



ecological

BUILDING SYSTEMS

*Naturally Better*

**PRODUCT** GUIDE



**ecological**  
BUILDING SYSTEMS

Naturally  
Better



## MISSION STATEMENT

“To **support** the construction sector in the creation of a better built environment through the **supply** of innovative, sustainable, ecological building materials and solutions to **deliver** quality, affordable products and training”

**1906**

Our parent company MacCann & Byrne founded. MacCann & Byrne successfully traded as an independent retail hardware merchant supplying hardware and timber products

**2000**

**Ecological Building Systems launched**

**2002**

pro clima wins the first of many awards at PLAN EXPO, SOLITEX PLUS breathable roofing underlay named Best Roofing Product

**2006**

Ecological Building Systems becomes the largest distributor of pro clima in Europe  
Thermo Hemp Natural Insulation awarded Best Eco Product at the *Grand Designs Magazine Awards*

**2007**

Ecological Building Systems UK Ltd is established, based near Carlisle in Cumbria

**2009**

Centre of Knowledge training centre officially opened

**2017**

Diasen Thermal Plaster wins Best Energy Efficient Product at the SEAI Energy Show

**2018**

Pro clima INTELLO PLUS airtight system certified as a Passivhaus component achieves the best airtightness test results ever by any airtightness membrane system

One-day intensive nZEB course commended in the Best Services Provider category at the SEAI Energy Show



[www.ecologicalbuildingsystems.com](http://www.ecologicalbuildingsystems.com)

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*"Ecological Building Systems provided excellent technical support to us throughout the specification/tender and construction stages of this large, high-spec A-rated dwelling on the shores of Lough Melvin, Co. Leitrim."*

Nicola Ryan, Studio Red Architects





# AIRTIGHT AND WINDTIGHT SYSTEMS

## **Leitrim House**

This family home overlooking Lough Melvin in Leitrim has delivered truly stunning results. The building is split into volumes – bedroom, living and leisure. The combination of natural insulation products and pro clima airtightness products ensure a comfortable, healthy environment all year round.

### *Ecological Products Used*

Guidelines were provided for insulating the walls, pitched roof, curved roof and masonry walls. A range of products was used including GUTEX Wood Fibreboard Insulation, Thermo Hemp Premium Natural Insulation and pro clima airtight/windtight systems with associated tapes/seals.

Pitched Roof - GUTEX was used on the outside of the pitched roof in combination with Thermo Hemp Premium. This ensured an excellent u-value was achieved. The GUTEX and Thermo Hemp Premium combination provided a very thermally efficient build up and also ensured the structure was breathable to the outside.

In addition, the roof was designed to be inhabited. GUTEX Ultratherm has an exceptionally effective thermal diffusivity meaning it absorbs heat during the summer on the metal roof preventing it permeating too quickly, leading to a comfortable temperature in the summer as well as insulating effectively during the winter months.

This project highlighted the adaptability of the GUTEX Multitherm board as it was used successfully both on the outside of a timber frame and on the outside of a masonry wall.

# AIRTIGHT SYSTEMS

At the core of our airtight solutions is pro clima INTELLO PLUS, the most advanced reinforced intelligent airtight & vapour control membrane on the market. Additional airtight solutions include internal and external high-performance sealing tapes, airtight grommets for pipework and cables, and multi-purpose adhesive.

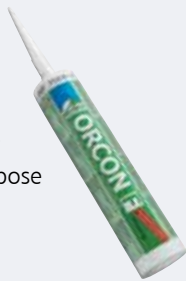
**INTELLO PLUS**  
Intelligent vapour check and airtight membrane



**CONTEGA SOLIDO SL**  
Vapour-resistant masonry plaster sealing tape



**ORCON F**  
Multi-purpose adhesive



**TESCON PRIMER RP / SPRIMER**  
Surface preparation treatment



**TESCON No.1/VANA**  
Multi-purpose flexible adhesive tape for airtight sealing



pro clima  
**Voted Best Airtightness System**

By the German independent consumer testing organisation 'Stiftung Warentest'



**AEROSANA VISCONN**  
Sprayable or paintable airtightness sealant

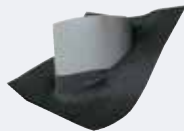


# WINDTIGHT SYSTEMS

The Irish climate is exposed to extremes in wind pressure, particularly in coastal areas. If wind penetrates a building's thermal envelope, the resulting convective air flows can exponentially increase u-values and significantly degrade thermal performance and comfort levels. To achieve maximum thermal efficiency, the insulation must be completely sealed on both sides. This prevents wind and rain penetrating the thermal layer between the rafters.



**SOLITEX PLUS**  
Vapour-permeable windtight roof tile underlay



**ROFLEX**  
Airtightness grommet for pipework



**SOLITEX FRONTA WA / QUATTRO**  
Monolithic fully windtight breather membrane for walls



Intelligent airtight and windtight building systems

## Why pro clima?

- Unsurpassed accreditation - the only airtight system with BBA, NSAI & Passive House Certification
- INTELLO system is Passive House Certified achieving the best ever airtightness results
- Installed in numerous passive houses and low-energy projects around the world
- High-performance solid acrylic glues and tapes are proven to have a life expectancy of at least 100 years
- Sentinel Haus approved for good indoor air quality and healthy buildings
- Hundreds of airtight & windtight solutions for block & timber frame construction details

## BENEFITS

- Reduced heating costs
- Improved building durability
- Better building quality
- Enhanced comfort levels
- Reduced mould risk

## Maximum Protection with Hydrosafe Technology

The INTELLO PLUS system provides maximum protection even on damp, humid building sites. This means INTELLO PLUS protects against dampness in winter but also offers maximum drying potential in the summer.



SENTINEL HAUS  
INSTITUT

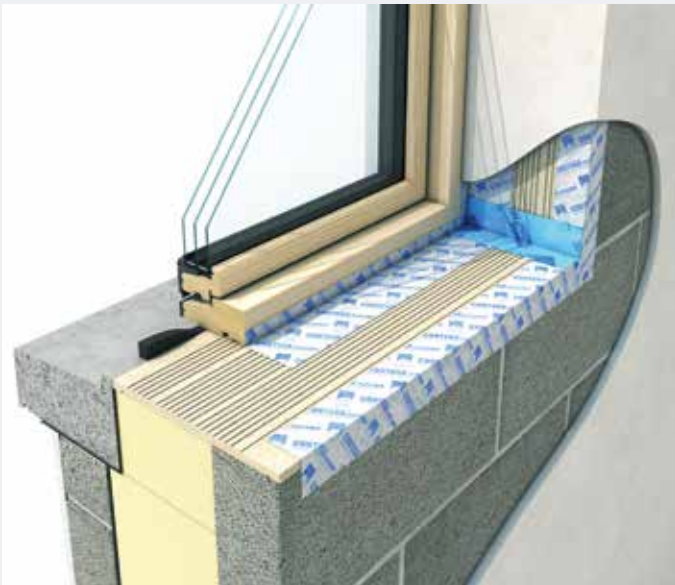
# WINDOW SEALING SYSTEMS

Windows and door junctions are often highlighted as one of the primary areas where air leakage occurs in buildings. The thermal performance of the window is very much dependent on how it is installed.

## External Window Head



## Internal Window Sill



**“A poor window installation can almost double annual heating bills.”**

Passive House Conference Hanover 2012



Intelligent airtight and windtight building systems

## Airtight Products for Masonry / Timberframe Walls



**CONTEGA SOLIDO SL**  
Internal vapour-resistant masonry plaster sealing tape



**CONTEGA SOLIDO EXO**  
External diffusion-open plaster sealing tape for windows



**TESCON PROFIL**  
Multi-purpose flexible corner sealing tape for windows, doors and corner joints



**CONTEGA FIDEN EXO**  
Pre-compressed joint sealing tape for exterior use



**BOSIG PHONOTHERM 200**  
Compressive-resistant thermal insulation



**ORCON F**  
Multi-purpose adhesive



**EXTOSEAL ENCORS**  
Butyl flashings for window sills and door thresholds



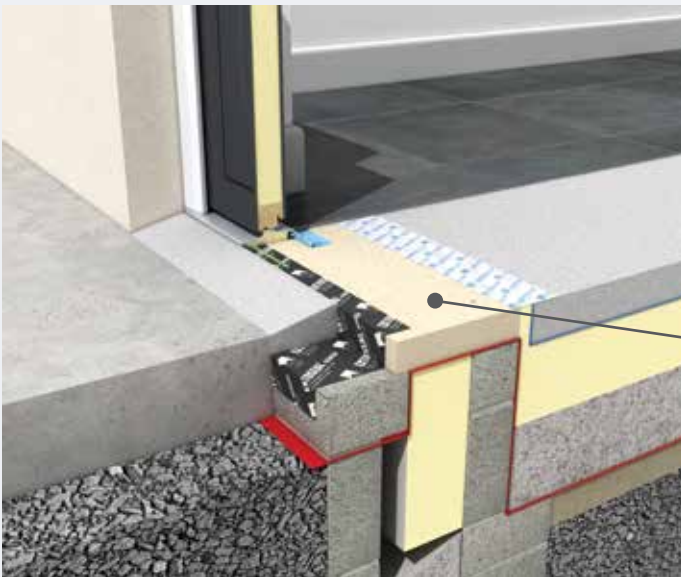
# THERMAL BRIDGE SOLUTIONS

Achieving thermal continuity in conventional masonry and timber frame construction is particularly pertinent with Nearly Zero Energy Building principles upon us, airtightness and limiting thermal bridging are now essential. BOSIG PHONOTHERM 200 is a compression-resistant structural insulation that provides a robust, practical thermal solution to address thermal bridges at critical junctions.

**“BOSIG PHONOTHERM’s robustness, adaptability and thermal properties ensured my high-performance windows and doors function to optimum levels.”**

Niall Smith, Niall Smith Architects

## Door Threshold Detail



Bosig PHONOTHERM Structural Insulation

This German-based company, who have been developing and producing innovative complete solutions for various industries for over 35 years.

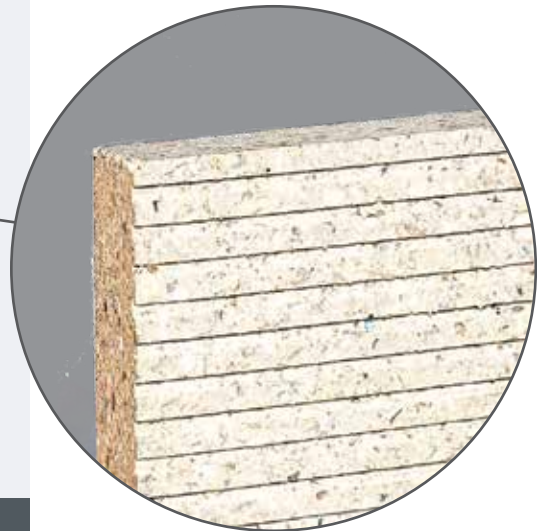
## FEATURES

- Ideally suited as a support for door thresholds, window installations and door foundation junctions

## BENEFITS

- 100% water resistant, no swelling or decay
- Optimum insulating properties: effectively reducing thermal bridging at critical junctions
- Diffusion open
- Easy to machine - use conventional carbide-tipped woodworking machinery
- Formaldehyde-free
- Excellent base material for tiles and plaster
- Grooved board can be plastered directly

**Custom sizes can be ordered**



## MATERIAL PROPERTIES

Thermal conductivity (W/m <sup>2</sup> K)	0.076
Raw density (kg/m <sup>3</sup> )	550 + 50kg
Compression strength at 10% compression	Approx 7000 kPa (DIN EN 826)
Format	Plain (no grooves) or (mortar grooves) 1 side
Dimensions (mm)	1350mm x 250mm x 25mm (mortar groove) 1350mm x 500mm x 25mm (plain) 1350mm x 500mm x 50mm (plain)
Applications	Door thresholds, window installations, door & foundation junctions.
Additional information	Where PHONOTHERM 200 is used for structural purposes, an engineer’s approval must be sought.



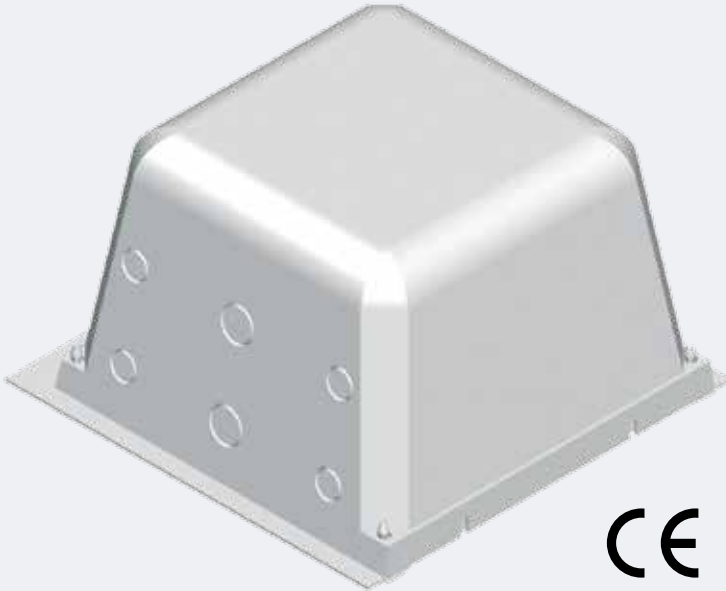
Niall Smith, Niall Smith Architects



## AIRTIGHT ACCESSORIES

### Downlight Protectors

Downlights are a known weak point and present a challenge for airtight design. Optime Mini and Maxi boxes provide an innovative solution for achieving a safe, easy to install, airtight seal for downlights.



**Reduce condensation risks in attics**



Based in Norway, Optime has been manufacturing recessed boxes for downlights for almost 20 years.

#### FEATURES

- Reduce heat loss with more continuous insulation
- Can be used for most conventional timber ceilings
- Suitable for new build and retrofit
- Made from inflammable and recyclable material
- Tested for fire resistance to comply with stringent European standards
- Suitable for downlights up to 50w (we recommend low-energy downlights to minimise energy consumption)

#### BENEFITS

- Improves air quality and airtightness
- Reduces risk of condensation
- Reduces dust and insect penetration
- Reduces heat loss



#### MATERIAL PROPERTIES

Optime Mini Box	200 x 200 x 140mm
Optime Maxi Box	320 x 320 x 160mm
Optime Mini 90	200 x 200 x 90mm
Tested to Nemko standards	BS 1363
Mini is third-party tested in compliance with	IS EN 13141 - 1: 2004 and BS 5250: 2011+A1: 2016



## AIRTIGHT ACCESSORIES

### Airtight Attic Hatches

Poorly sealed and insulated attic hatches can lead to high levels of heat loss. Improperly sealing the hatch perimeter to an airtight envelope can result in the leakage equivalent to a hole the size of an A4 page, leading to significant heating costs and condensation risks. The Wellhöfer 4D attic hatch features a certified airtight and pre-insulated attic door with a u-value of 0.58W/m<sup>2</sup>K, which provides homeowners and specifiers with the optimum level of thermal performance and airtightness.



The only hatch with an independent airtightness sealing system, which seals the hatch frame to the surrounding timber joists, noggins or the adjacent airtightness and vapour control layer

#### MATERIAL PROPERTIES

	4D Attic Hatch	Access Hatch
Thermal resistance (W/m <sup>2</sup> K)	0.58 (approx.)	0.75
Dimensions (mm)	1200 x 600 x 250	600 x 600
Floor-to-ceiling height ranges available	up to 3.1m	
Airtightness class 4 - Tested		

#### Available on Request

Custom airtight attic hatch sizes, fire-rated hatches, certified passive house attic hatches and access hatches

**wellhöfer**  
ATTIC HATCHES

Pre-insulated & pre-sealed for airtightness

Based in central Germany, Wellhöfer is one of the world's leading producers of high-performance attic hatches.

#### FEATURES

- Wellhöfer 4D attic hatch remains airtight even under blower door test conditions
- Manufactured and engineered in Germany
- Tested and certified as low emissions for healthy housing
- Class 4 airtightness - tested to stringent EN & DIN standards, surpassing airtightness and insulation requirements
- Suitable for new builds and retrofits

#### BENEFITS

- Improved comfort in the home
- Reduction in overall heating costs
- Increased insulation performance
- Condensation risk reduced
- Thermal bridging risk reduced



#### Access Hatch





*“Ecological Building Systems have been our go-to source for sustainable products for as long as we care to remember. If they supply it or source it, you can rest easy it will have been fully vetted and that the technical support for the product will be readily available to ensure suitability. If we need peer review or technical input, Ecological Building Systems can deliver it in house and in a timely manner.”*

John Morehead, Wain Morehead Architects Ltd





## NATURAL INSULATION

### **West Cork Passive House**

West Cork has become synonymous over the years for its natural beauty and tourist hotspots such as Lough Hyne-Skibbereen, Mizen Head and indeed Cape Clear, Ireland's most southerly Island. This stunning West Cork passive house, designed by Wain Morehead Architects, certainly fits the mould in terms of elegant design, spectacular views and distinctly a modern appearance. Not only is this easy on the eye, it also performs remarkably well, achieving an impressive airtightness result of 0.59 ACH at 50 Pa. Careful detailing and use of materials in the project allowed for a thermal-bridge-free design.

#### *Ecological Products Used*

To optimise not only airtightness but the ability for the timber elements in the roof to breathe, INTELLO PLUS intelligent vapour-control membrane was specified. GUTEX Ultratherm was used on the outside of the timber frame, clad walls. This provided high levels of windtightness, weathertightness and breathability.

The building not only features beautiful aesthetics but also attained an outstanding A1 energy rating and is also Passivhaus certified.



# NATURAL INSULATION

## Natural Hemp Insulation

Thermo Hemp Premium is made from hemp, the world's oldest cultivated plant, and offers an ideal combination of thermal insulation, thermal mass and high density. It is made from natural hemp plant fibres, without the use of any harmful chemicals.



**Completely biodegradable and 100% pollutant free**

### MATERIAL PROPERTIES

Thermal conductivity (W/mK)	0.041
Density (kg/m <sup>3</sup> )	Approx. 30 - 42
Specific heat capacity (J/kgK)	2300
Vapour resistance factor	1 - 2
Format	Batts (semi-rigid/flexible)
Dimensions	
Length x width (mm)	1200 x 375
Thickness (mm)	40, 60, 80, 100, 140 *580mm width & alternative thickness available on request
Applications	Roof, suspended floor or vertical
Fire class	Euro Class E



Insulating materials for innovators which are, healthy and naturally energy efficient.

### FEATURES

- Outstanding thermal insulation properties 0.041 W/mK
- One of the most effective insulations available
- Does not slump
- European technical approval
- Full declaration of ingredients and free from environmentally harmful ingredients

### BENEFITS

- Thermo Hemp Premium helps create a natural, healthy and living climate
- Great durability – greater strength of hemp fibres means the batts are semi-rigid and more resistant to slumping
- Has the ability to absorb and release moisture without effecting thermal performance
- Easy to handle and install



Climate function



Very good sound absorption



Very good thermal insulation



Capillary action natural moisture transport



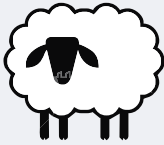
Natural fire protection with soda



# NATURAL INSULATION

## Thermafleece Wool Insulation

Thermafleece CosyWool Insulation is a versatile insulation rich in sheep's wool. It is the ideal choice if you are looking for all-round performance and value for money. The wool can absorb up to one-third of its own weight in water vapour without damaging the insulation or its performance.



Improved indoor air quality wool has unique properties that can neutralise harmful substances found in our indoor air.

### MATERIAL PROPERTIES

Thermal conductivity (W/mK)	0.039
Density (kg/m <sup>3</sup> )	18
Specific heat capacity (J/kgK)	1800
Vapour resistance	Factor 1
Format	Rolls
Dimensions	
Width mm	370mm, 570mm available on request
Thickness (mm) & length (m)	50 (13m), 75 (8.5m), 100 (6.5m), 140 (4.6m)
Applications	Roof, suspended floor or horizontal
Fire class	Euro class E

**therma  
fleece**  
Nature's finest insulation

Based in the heart of the Lake District, Thermafleece has become a leading brand since it's launch in 2000.

### FEATURES

- Wool insulation retains its structure and provides consistent performance and energy saving throughout its service, which is more than 60 years
- Installing 240mm thickness of Thermafleece in the loft will reduce carbon dioxide emissions from a typical household by as much as 1 tonne per year.

### BENEFITS

- Long lasting
- Affordable
- Sustainable
- Quality assured
- Acoustic performance
- Breathable
- Safe to handle
- Can be recycled
- Excellent hygrothermal properties
- Vacuum packed for efficient transport and handling
- Manufactured to ISO 9001 & 14001



# NATURAL INSULATION

## Cellulose Insulation

DÄMMSTATT cellulose insulation is manufactured from daily newspapers. The papers are sorted and ground into insulating cellulose fibres. Cellulose insulation has the highest amount of recycled content compared to any other form of insulation.



## Exceptional levels of thermal performance

### MATERIAL PROPERTIES

Thermal conductivity (W/mK)	0.037
Density (kg/m <sup>3</sup> )	25-50 kg/m <sup>3</sup> exposed 40-65 kg/m <sup>3</sup> cavity filling 30-65 kg/m <sup>3</sup> CSO pressed
Vapour resistance factor	1 - 2
Specific heat capacity (J/kgK)	2150
Format	Loose in 12.5 Kg bags
Applications	Attic, wall, roof
Loose fill	Simply empty contents of cellulose bag
Dense packed	Installed with a blowing machine



DÄMMSTATT, part of the Isofloc group, is a market leader in injectable insulating materials.

### FEATURES

- European technical approval
- Can be machine or hand applied
- Hygroscopic and moisture balancing
- Tested fire safety

### BENEFITS

- No cutting awkward shapes or joints
- Quick Installation
- Long-term energy savings
- Enhanced sound insulation
- Budget Friendly insulation
- Supplied in easy-to-handle bags



## Budget-friendly insulation



Das Zeichen für verantwortungsvolle Waldbirtschaft



# NATURAL INSULATION

## Thermoflex

The superb properties of GUTEX woodfibre boards make it an ideal solution for interior and exterior application. GUTEX Thermoflex is a flexible but strong woodfibre insulation batt suitable for internal applications. Its extremely homogenous fibre structure makes it stronger and easier to fit in framed constructions.



## Exceptional insulation performance

### MATERIAL PROPERTIES

Thermal conductivity (W/mK)	0.036
Density (kg/m <sup>3</sup> )	50
Specific heat capacity (J/kgK)	2100
Vapour resistance factor	2
Format	Batts
Dimensions	
Length x width (mm)	1350 x 370
Thickness (mm)	100
Applications	Between attic Ceilings Partitions / drywall structures Timber frame walls Between suspended floors Additional thicknesses available on request
Fire class	Euro Class E



Based in the black forest, GUTEX is a leading German manufacturer of woodfibre insulation with over 80 years' experience.

### FEATURES

- Declared thermal conductivity of 0.036 W/mK
- Low dust formation
- Batts are light and flexible
- Pleasant to touch and easy to install

### BENEFITS

- High dimensional accuracy
- Excellent cutting properties
- Humidity regulating
- Very stable, no slumping
- Biologically safe
- Acoustic insulation properties
- Insulates against heat in the summer and protects against cold in winter





*“Ecological Building Systems supplied the woodfibre insulation and breathable plasters used to line the existing masonry. Airtightness, breathable insulation and robust moisture control through the structure were critical and especially complicated given the age and condition of the existing structure. Without Ecological Building Systems’ excellent technical support, the work of the architect and level of performance on this project would not have been possible.”*

Paul McNally, The PassivHaus Architecture Company





# 3

## WOODFIBRE INSULATION SOLUTIONS

### **St Joseph's Woolen Mill**

This primitive methodist mill was built in 1896 beside the Kiltha River in Middleton and was designed by architects Howdill and Howdill of Leeds (their only Irish building). It had fallen into a state of dilapidation on the site of a cabinet manufacturing business, who chose to restore it as their new head office.

The design concept sought to create a central open-plan office, working with the grid of the cast iron columnar structure. This allows a depth of space sufficient to appreciate the height and scale of the original pine trusses. The outer bays of the grid were partitioned to provide meeting rooms, managerial offices and support spaces, in a similar logic to the original offices along the south wall. A new entrance was inserted into the south facade under the projecting awning that protects the stone work.

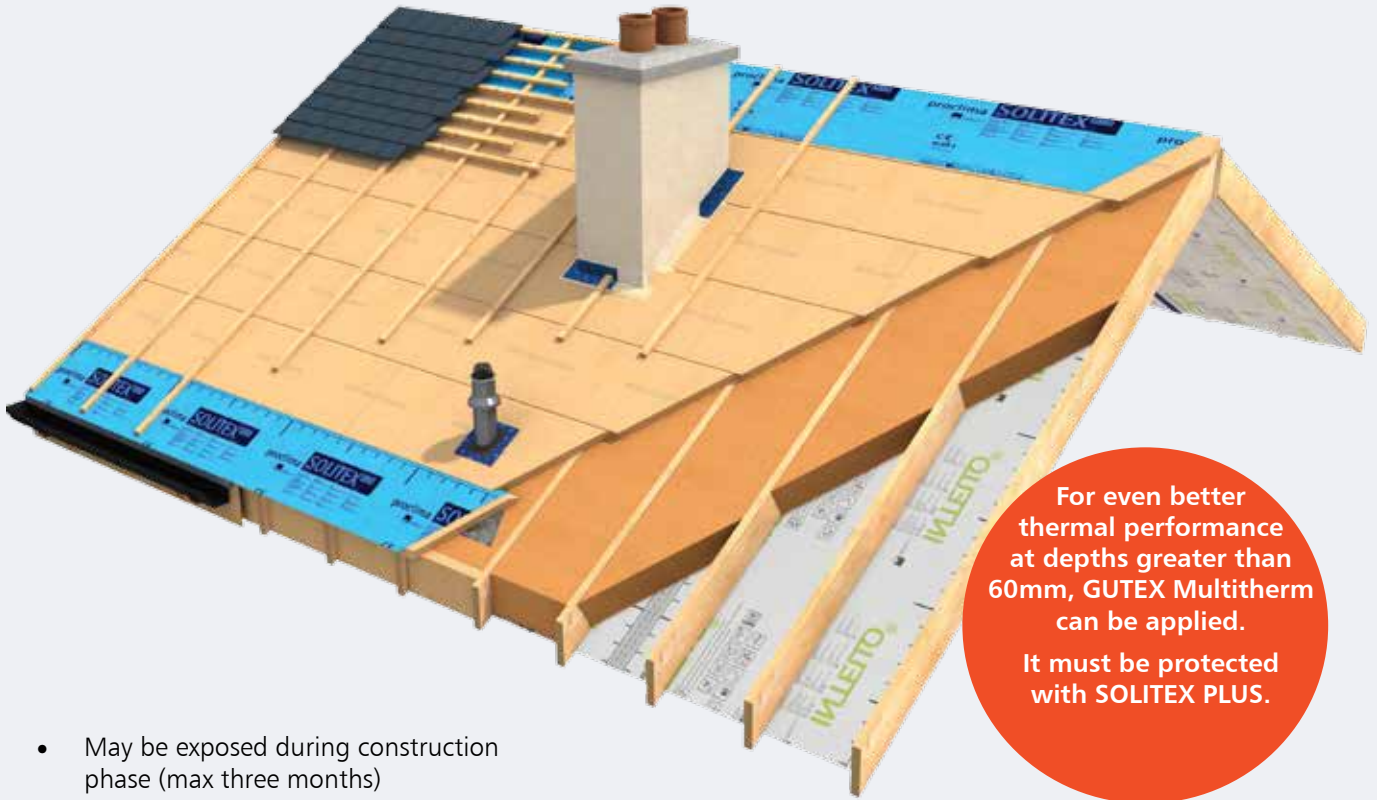
#### *Ecological Products Used*

GUTEX Thermoroom was applied on the internal side of the external wall. The application was straightforward and ensured compatibility with the existing wall. This practical solution also ensured optimum breathability and thermal performance was achieved.

# WOODFIBRE ROOF INSULATION

## Thermal Roof Solutions

GUTEX manufactures two thermal insulation boards, which can be applied on the outside of pitched roofs (Ultratherm & Multiplex Top). The T&G edges ensure a fast, accurate installation and also ensure the boards are waterproof and windtight from the outset.



- May be exposed during construction phase (max three months)
- Ideal for upgrading the thermal insulation of existing structures
- Reduces thermal bridges
- Helps prevent overheating
- Significantly improves acoustic insulation
- Regulates humidity
- Makes the structure windtight

### MATERIAL PROPERTIES

	Multiplex Top	Ultratherm
Thickness (mm)	22/28/35	50,60,80,100,120,140,160
Length x width (mm)	2500 X 750	1780 X 600
Thermal conductivity (W/mK)	0.044	0.042
Vapour resistance factor	3	3
Compressive stress/strength (kPa)	200	150
Short-term water absorption (kg/m <sup>2</sup> )	1.0	1.0
Specific heat capacity (J/kgK)	2100	2100
Fire reaction Euro Class as per DIN EN 13501 - 01	E	E



Multiplex Top



Ultratherm

# WOODFIBRE WALL INSULATION

## Thermal Wall Solutions

GUTEX Multitherm boards' high density, combined with their high specific heat capacity, results in a material that heats up slowly and has outstanding thermal diffusivity. Multitherm boards can delay temperature rise by 10 or more hours, which can help maintain a comfortable internal temperature on warmer days and on colder nights. This ability to buffer temperature fluctuations can be a critical component in ensuring comfort levels are optimized all year round.



**Fixing calculations for both roofs and walls available on request**



### MATERIAL PROPERTIES

	Multitherm
Thickness (mm)	40, 60, 80, 100, 120, 140, 160, 180, 200
Length x width (mm)	1760 x 600
Thermal conductivity (W/mK)	0.040
Vapour resistance factor	4
Specific heat capacity (J/kgK)	2100
Short-term water absorption (kg/m <sup>2</sup> )	1.0
Fire reaction Euro Class as per DIN EN 13501 - 01	E
Application Areas	Internal / external walls Roof – must be protected with Solitex Plus



### FEATURES

- Inherently windtight thanks to tongue-and-groove structure
- Single-layered and homogeneous density profile
- Vapour permeable and moisture-regulating
- Sustainable raw material (wood)
- Recyclable
- High-quality, made in Germany (Black Forest)
- Regulates humidity

### BENEFITS

- Minimises thermal bridges
- Excellent heat storage capacity
- Biologically harmless
- Improves soundproofing
- Easy installation due to high dimensional accuracy
- Adaptable and cost effective
- Can be applied on the outside of pitched roofs (with SOLITEX PLUS breather membrane) or walls



GUTEX Multitherm

Information on GUTEX thermal floor solutions, contact us at:  
[www.ecologicalbuildingsystems.com](http://www.ecologicalbuildingsystems.com)







*"Dublin Civic Trust has been delighted to be able to showcase the use of Ecological's breathable wall insulation products in its conservation project at 18 Ormond Quay Upper in Dublin city centre. Calsitherm Climate Board and Diasen Thermal Plaster provided exactly the type of sensitive insulating solutions the Trust was seeking to apply in this prominent 1840s merchant building. Ecological's service is efficient, dependable and professional – it was a pleasure to deal with the company and its staff."*

Graham Hickey, Dublin Civic Trust

# 4

## INTERNAL WALL INSULATION SOLUTIONS

### **18 Ormond Quay**

18 Ormond Quay Upper sits in the heart of historic Dublin overlooking the river Liffey. Over the centuries, it has been home to occupants as varied as hotels and gunsmiths, taverns and grocers. It has been at the centre of urban life for over three centuries and is seen by thousands of curious passers-by every day on their way to work along the busy quays.

#### *Ecological Products Used*

Dublin Civic Trust has been pioneering and demonstrating different conservation strategies in this project. As the project turned to the interior, the Civic Trust specified Calsitherm Climate Board and Diasen Thermal Plaster for different areas of the building. This was to demonstrate breathable wall insulations, both for the health of the building and as part of its work as an educational trust that runs CPD courses and seminars for conservation specifiers, professionals and builders from all over the city and country. In some areas, there was an issue with salt penetrating through the wall. Diasen Deumix+, with its high dehumidifying properties, provided a robust solution.



# INTERNAL WALL INSULATION

## Mould Prevention & Thermal Insulation

Made from calcium silicate, a micro-porous mineral building material (which is highly capillary open), Calsitherm is designed for use mainly on single-leaf masonry walls, for example brick or stone. It is an ideal solution to thermally upgrade and restore all solid masonry walls including heritage and protected structures.



Don't forget to finish with a breathable paint (p26)

### MATERIAL PROPERTIES

Thermal conductivity (W/mK)	0.059
Fire rating (DIN 4102)	A1 non-combustible Board
Board dimensions	1250mm x 500mm
Colour	White Boards & Pre-primed
Materials	Calcium Silicate (sand and lime)
Application	Used to insulate the internal surface of existing masonry walls and window reveals
Calsitherm tapered board	Starting thickness of 30mm reducing to 8mm used where thermal bridging may occur (solid internal walls meet external walls or at ceiling junctions)

# CALSITHERM CLIMATE BOARD

Founded in 1977 and based in Paderborn, Germany, Calsitherm is a leading manufacturer of Climate Board, a thermal internal wall insulation.

### FEATURES

- Reliable thermal insulation for existing masonry walls
- High compression resistance
- Highly capillary active insulation optimising moisture transfer
- 30mm of Climate Board can reduce heat transfer by 50%

### BENEFITS

- Extreme resistance to mould
- Innovative solution for thermal bridging
- Creates a healthy living climate
- Reduced heating costs
- Ideal insulation solution for old and historic buildings

# Extreme resistance to mould!



Calsitherm Climate Board (30mm and 50mm)



Calsitherm Reinforcing Mesh



Calsitherm Adhesive Mortar



Calsitherm Smooth Finish Plaster

# INTERNAL WALL INSULATION

## Cork-Based Sprayable Thermal Insulation

Cork is at the heart of Diathonite's incredible performance and offers breathability, thermal insulation and elasticity. Thermactive.037 also contains pumice and natural hydraulic lime, which provides high breathability, high resistance to moisture, high mechanical strength and antibacterial properties.



Applying 45mm of Diathonite Thermactive to a solid stone wall improves the u-value from 2.26W/m<sup>2</sup>k to only 0.60W/m<sup>2</sup>K. The resulting wall (600mm un-rendered externally) will perform approx. 3.77 times better thermally.

### MATERIAL PROPERTIES

	Diathonite Thermactive.037
Thermal conductivity (W/mK)	0.037
Fire reaction	Class A1
Vapour permeability value	$\mu=3$
Thermal resistance (R) for 1 cm of thickness (m <sup>2</sup> K/W)	0.270
Mechanical strength (N/mm <sup>2</sup> )	2.8
Delivery form	15kg bags
Yield	2.60 kg/m <sup>2</sup> ( $\pm 10\%$ ) per cm of thickness.
Application:	Can be spray or hand applied



Based in Italy, Diasen specialises in 'diffusion-open render systems.'

### FEATURES

- Thermal conductivity .037(W/m<sup>2</sup>K)
- Excellent insulation – keeps walls warm in winter and cool in summer
- Breathability – Diathonite allows walls to breathe & balances room humidity
- Antibacterial properties prevent the formation of mould and condensation
- 10 times more elastic than traditional plasters, which reduces the risk of cracks

### BENEFITS

- Excellent drying times (compared with traditional lime plaster)
- Lightweight - three-times lighter than traditional lime plaster
- Fire protection – Euroclass A1 fire resistance
- Simple solution for thermal bridge mitigation
- Easy hand application for plasterers / faster application with spray machine
- Can be used both externally and internally
- Maintains unique characteristics of walls

Diathonite Thermactive.037 wins the renewable product category in the architects choice awards - Architecture & Building Expo 2018



Cork-based Thermal Plaster .037(λ)



Cork-based Thermal Plaster .045(λ)



Argacem HP Highly Breathable Skim Coat



Eco-Friendly Plaster with High Dehumidifying Properties

# INTERNAL WALL INSULATION

## Thermoroom Wall Renovation

GUTEX Thermoroom has been specifically designed for situations when it is only possible to insulate exterior walls in older buildings from the inside. With its single-ply, homogenous construction, GUTEX Thermoroom adheres with plaster to the substrate for simple, quick installation without mechanical fasteners.



Don't forget to finish with a breathable paint (p26)



### FEATURES

- Quick & easy to install via adhesion to the substrate
- Mechanical fasteners are not necessary
- Active capillary action
- Improved acoustic performance
- Optimises the indoor environment due to its humidity-regulating ability
- Complete system, including adhesive and GUTEX breathable plaster

### BENEFITS

- Reduces thermal bridges
- Excellent impact resistance
- Optimum thermal insulation ( $\lambda=0.39W/mK$ )
- Provides outstanding insulation against heat in the summer and cold in winter
- Biologically safe (natureplus® certified)



## Biologically safe



### MATERIAL PROPERTIES

Joint type	Butted
Thickness (mm)	20/40/60/80/100
Length x width (mm)	1200 x 500
Bulk density (kg/m <sup>3</sup> )	130
Thermal conductivity (W/mK)	0.039
Vapour diffusion factor ( $\mu$ )	3
Compressive stress/ strength (kPa)	50
Tensile strength perpendicular to board surface (kPa)	7.5
Air flow resistivity (kPa·s/m <sup>3</sup> )	100
Short-term water absorption (kg/m <sup>2</sup> )	≤ 2
Specific heat capacity (J/kgK)	2100
Fire reaction Euro Class as per DIN EN 13501-1	E





# STRUCTURAL BOARDS

ELKA Strong Board (ESB) is a highly diffusion-open, structural wood particle board. ESBs are over 5 times more diffusion open in comparison to many OSB3 boards, increasing the ability for walls and roofs to dry out in the event of unforeseen moisture entry.



**40% higher transverse tensile strength compared to OSB3**

## MATERIAL PROPERTIES

P5 racking board in accordance with Application

Transverse tensile strength

EN 312  
Suitable for external or internal use  
(N/mm<sup>2</sup>) >0.45



**elka strong board**

elka-Holzwerke GmbH is a third-generation family business with over 100 years of wood experience based in Morbach, Germany.

## APPLICATIONS

- Suitable for external or internal use
- Structural board suitable for use in humid conditions
- Can be used internally as a surface finish & may be painted directly

## BENEFITS

- Low emission of formaldehyde & VOCs (E1)
- Convenient size 2700 x 1200 x 12mm
- Compatible with breathable diffusion-open construction (u-40 when humid)
- ESBs use exclusively virgin green wood chips, ensuring boards are practically odourless and supports healthy indoor air quality
- ESBs have considerably less risk of swelling compared to OSB3. This is a critical property in our humid climate



SENTINEL HAUS  
INSTITUT



## NATURAL PAINTS

### AURO Natural Paints

With the rise in allergies and respiratory ailments, there is an increased need to have gentle, non-toxic products used within the home. Every AURO product is free of synthetic irritants and pollutants, and are manufactured to the highest possible ecological and technical quality.



### Breathable, natural indoor paint



State-of-the-art tinting machine  
More than 700 premixed colours now available



AURO also supplies a highly breathable clay paint for use on interior walls and ceilings.

# AURO

Founded in 1983 and based in Germany, Auro is a pioneer in ecological natural paints, wood care & cleaning products.

### FEATURES

- VOC free and zero emissions
- Easy application
- Natural, wipeable and durable
- Available in a range of colours
- Vegan

### BENEFITS

- Improves indoor air quality
- AURO is excellent for asthma/allergy sufferers
- Contains NO harmful chemicals
- Transparency of ingredients
- Suitable for a wide range of surfaces
- very breathable and emits little odour

AURO Clay Paint wins the architects choice awards in the renewable category - Architecture & Building Expo 2018



Wall and ceiling paints



Varnishes, oils and waxes



Wood and metal paints



Natural cleaning and household products





# ACOUSTIC SOLUTIONS

## CELENIT Acoustic AB/A2

CELENIT, manufactures a broad range of high-performance wood wool boards with a range of applications. CELENIT AB/A2 boards are thermal and acoustic insulation boards that achieve superior fire performance (Euroclass A2-s1, d0). CELENIT boards consist of mineralised fir wood wool bound with white Portland cement and mineral powder.



### MATERIAL PROPERTIES

Board dimensions (mm)	1200 x 600	
Thicknesses (mm)	15, 25, 35, 50	
Reaction to fire	Euroclass A2-s1, d0	
Environmental certifications	Certified by ANAB-ICEA for the eco-compatibility of materials and the production process PEFC & FSC certified	
Applications	Ceilings, wall coverings, baffles and acoustic rafts, and design solutions	
Sound absorption	Application in adherence	$\alpha_w$ up to 0,45
	Empty air gap	$\alpha_w$ up to 0,60
	Background filling with mineral wool	$\alpha_w$ up to 1.00
	Sound absorption certificates available on request	

Board dimensions available on request (mm) | 2400 x 600, 2000 x 600, 600 x 600



Further information concerning the full range of CELENIT wood wool boards is available on request.



CELENIT is one of Europe's leading manufacturers of eco-biocompatible insulation solutions and supplies over 20 markets from its sophisticated plant in Tombolo, Italy.

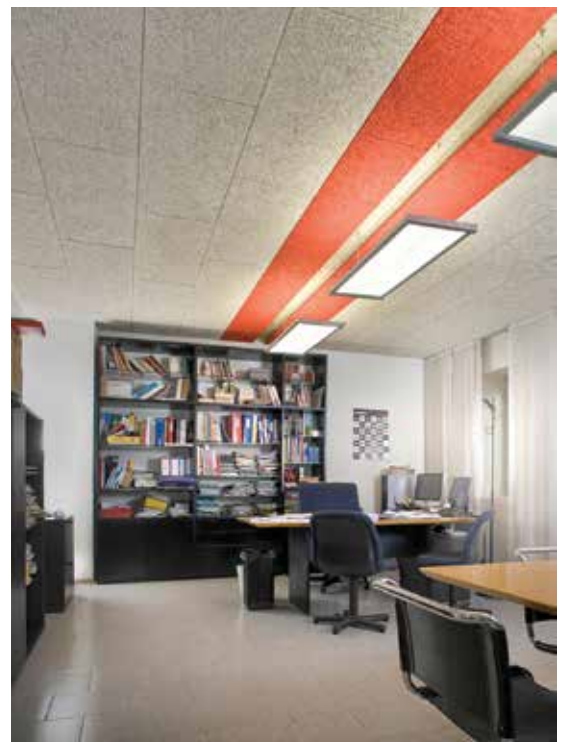
### FEATURES

- Aesthetically pleasing
- High performance for sound absorption
- Superior fire reaction characteristics
- Available in many varieties of edges and a wide range of colours
- Fire resistant
- Moisture resistant
- Impact resistant

### BENEFITS

- Fire Euroclass A2-s1,d0
- Excellent acoustic insulation
- High insulation performance
- Sustainable and eco-friendly
- VOC and formaldehyde free

## Diffusion open and high thermal resistance



## ECOLOGICAL KNOWLEDGE HUB

### Training, Seminars & CPDs

With our vast experience using award-winning products on pioneering low-energy projects Ecological Building Systems are in a unique position to impart our knowledge to homeowners, builders and building professionals. Ecological Building Systems are proud to have a passionate team of engineers and technical consultants who are committed to providing customers with the best technical guidance for their unique project requirements.

We run a comprehensive portfolio of training and have invested in creating a 'Centre of Knowledge' at our headquarters in Athboy. The centre gives our customers the unique opportunity to view our building systems and discuss their projects in more detail.

Access to our Centre of Knowledge is free, simply call in advance to make an appointment. Visitors are welcome to bring plans for a free consultation.

### CPDs Available

- Airtightness and active moisture management
- Airtightness and windtightness window installer training
- Insulating and achieving airtightness with CLT
- New build construction using woodfibre insulation
- Thermally refurbishing solid masonry walls with breathable internal insulation
- Roof refurbishment
- Thermally upgrading existing floors



Our technical expertise and leading range of ecological products provide the highest specifications for diffusion-open, healthy, low-energy sustainable buildings.

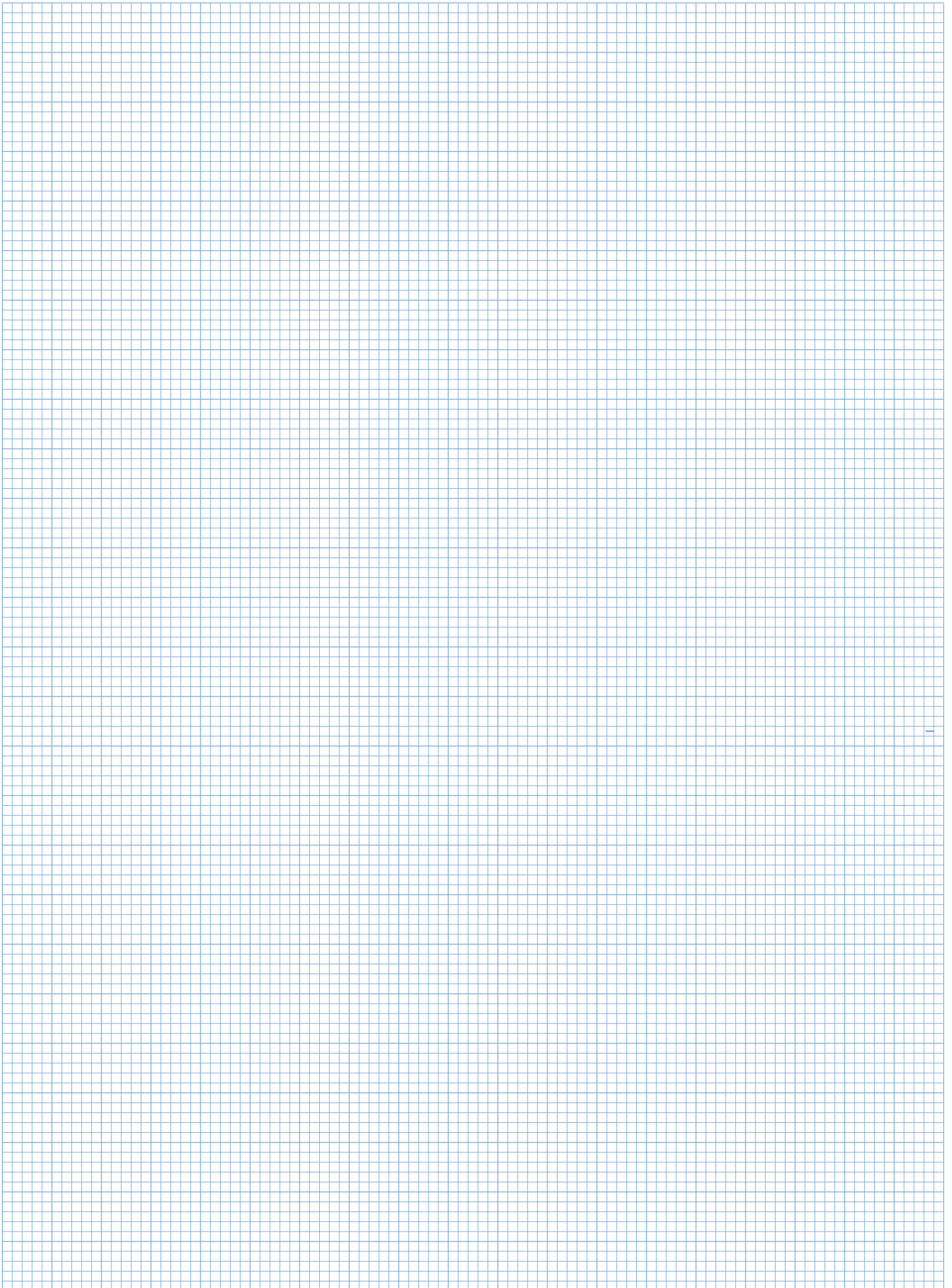
### Training Courses

- Pro clima intelligent airtight systems installer training
- Ecobuild2nZEB training



Visit our website for the latest training courses and dates or to request a CPD presentation  
[www.ecologicalbuildingystems.com](http://www.ecologicalbuildingystems.com)





The information provided by Ecological Building Systems is based on practical experience and the current state of knowledge. We reserve the right to make changes to the recommendations given or to make alterations due to technical developments and associated improvements in the products mentioned. Advice and recommendations are given in good faith as a general guide and a service to designers, contactors and manufactures. While Ecological Building Systems attempts to provide accurate and timely information, there may be inadvertent technical inaccuracies and typographical errors contained in this brochure.

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Dew-point calculations

Site support

Technical briefing seminars

In-house training - CPDs



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For over 20 years, Ecological Building Systems has been at the forefront of environmental and sustainable building products supplying a range of innovative airtightness solutions and natural insulations backed up with expert technical support.

**As product suppliers in the UK and Ireland, we're happy to assist you with your projects and have expert technical and sales advice on hand.**



**Call us**

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