



# PIR INSULATION PRODUCT GUIDE

APRIL 2024



[IKOGROUP.CO.UK](http://IKOGROUP.CO.UK)

# CONTENTS

<b>04</b>	<b>Preventing heat loss and reducing energy consumption, every time</b>
<b>06</b>	<b>Why choose IKO enertherm?</b>
<b>09</b>	<b>Introducing - micro cell technology</b>
<b>10</b>	<b>IKO enerthem insulation board range</b>
<b>13</b>	<b>IKO enertherm - see the difference for yourself</b>
<b>14</b>	<b>Internal walls</b>
<b>16</b>	<b>External walls</b>
<b>18</b>	<b>Flooring (including loft flooring)</b>
<b>20</b>	<b>Pitched roofs</b>
<b>22</b>	<b>Flat roofs</b>
<b>24</b>	<b>Recommended U-values</b>
<b>26</b>	<b>IKO in action case study</b>
<b>29</b>	<b>We are IKO</b>
<b>30</b>	<b>Protecting what matters</b>



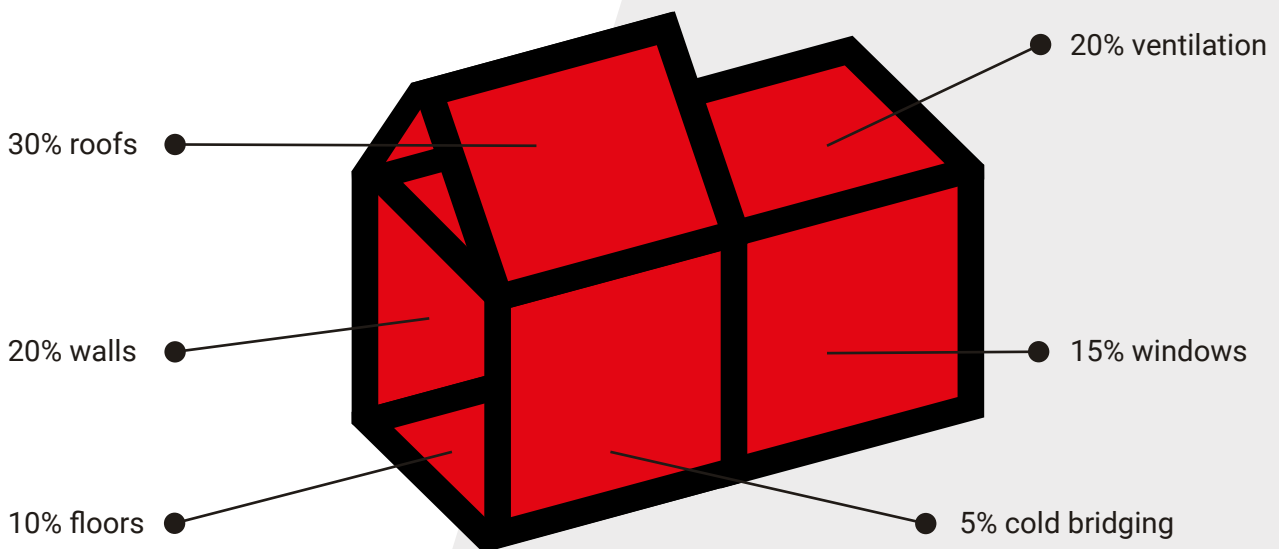
# PREVENTING HEAT LOSS AND REDUCING ENERGY CONSUMPTION, EVERY TIME

IKO enertherm high-performance insulation solutions, ranging from walls and floors to flat roofs and pitched roofs, can help lower heating and cooling costs. As a result, they can significantly reduce the energy consumption of the building while lowering CO2 emissions.

With its combination of moisture and mould-resistant properties and dimensional stability, IKO enertherm lasts for the lifetime of the building.

## IKO enertherm helps prevent energy loss through multiple areas of the building envelope.

Here's how much energy is lost from certain areas of a house construction:



This can be combatted with IKO enertherm insulation systems, including:

- External and internal wall insulation.
- Insulated plasterboard.
- Floor insulation.
- Loft insulation.
- Pitched roof insulation.
- Flat roof insulation.

## Protecting the environment

IKO enertherm retains energy and decreases CO2 emissions, but we understand our sustainability responsibilities when manufacturing our insulation boards and thinking about our future.

- ✓ IKO enertherm is made from renewable raw materials, such as recycled Polyethylene Terephthalate (PET) bottles.
- ✓ Every year, just 0.5% of IKO enertherm ends up as waste.
- ✓ All production cutting remains are turned into briquettes that are used as a filler material in other building applications.



## Our sustainability pledge

What matters to you, matters to us. That's why we pledge to embrace and champion best practice on environmental, social, and governance (ESG) standards throughout our company, culture, and core values.

We believe that by protecting what matters, we can accelerate positive change and safeguard a sustainable future. Turn to page 30 for further details about our ESG strategy.

# WHY CHOOSE IKO ENERTHERM?

IKO enertherm is a 100% CFC, HCFC or HFC-free insulation board with a rigid polyisocyanurate foam core. It is clad on both sides with various facings, depending on the required application and waterproof finishing.



## Top quality, multi-layer facing

IKO enertherm ALU Insulation boards are finished on both sides with a seven-layer facing that is laminated in a single complex.

The lamination is tested under the most extreme conditions. This involves putting it to the test in relation to water absorption, mechanical properties and emissivity.

**The high quality, multi-layer facing acts as a barrier against air that penetrates the insulation board and disrupts the U-value and overall performance.**



## Thermal performance

IKO enertherm PIR has a thermal conductivity (Lambda/ $\lambda$ -value) of 0.022 W/mK. The low emissivity surface of the reflective foil can help improve U-values in certain constructions when reflecting into a cavity.

IKO enertherm PIR insulation Lambda and thermal resistance are in accordance with BS EN 13165: 2012 + A2: 2016 (thermal insulation products for buildings).



## Fire performance

IKO enertherm ALU has a reaction to Fire Class NPD & F (in accordance with EN 13501-1) and UK Class 1 (in accordance with BS 476 - p7). It also has a low to zero smoke emission rate and does not melt or drip. This fire performance is an inherent part of the foam cell structure.

There are potential restrictions placed upon this product which vary dependant on building type, height, construction, and location within the UK. For guidance regarding the routes to compliance for meeting fire safety requirements, please refer to the relevant Building Regulations/Standards for England, Scotland and Wales.

Further details can be obtained from IKO enertherm Technical Services.



## Compressive strength

The compressive strength of IKO enertherm typically exceeds 175 kPa when tested at 10% compression to BS EN 826: 2013 (thermal insulating products for building applications - determination of compression behaviour).



## Durability

When correctly installed, IKO enertherm has an indefinite life. Its durability depends on the background/supporting structure and conditions of its use. It should not be used to isolate dampness or in continuously damp/humid conditions.



## Recycled content

PET bottles are recycled and used throughout the entire IKO enertherm insulation production process.

IKO enertherm is also manufactured in accordance with IKO's zero waste policy. This involves taking all production cutting remains and turning them into briquettes that are used as a filler material in other building applications.

“

*Building a house which achieved new building regulation thermal performance was the key objective. To achieve this, a fabric-first approach was agreed to ensure the property's walls, floors and roof were fitted with suitably specified high-performance PIR insulation, hence we engaged with IKO.”*

**Architect, Elaine Kennedy**

To read the full case study, turn to page 26.

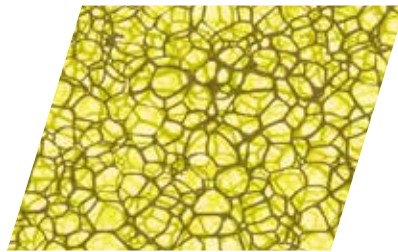




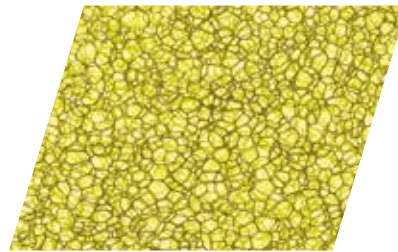
# INTRODUCING – MICRO CELL TECHNOLOGY

With its optimum raw material formulation and industry-leading production parameters, IKO enertherm features an exceptionally fine cell structure that is created using Micro Cell Technology (MCT).

## Standard PUR/PIR board cell structure vs IKO enertherm cell structure



Standard PUR/PIR Board Cell Structure  
(microscopic view)



IKO enertherm Cell Structure  
(microscopic view)

## IKO enertherm MCT unique characteristics – at a glance

### 1. Shape retention

IKO enertherm insulation boards retain their shape and dimensional stability.

**The end result:** No shrinking or cold bridging and a longer service life without any loss of insulating properties.

### 2. Moisture and mould resistance

Due to their unique MCT composition, IKO enertherm insulation boards have an extremely low, long-term water absorption rate (< 0.6%) compared to other insulation materials.

**The end result:** Increased weight (through water absorption) is eliminated, rot and mould prevention, and enhanced insulation value.

### 3. Exceptional flexibility

IKO enertherm insulation boards have a high level of elasticity, with MCT delivering exceptional pressure resistance.

**The end result:** Flexibility and no rupturing.

# IKO ENERTHERM INSULATION BOARD RANGE

RANGE		USAGE
ALU	A versatile, multi-application thermal insulation board. Suitable for walls, floors, pitched roofs and flat roofs.	
MG	Clad on both sides with a perforated glass membrane. Designed for flame-free systems.	
BM	Clad on one side with polypropylene-coated bituminous sand and talc-free glass fabric. The other side is covered with a perforated glass membrane (MG) for added versatility.	
PB	Removes the hassle of installing insulation and plasterboard separately by combining both materials. A built-in damp screen and a straight edge creates a smooth finish, saving valuable time and space.	

## Key

- Flooring (including loft floor and underfloor heating)
- Internal walls (timber and steel frame and insulated plasterboard)
- External walls (partial and full filled cavity and external wall cladding)
- Pitched roofing
- Flat roofing





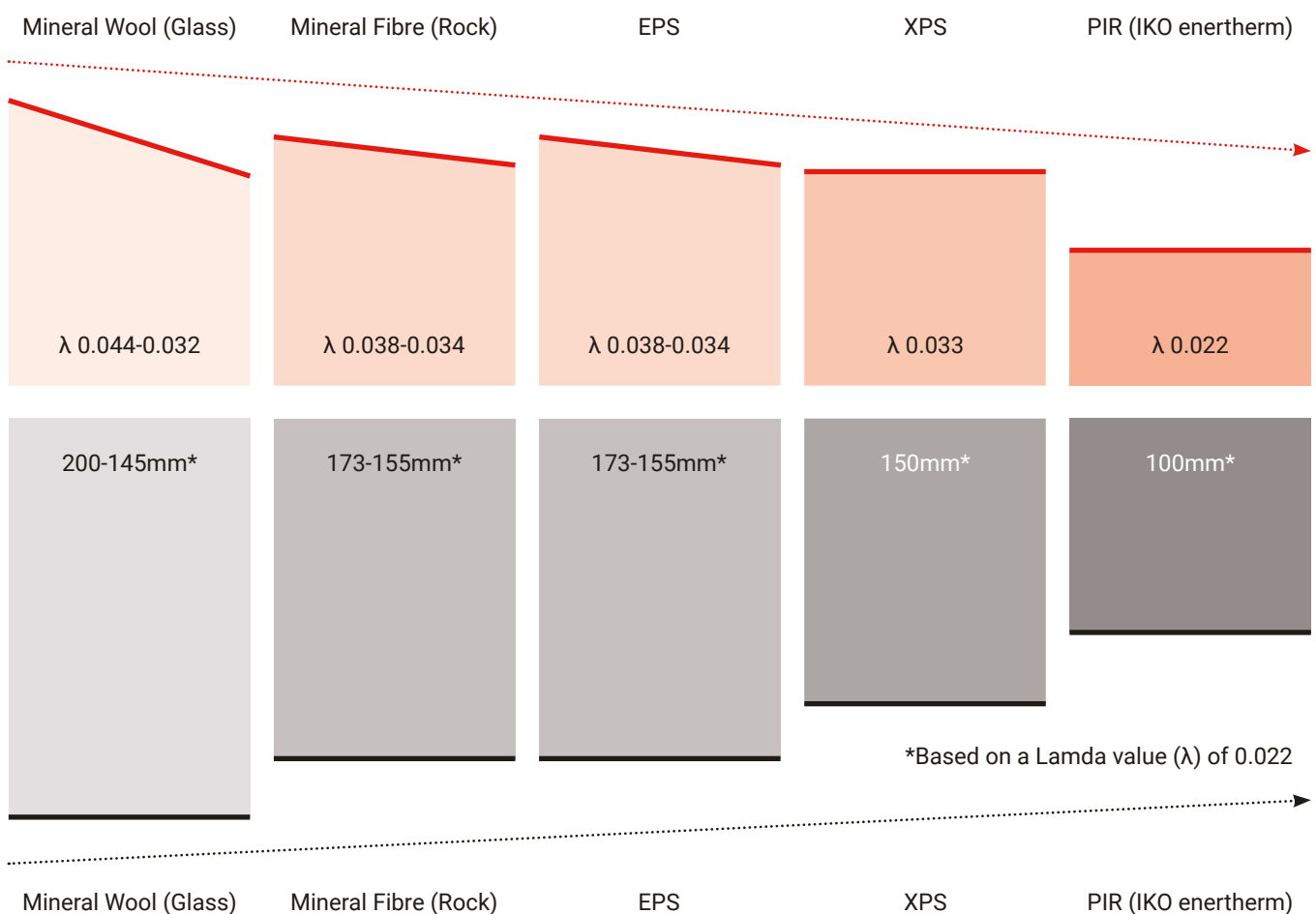
# IKO ENERTHERM – SEE THE DIFFERENCE FOR YOURSELF

Certain insulation products are suitable for certain applications. The lower the Lambda value ( $\lambda$ ), the better the product's overall thermal efficiency.

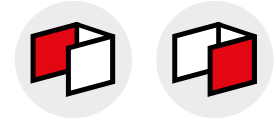
Application aside, thickness also plays a key role in specifying the correct insulation for the project at hand.

In comparison to other insulation boards (e.g. mineral wool, fibre, EPS and XPS), IKO enertherm may be dramatically thinner, but it is still capable of achieving a lower Lambda value.

Using a thinner insulation board doesn't compromise the dimensional structure of buildings in the same way other insulation materials do.



# INTERNAL WALLS



IKO enertherm ALU and PB are both widely used to insulate internal walls.

## IKO enertherm ALU

### Key benefits and features:

- ✓ The dimensional stability provides a guaranteed unbroken insulation shield.
- ✓ The outstanding thermal performance means just one thin layer may be enough, depending on the building construction.
- ✓ Quick and easy to cut and install.
- ✓ Lightweight and easy to transport.
- ✓ Fibre-free, zero irritation installation.



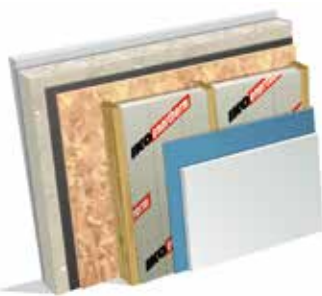
Dwarf wall



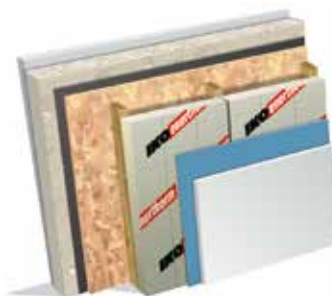
Steel friction fit



Steel mechanical fix



Timber friction fit



Timber wall mechanical fix

## IKO enertherm PB

Has been specifically created to insulate internal walls, as well as providing a ready-made plasterboard finish with various fixing options, such as dot and dab, below truss, over timber frame or stud and steel frame.

### Insulated plasterboard:

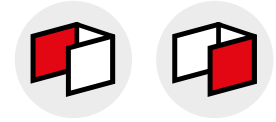
- ✔ Space-saving solution for renovations.
- ✔ Built-in damp screen.
- ✔ Larger-sized boards for quick and easy installation.
- ✔ Bevelled edges for a smoother, highly professional finish.
- ✔ Various fixing options available.



Insulated plasterboard

**Contact our Technical Services Team:  
01257 256888**

# EXTERNAL WALLS



**IKO enertherm ALU is widely used to insulate cavity walls and external walls.**

## IKO enertherm ALU

IKO enertherm ALU is a 100% CFC, HCFC or HFC-free insulation board with a rigid polyisocyanurate foam core, clad on both sides with a multi-layer gastight aluminium complex.

This high-quality reflecting aluminium cladding consists of no fewer than seven layers, combined into a single complex. It is tested under extreme conditions in respect of water absorption, mechanical properties, corrosion resistance and emissivity.

### IKO enertherm ALU key benefits and features:

- ✓ The dimensional stability of the boards guarantees one unbroken insulation shield.
- ✓ The outstanding thermal performance of IKO enertherm means that one thin layer of insulation board in the cavity may be enough (depending on the building construction).
- ✓ Quick and easy to cut and install.
- ✓ The lightweight board facilitates easy transportation.
- ✓ Fibre-free board, so no irritation during installation.
- ✓ The tongue and groove connection avoids thermal bridging and water ingress.
- ✓ Compatible with IKO Rubershield Breather Membranes as a house wrap, reducing condensation and protecting internal walls from moisture.

**Contact our Technical Services Team:  
01257 256888**



### IKO enertherm ALU CW & FF key benefits and features:

- ✓ Rigid PIR partial and full fill masonry cavity wall solution with great thermal performance – a Lambda of 0.022 W/mK.
- ✓ Engineered straight and T&G board edges maximise thermal performance and resist water penetration.
- ✓ Low emissivity foil facing 0.05 improves thermal performance in sealed cavity air spaces and U-values.
- ✓ The low thermal conductivity can maximise usable internal floor space.
- ✓ Available as 1200mm x 450mm rigid boards in a wide range of thicknesses for common cavity widths.
- ✓ Lightweight and rigid design for easy handling, transportation, and fitting.
- ✓ BBA-certified.
- ✓ Manufactured using a blowing agent that is CFC/HCFC-free and has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).
- ✓ Produced in accordance with an ISO 14001:2015-accredited Environmental Management System.



Partial fill only



Partial fill with insulated plasterboard



Full fill only



Full fill with insulated plasterboard

# FLOORING (INCLUDING LOFT FLOORING)



## IKO enertherm ALU

This insulation is frequently used to thermally insulate floors, including loft floors. It is widely recognised as being a convenient, highly effective solution for insulating new and refurbished properties at ground or loft level.

When used in lofts, or any ceiling that is above a cold space such as a garage, IKO enertherm ALU can reduce heat loss within the rest of the building by up to 10%; especially when the roofing structure does not provide any further insulation (i.e. between the rafters).

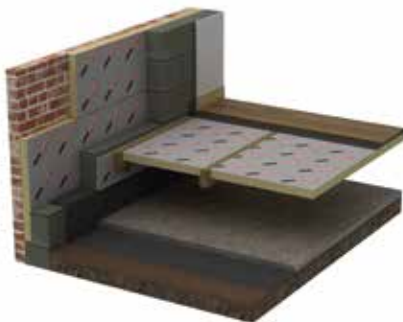
The overall building design will determine the insulation type. Regardless of whether the insulation is required above or below ground, IKO enertherm ALU is quick and easy to install.



Below slab



Beam & block detail



Suspended timber floor



Above ground bearing slabs

### **Key benefits and features:**

- ✔ Exceptional dimensional and compressive stability.
- ✔ Moisture and rot-proof.
- ✔ Can be installed quickly and easily due to lightweight properties and convenient sizes.
- ✔ Loose installation in combination with OSB boards.
- ✔ Can be used alongside IKO Hyload Structural Waterproofing products when insulating ground floors.

### **Common applications:**

- ✔ Below and above concrete floor slabs.
- ✔ Below cement-based screed on concrete slabs with a hard-core base.
- ✔ Below suitable OSB plywood or shipboard coverings on solid floors.
- ✔ Above suspended concrete floors (e.g. beam and block) with a cement-based screed.
- ✔ Between the joists of suspended timber ground floors.

**Contact our Technical Services Team:  
01257 256888**

# PITCHED ROOFS



**IKO enertherm ALU is the perfect pitched roofing insulation solution.**

Using the correct type of insulation with a suitable breathable membrane can reduce the risk of condensation forming within pitched roof structures, which can lead to mould and can cause wider damage to the overall building over time.

**IKO enertherm ALU insulation boards are available in a wide range of thicknesses.**

For quick and easy installation, even if small adjustments are required for a tight fit. The boards also maintain their shape, eliminating the risk of thermal bridging.

**IKO enertherm ALU insulation boards feature a moisture-resistant cell structure in addition to IKO's Rubershield Breather Membrane, combatting condensation and reducing thermal bridging in the process.**



**Key benefits and features:**

- ✔ Can be installed quickly and easily due to lightweight properties and convenient sizes.
- ✔ Moisture-proof and non-deformable.
- ✔ Thinner alternative to traditional loft insulation materials.
- ✔ Compatible with IKO Easyseal Vapour Control Layer (VCL) or the IKO Rubershield Breather Membrane range.



Between and under rafters unventilated



Between and under rafters ventilated



Over and between rafters



Over rafters only



Under rafters only unventilated



Under rafters ventilated

**Contact our Technical Services Team:  
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# FLAT ROOFS



**IKO enertherm ALU is used to insulate flat roofs within new and refurbishment projects on concrete, steel deck and timber substrates.**

Due to its high compressive strength, IKO enertherm ALU offers additional protection during installation for a more efficient end result.

In addition, the closed cell structure offers further protection against water ingress that can potentially compromise the insulation value. At the same time, the thinner dimension boards are capable of meeting the insulation requirements.

**This is extremely useful when overlying roofs with abutments, sills, roof lights and doorways because the need to remove these features, in order to conform with Building Regulations, is no longer required.**

Key benefits and features:

- ✓ Lightweight boards for easy transportation and handling.
- ✓ Wide selection of board widths to suit most installations.
- ✓ High dimensional stability and compressive strength provides added protection.
- ✓ Can be installed quickly and easily.

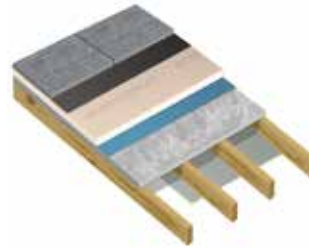
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Cold roof IKO build-up



Cold roof typical build-up



Inverted roof



Warm roof

## IKO enertherm BM and MG are used to insulate flat roofs.

### IKO enertherm BM

IKO enertherm BM is versatile enough to be used for various roofing projects involving different application methods.

### IKO enertherm MG

IKO enertherm MG is clad on both sides with a perforated glass membrane. The MG board has been designed to be incorporated within flame-free applications, including self-adhesive membranes, single ply, mastic asphalt and liquid waterproofing.

#### Wide range of facings

An extensive range of facings are available within the IKO enertherm range, which means there is an insulation board to suit most roofing requirements.

All of the facings incorporate the wealth of benefits offered by the ALU facing board, which include its compressive strength created by its unique closed core cell structure.

#### Key benefits and features:

- ✔ Highly versatile – can be used within torch-on, pour and roll, self-adhesive, liquid, mastic asphalt, single ply, and PU adhesive installations.
- ✔ High dimensional stability and compressive strength provides added protection.
- ✔ Wide selection of board widths to suit most installations.
- ✔ Lightweight boards for easy transportation and handling.
- ✔ Can be installed quickly and easily.

# RECOMMENDED U-VALUES



IKO's Technical Services team is on hand to provide a complete U-value analysis for every element of your project to make sure it complies with Building Regulations.

Current regulations stipulate that the U-value calculation must be used to assess thermal insulation in accordance with the England & Wales and Section 6 (Scotland) Building Regulations for new build and refurbishment projects.

**The value depends on a number of factors including:**

- **Project location** – different regulations exist for England, Wales, and Scotland.
- **Building type** – domestic or commercial.
- **Insulation application** – roof, wall, or floor.
- **Positioning** – internal or external.

Producing a calculation that complies with the Building Regulations for each region can be complex. The factors listed above must be taken into consideration, as well as the:

- Build-up the insulation is part of.
- Cavity requirements.
- Slope and incline of the roof.
- P/A (perimeter area) ratio.

**These tables highlight the required target U-values, depending on the application and geographical location:**

**Contact our Technical Services Team:  
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England June 2023	Domestic New Build			Non-Domestic New Build		
	Target U Value W/m <sup>2</sup> K	Extension	Refurbish	Target U Value W/m <sup>2</sup> K	Extension	Refurbish
Wall	0.18	0.18	0.3	0.18	0.3	0.3
Floor	0.13	0.18	0.25	0.15	0.25	0.25
Pitch Roof - Ceiling level	0.11	0.15	0.16	0.15	0.16	0.16
Pitch Roof- Rafter Level	0.11	0.15	0.16	0.15	0.18	0.18
Flat Roof	0.11	0.15	0.16	0.15	0.18	0.18

Scotland February 2023	Domestic New Build			Non-Domestic New Build		
	Target U Value W/m <sup>2</sup> K	Extension	Refurbish	Target U Value W/m <sup>2</sup> K	Extension	Refurbish
Wall	0.15	0.17	0.17	0.15	0.21	0.21
Floor	0.12	0.15	0.15	0.13	0.18	0.18
Pitch Roof - Ceiling level	0.09	0.12	0.12	0.11	0.16	0.16
Pitch Roof- Rafter Level	0.09	0.12	0.12	0.11	0.16	0.16
Flat Roof	0.09	0.12	0.12	0.11	0.16	0.16

Wales November 2022	Domestic New Build			Non-Domestic New Build		
	Target U Value W/m <sup>2</sup> K	Extension	Refurbish	Target U Value W/m <sup>2</sup> K	Extension	Refurbish
Wall	0.13	0.18	0.3	0.22	0.26	0.3
Floor	0.11	0.15	0.25	0.22	0.22	0.25
Pitch Roof - Ceiling level	0.11	0.13	0.16	0.18	0.15	0.16
Pitch Roof- Rafter Level	0.11	0.13	0.16	0.18	0.18	0.18
Flat Roof	0.11	0.13	0.16	0.18	0.18	0.18

\* Column A for extensions where existing dwellings wall and roof U-values are worse than 0.70 W/m<sup>2</sup>K in the walls and worse than 0.25 W/m<sup>2</sup>K in the ceiling.

Column B applies to other extensions, upgraded existing thermal elements, non-exempt conservatories and conversion of unheated buildings.

\*\* 0.20 only applies when integral insulation is used.

# IKO IN ACTION

## CASE STUDY

### Residential house build

**Project: Highwood House, Scotland**

**Product: 950m<sup>2</sup> of enertherm ALU insulation**

Highwood House is a brand new, four bedroom, detached property in south west Scotland, which was constructed under the supervision of Elaine Kennedy Architects.

Designed with sustainability in mind, the house needed to be thermally-proofed and meet current Building Regulation thermal performance requirements. As a result, a fabric-first approach was implemented, which prioritised the property's energy efficiency credentials from the outset.

As part of this vision, specifying a high quality, high performance insulation system for the entire building was fundamental in maximising thermal efficiency and future-proofing the property.

More specifically, due to the fact Highwood House is located in open countryside, it is at the mercy of the elements, particularly wind-driven rain. This meant that the insulation solution had to be watertight and airtight, as well as delivering the required U-values.

IKO enertherm ALU was specified as the main insulation system throughout, providing a thermal capability of 0.022W/m<sup>2</sup>K and fitting easily between the timber studs, roof rafters and flooring. This enabled different air tightness levels and ventilation strategies to be incorporated, as well as various heating and hot water solutions.

Installing IKO enertherm ALU also resulted in the following U-values being achieved:

- ✓ **Ground floor** - 150mm IKO enertherm ALU = 0.11W/m<sup>2</sup>K
- ✓ **Walls** - full-fill IKO enertherm ALU = 0.12W/m<sup>2</sup>K
- ✓ **Pitched roof** - 140mm IKO enertherm ALU (between the rafters and 90mm below) = 0.10W/m<sup>2</sup>K







# WE ARE IKO

## **We are recognised as being an industry institution in the UK.**

With more than 140 years' manufacturing experience, IKO is firmly established as the UK's market leader in the design, manufacture and installation of roofing, waterproofing and insulation solutions, along with our fast-growing highways maintenance range.

This hard-earned reputation has been built on a foundation of high-quality products, exemplary customer service and an unwavering commitment to driving positive change and protecting what matters to our people and the planet.

With this comes a responsibility to continue investing in our product solutions, our manufacturing facilities and our extensive team of experts to deliver excellence at every level.

## **Manufactured in the UK. Made for the future.**

Our strategically-located manufacturing plants around the country, supported by our nationwide network of building contractors and distributors, make IKO best placed to provide our UK-wide customers with a reliable, responsible and responsive service.

All IKO projects are regularly monitored during installation by our dedicated Technical Services department, helping maintain full specification compliance and ensuring any site queries are handled quickly and effectively.

In addition to manufacturing these systems to the highest standard and minimising our environmental impact, we also provide dedicated project design support.

The IKO team is also on hand to provide specification advice, technical drawings, wind uplift and thermal calculations, site visits and post-project support, such as maintenance and comprehensive guarantees.

# PROTECTING WHAT MATTERS

As a responsible UK manufacturer of roofing, waterproofing and insulation solutions, we aim to limit the environmental impact of our operations and the lifecycle of our products, from maximising energy efficiency and minimising waste to locally sourcing raw materials and reducing carbon emissions from transportation.

## IKO continues to make significant strides forward

We have committed to a programme of continuous improvements that apply to our ways of working, manufacturing and initiatives to reduce, reuse and recycle materials. For example, we are investing in more sustainable packaging and our waste policy means almost all of our waste is now diverted from landfill. All IKO sites now also run on renewable energy.

Our R&D and product development teams also continue to expand our innovation pipeline of environmentally friendly, sustainably sourced products. Our insulation boards are manufactured from renewable raw materials such as recycled Polyethylene Terephthalate (PET) bottles at our IKO Insulations site in Alconbury Weald, Cambridgeshire. Every year, just 0.5% of IKO enertherm ends up as waste and all production cutting remains are turned into briquettes that are used as a filler material in other building applications.

IKO continues to make significant strides to becoming a more sustainable business, including becoming a Partner of the Supply Chain Sustainability School to build on efforts to increase awareness, educate our people, and share knowledge of sustainable industry practices.

## Meeting our wider Environmental, Social and Governance (ESG) goals

We have introduced a number of initiatives to drive positive change as part of our wider ESG framework, ranging from installing bug hotels and nurturing the talent of the future, to offering mental health support to all IKO people. However, we haven't stopped there – our efforts extend beyond our employees.

Whether it's the people who live in the communities around our manufacturing sites, or those who work, live or learn under our roofing and waterproofing solutions, we aim to protect what matters to them most and create a positive legacy.

[Learn more about our ESG journey](#) 





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