3-WD-04 V1
E3 (MCI-WD-04) - Sill	Med 0.31	0.021	0.024	UI-CWP-E3-WD-04 V1
E3 (MCI-WD-04) - Sill	Light 0.15	0.022	0.025	UI-CWP-E3-WD-04 V1
E4 (MCI-WD-06) - Jamb	Dense 1.13	0.001	0.000	UI-CWP-E4-WD-06 V1
E4 (MCI-WD-06) - Jamb	Med 0.31	0.001	0.000	UI-CWP-E4-WD-06 V1
E4 (MCI-WD-06) - Jamb	Light 0.15	0.001	0.001	UI-CWP-E4-WD-06 V1
E5 (MCI-GF-01) - Floor/Wall	Dense 1.13	0.166	0.168	UI-CWP-E5-GF-01 V1
E5 (MCI-GF-01) - Floor/Wall	Med 0.31	0.079	0.078	UI-CWP-E5-GF-01 V1
E5 (MCI-GF-01) - Floor/Wall	Light 0.15	0.058	0.058	UI-CWP-E5-GF-01 V1
E16 - External corner	Dense 1.13	0.055	0.047	UI-CWP-E16-EXT-CRN V1
E16 - External corner	Med 0.31	0.048	0.042	UI-CWP-E16-EXT-CRN V1
E16 - External corner	Light 0.15	0.044	0.039	UI-CWP-E16-EXT-CRN V1



For further information on this topic: Unilin has published Thermal Bridging guidance, request your copy from our technical department.

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

Visit [unilininsulation.co.uk](http://unilininsulation.co.uk)



## 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, depending 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 the UK's largest manufacturers and suppliers of insulation. We have a 20-plus year history of working in partnership with construction professionals to close the gap between design and as-built performance.

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 Trained Modelling
- BBA/TIMSA calculation competent
- Warranted Calculations available
- Immediate technical response
- SAP Qualified
- Insulation systems to deliver real onsite performance

#### Get in touch

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**FREE**  
One-to-one  
advice



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### The Sustainable Solution

Specifying Unilin Insulation is a real commitment to minimising energy consumption, harmful CO<sub>2</sub> 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 and 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 O2 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.



ISO 45001 Occupational Health & Safety Management Systems

ISO 9001 Quality Management Systems

ISO 14001 Environmental Management Systems