insu BEAM®

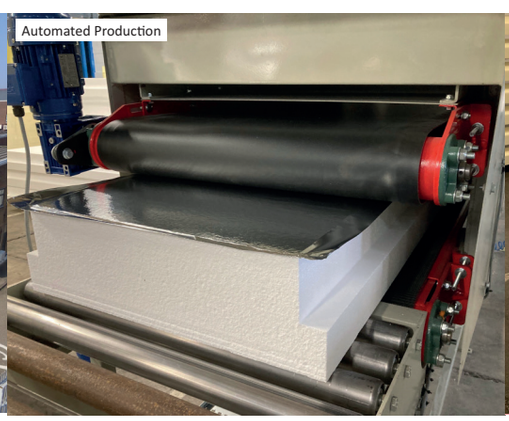
The low CO_2 high thermal performance beam & insulation block flooring system

PART L 2021 Solution

insuBEAM®

Contents


UK Production Facility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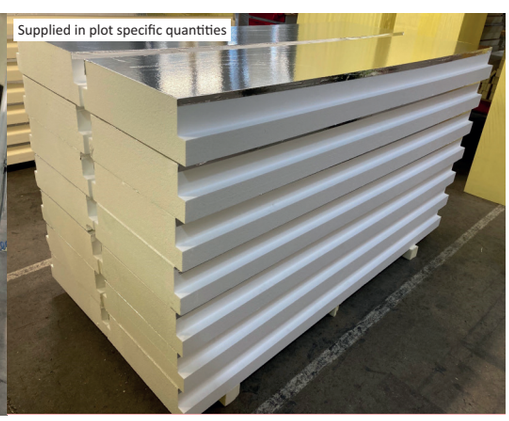
Supplied in plot specific quantities

Why CELLECTA?

CELLECTA is the UK's leading innovator, manufacturer and supplier of environmentally friendly, high performance thermal insulation, acoustic treatments and under floor heating systems.
For 30 years our products have been successfully installed in a myriad of residential, commercial, educational, health and industrial buildings.

CELLECTA's team of experienced staff are able to offer unrivalled customer support, from delivering RIBA certified CPDs, assisting in selecting the most suitable product that satisfies current legislation, arranging delivery of the right materials direct to site on time, to providing after sales installation instructions ensuring customer satisfaction.

FREE services offered by CELLECTA:

- Technical and installation advice
- insuBEAM floor designs
- U-value and imposed load calculations
- Architectural drawings and NBS specs
- Site surveys and take-off service
- Present RIBA certified CPDs

ON SITE ASSISTANCE

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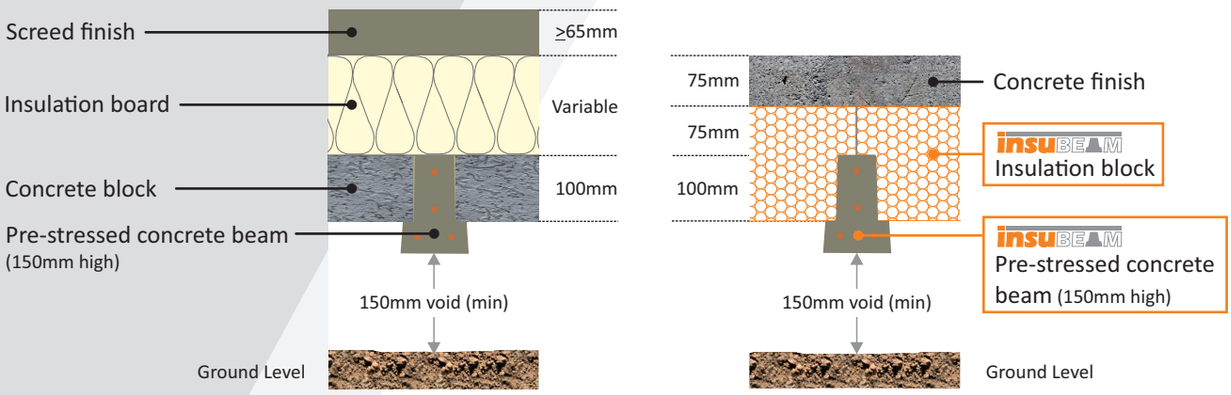
insuBEAM *The Low CO_2 Flooring System*

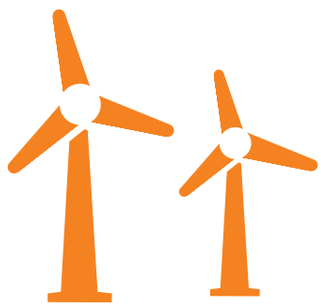
Beam & Block Vs insuBEAM



142kg CO_2/m^2 [2]

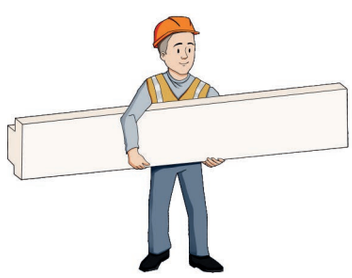
42% less CO_2 Produced [1]

83kg CO_2/m^2



Heavy Blocks

Super Lightweight Boards



		100mm concrete blocks[2]			insuBEAM insulation blocks[3]			Traditional B&B V insuBEAM
Building type	**Floor size**	**Qty of blocks** (215 x 440mm)	**Weight of each block**	**Total weight of blocks** [4]	**Qty of blocks** (600 x 2400mm)	**Weight of each block**	**Total weight of blocks**	
Small house	60m²	585	13.72kg	8,026kg	42	8.32kg	349kg	543 more blocks[2] 7,677kg heavier
Pair of semi-detached houses	100m²	975	13.72kg	13,377kg	70	8.32kg	582kg	905 more blocks[2] 12,795kg heavier
Block of flats	450m²	4,388	13.72kg	60,203kg	315	8.32kg	2,621kg	4,073 more blocks[2] 57,582kg heavier

Notes. [1] Values are indicative, calculated by LCD Consulting in accordance with BS EN 15978:2011 & BS EN 15804:2012+A2:2019 and verified Construction Carbon Limited
[2] Quantities stated are typical, based on 1450kg/m³ concrete block. [3] Based on 175mm thick IB-6 insulation blocks. [4] Weight of the insulation board required needs to be added.

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insuBEAM System Benefits

- Produces a ground floor with outstanding thermal performance
- Lighter, quicker and far less blocks to install
- Provides fixed floor heights above the beam
- Supplied to site in plot/floor specific quantities, controlling waste costs
- Reduces the number of concrete beams required
- Produces a floor with zero cold bridging
- Low emissivity foil facing provides superior thermal performance
- Insulation integrity guaranteed - sits on and between standard concrete beams
- Reduces number of deliveries
- Strong, robust insulation blocks - able to withstand foot traffic during construction process
- Easily incorporates underfloor heating
- Ultra-low psi (ψ) value's achievable
- Part L 2021 solution
- Q-Mark third party accredited system
- Manufactured under ISO 9001:2015 quality management system & ISO 14001:2015 environmental management system

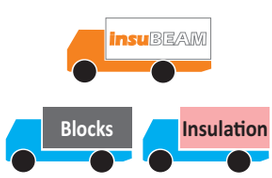
Q-MARK CERTIFICATION bmtrada

Third Party Accredited

NHBC
LABC warranty
Premier Guarantee

Accepted

Super Low U Value



Reduces number of lorries

100% Recyclable Insulation

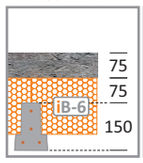
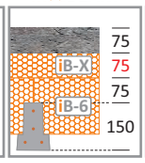
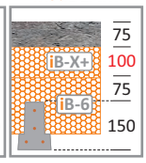
insuBEAM Thermal Performance

U-value (W/m²K)
To comply with the legislative requirements, each floor's thermal performance needs to be assessed individually in accordance with BS EN ISO 13370: 2017.

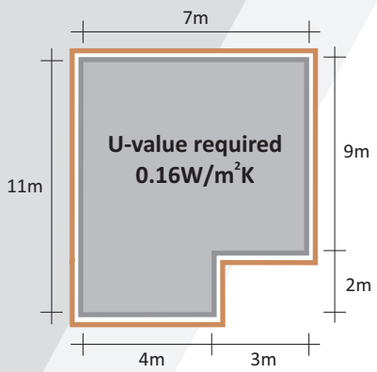
Determining the U-value of the floor
1. Calculate the internal perimeter in metres of the external walls (**P**)
2. Calculate the internal area in metres of the floor (**A**)
3. Calculate the **P**/**A** ratio
4. Use the table below to select the thickness and type of insuBEAM required to achieve the desired U-value

Alternatively, simply email your floor plans to our technical team at info@insubeam.com and they'll calculate the P/A ratio and issue the U-value options free of charge.

P/A ratio	Typical U-value Achieved (W/m²K)		
0.7	0.17	0.12	0.11
0.6	0.17	0.12	0.11
0.5	0.16	0.12	0.11
0.4	0.16	0.12	0.11
0.3	0.15	0.11	0.10

Standard insuBEAM	Enhanced insuBEAM	Enhanced *Plus* insuBEAM
		

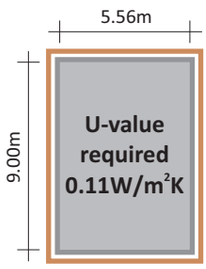
Examples



Perimeter: 11 + 4 + 3 + 2 + 9 + 7 = 36lm
Area: (9 x 3) + (4 x 11) = 71m²

Floor ratio: P/A = 36/71 = **0.50**

insuBEAM required: **Standard**



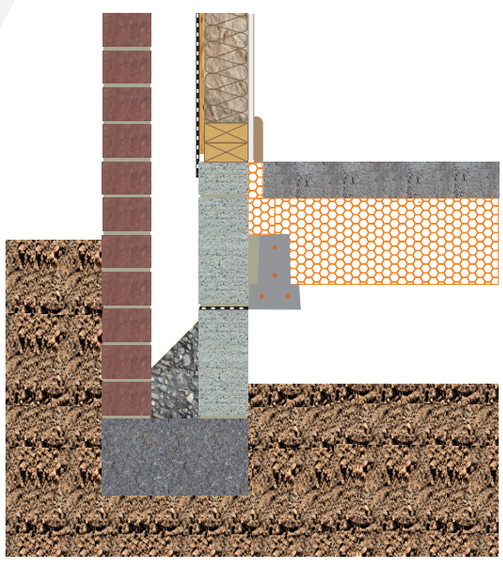
Perimeter: (2 x 5.56) + (2 x 9)= 29.12lm
Area: 5.56 x 9 = 49.5m²

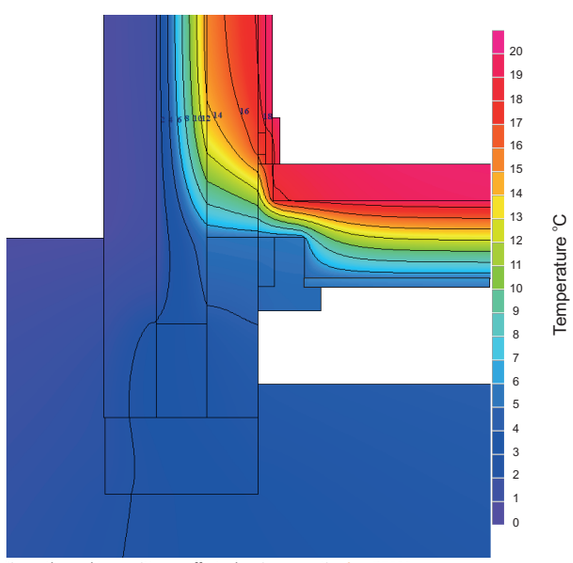
Floor ratio P/A = 29.12/49.50 = **0.59**

insuBEAM required: **Enhanced *Plus***

U-value calculation service
01634 277766 **info@insubeam.com**

Ψ (psi) value W/mK
In addition to the U-value, a Standard Assessment Procedure (SAP) needs to be established for the linear thermal transmittance of the external wall to ground floor junction by calculating the Ψ (psi) value of the specific detail to be constructed in accordance with ISO 10211:2017. Email your construction details to our technical team at info@insubeam.com and they'll calculate the Ψ (psi) value for a small fee.





Linear thermal transmittance effect when incorporating insuBEAM

Ψ (psi) value calculation service
01634 277766 **info@insubeam.com**

insuBEAM Quotation & Order Process

The insuBEAM flooring system is supplied in plot specific quantities and is quick and easy to order:

STEP 1

Email the substructure plans along with the desired U-value to **info@insubeam.com**

STEP 2

One of CELLECTA's experienced technicians will produce a beam layout to suit the foundation plan & the U-value achieved.

STEP 3

You will receive an email quotation for the complete insuBEAM system (insulation panels, perimeter edge strips and pre-stressed concrete beams) delivered direct site, along with a price for any required closer blocks.

STEP 4

Should the quotation be acceptable, simply email our team, who will issue a beam layout design for final approval, along with payment options.

STEP 5

Each specific plot (insulation, beams and closer blocks) is manufactured, palletised and delivered to site on a pre-agreed day, with a project pack, including all the information you will require for an easy installation.

insuBEAM System Components

Items Supplied with the System

insuBEAM high compressive strength insulation is used to deliver outstanding thermal performance and provide form-work for the structural topping:

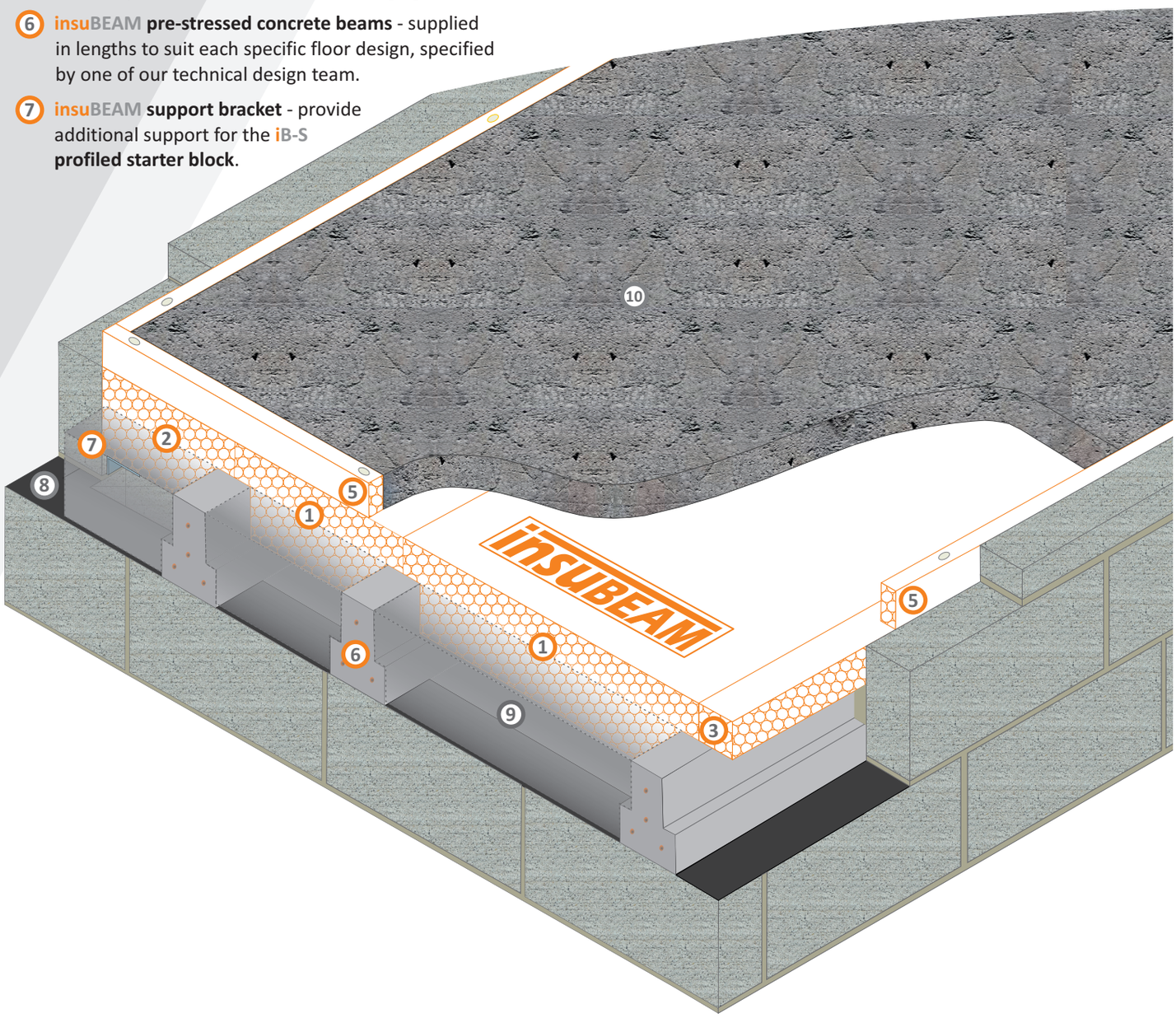
1. iB-6 & iB-3 **profiled insulation blocks** - used to span 600/300mm beam spacings. 75mm sits on the top and 100mm fits between the concrete beams.
2. iB-S **profiled starter block** -used to span the gap between the wall and the first beam.
3. iB-G **infill strips** - used to fill gaps between the wall and an abutted beam & double and triple beams.
4. iB-X **flat panel** (Not shown) - 75mm thick laid over the profiled insulated floor when an enhanced U-value is required.
5. iB-U **vertical up-stand** - placed around the floors' external perimeter to eliminate cold bridging.
6. insuBEAM **pre-stressed concrete beams** - supplied in lengths to suit each specific floor design, specified by one of our technical design team.
7. insuBEAM **support bracket** - provide additional support for the iB-S **profiled starter block**.

Additional Items Required

8. **Damp proof course** (DPC)
9. **Concrete closer blocks -** Closer blocks cast in a "T" shape to suit 600mm (**CB-6**) and 300mm (**CB-3**) beam spacing, used to close beam ends.
10. **Structural floor finish -** to give the floor its structural integrity, the insulation blocks are covered with the following concrete topping:

- **RC28/35** concrete - 75mm(min) RC28/35 concrete with a CEM1 Slump Class S3 to BS 8500 Part 1 & 2: 2002, with a maximum aggregate size of 20mm*.

*For full concrete specification and reinforcement details please speak to our insuBEAM technical team.



insuBEAM insulation components

Vertical up-stand: 75mm (high) x 30mm x 2500mm

Thermal enhancement boards: 75mm x 600mm x 2400mm

100mm x 600mm x 2400mm

Gap Strip:
75mm x 63mm x 2500mm

Wide span insulation profiled block:
175mm x **600mm** x 2400mm

Narrow span insulation profiled block:
175mm x **300mm** x 2400mm

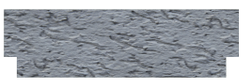
Insulation starter block:
175mm x 300mm x 2400mm

Insulation in-fill block:
100mm x 300mm x 2400mm

Insulation Top block:
75mm x 300mm x 2400mm

insuBEAM concrete components

Pre-stressed concrete beams:
150mm high x various lengths



iB-6 closer block: 100 x 502 (UW) x 448(LW) x 138mm
iB-3 closer block: 100 x 202 (UW) x 148(LW) x 138mm

iB-S support bracket

Construction Details

Standard insuBEAM system - vertical edge detail

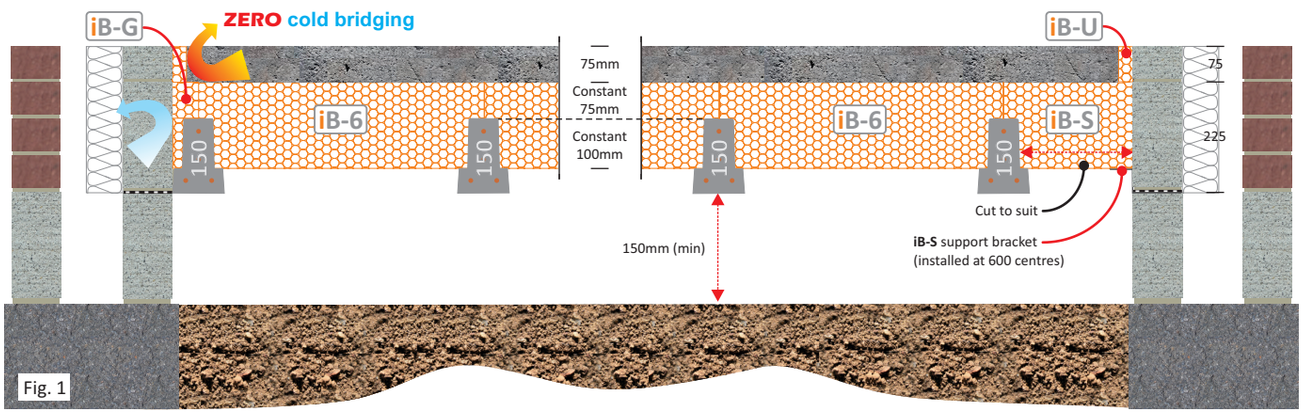


Fig. 1

Enhanced insuBEAM system (with additional layer of 75mm insulation) - vertical edge detail

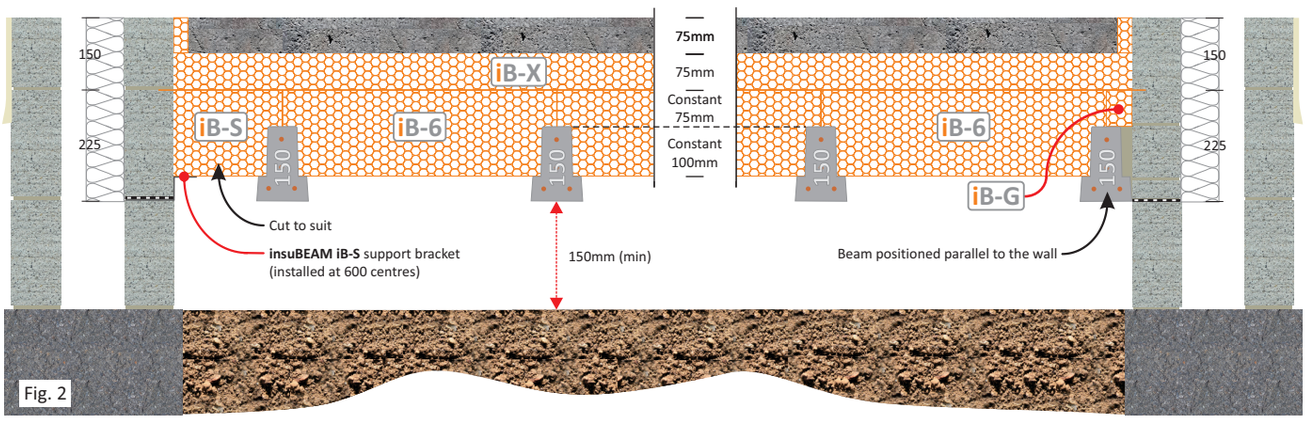


Fig. 2

90mm timber frame

140mm timber frame

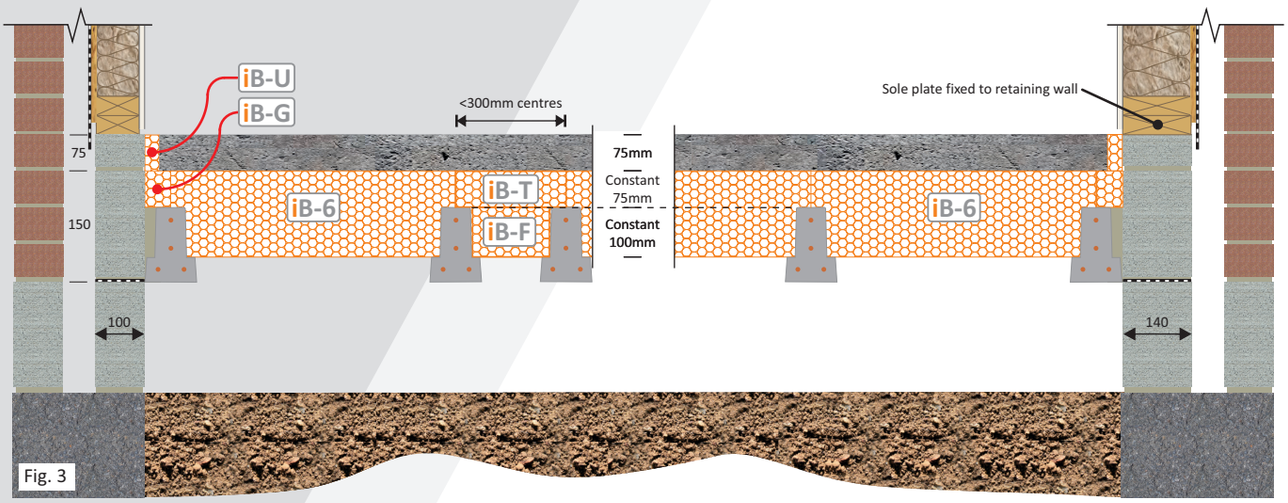


Fig. 3

Insulating abutted double and triple beams

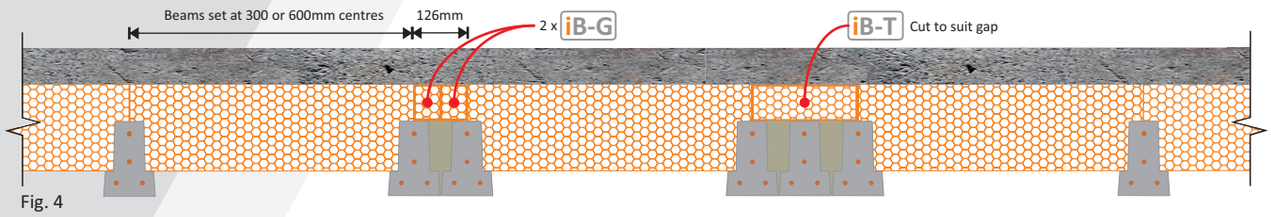


Fig. 4

Insulating beams set at centres less than 300mm

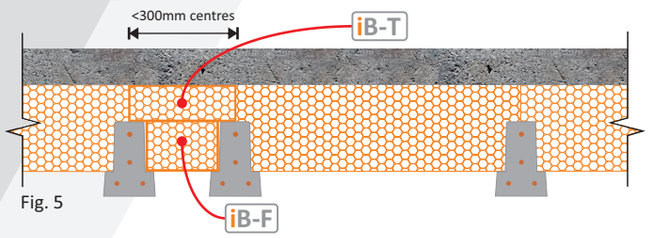


Fig. 5

ON SITE ASSISTANCE

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Non-load bearing partitions

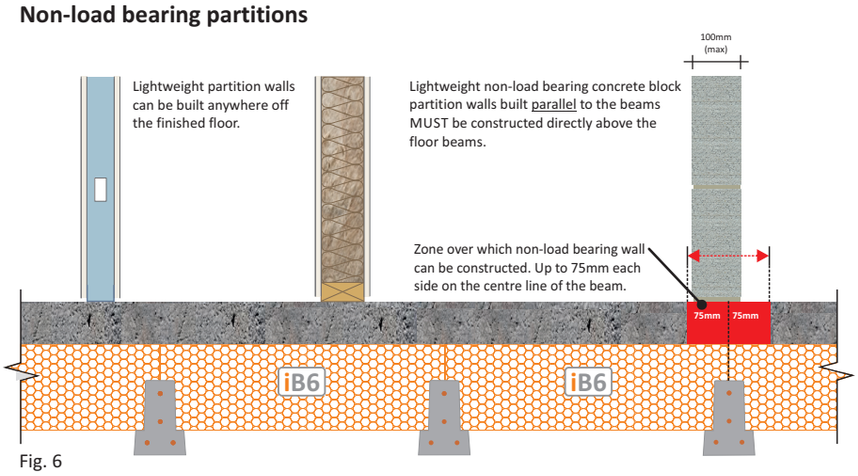


Fig. 6

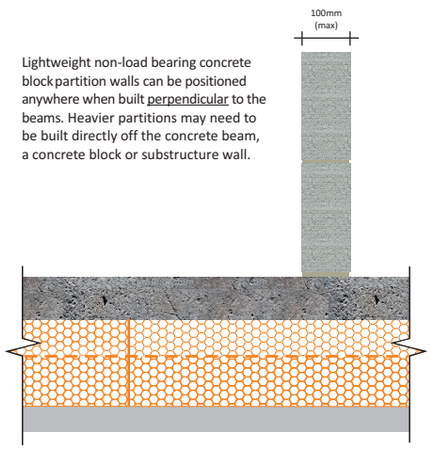


Fig. 7

Load bearing partitions

Beams laid staggered on 100mm sleeper wall

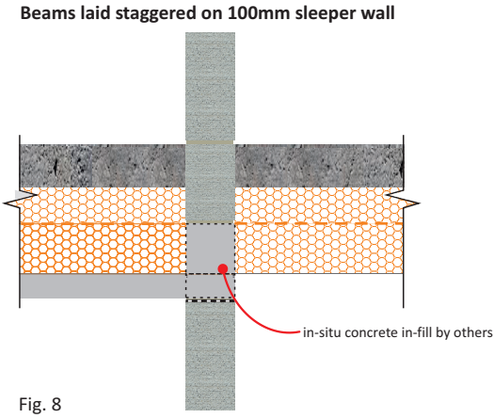


Fig. 8

Beam ends butted on 200mm sleeper wall

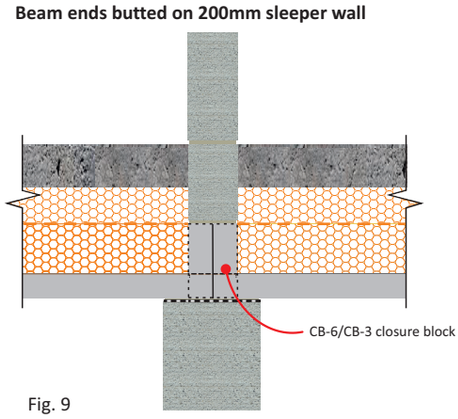
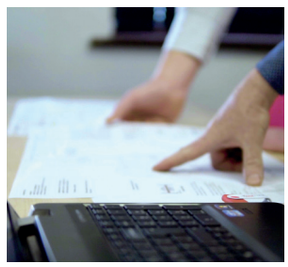


Fig. 9



Underfloor heating systems (supplied by other)

Underfloor heating pipes can easily be integrated into the floor prior to applying the structural concrete finish.

Option 1

Secure the underfloor heating pipes to the **insuBEAM** blocks with 'U' clips at the desired centres and cover with the structural concrete topping. Install the heating manifold at a later stage.

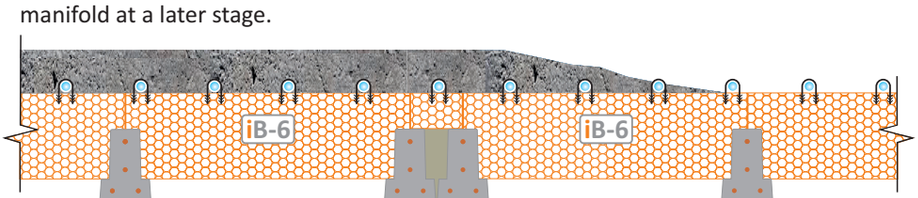


Fig. 10

Option 2

Cover the **insuBEAM** insulation with a A142 steel mesh. Cable-tie the underfloor heating pipes to the mesh at the desired centres and cover with the structural concrete. Install the heating manifold at a later stage.

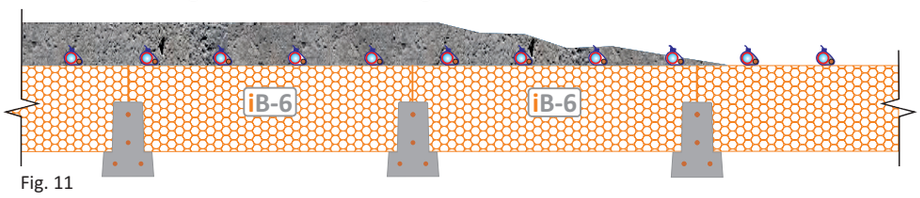


Fig. 11

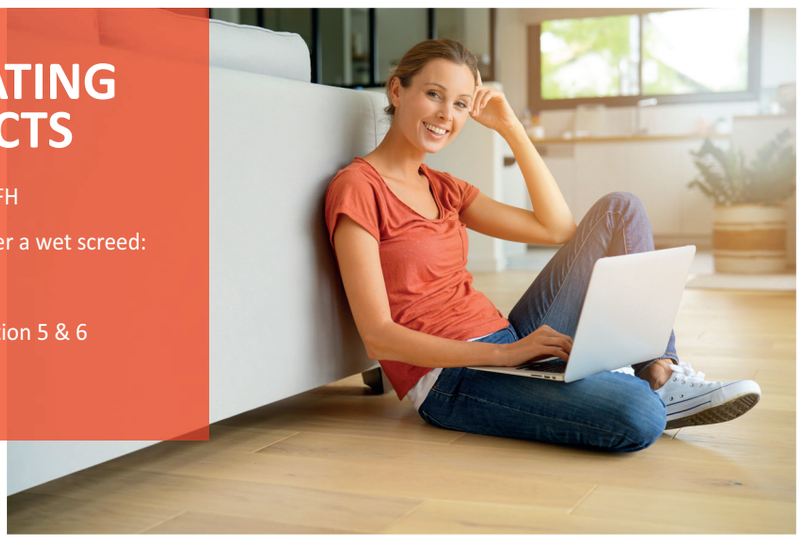
RIBA Certified CPDs

INSULATED SUSPENDED GROUND FLOORS CPD FOR ARCHITECTS

- What is a suspended ground floor
- Types of insulated suspended ground floors: Benefits and advantage of each
- How to comply with Part L and Section 6
- On site practicalities

UNDERFLOOR HEATING CPD FOR ARCHITECTS

- Understanding the different types of UFH
- When to utilise a dry laid treatment over a wet screed: benefits and disadvantages of each
- How to comply with Part E & L and Section 5 & 6
- The future of floor designs



BUILDING ACOUSTICS CPD FOR ARCHITECTS

- Soundproofing & compliance with Part E and Section 5
- Legislation made simple
- Methods of compliance: PCT & Robust Details
- New build, refurbishment and conversion
- Solutions for floors, walls & ceiling

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insuBEAM®

High Performance Insulation Floor System

Product Information

insuBEAM low emissivity foil faced insulation blocks are manufactured to the highest possible specification. Their physical properties are determined under strictly controlled laboratory conditions in accordance with the UKCA Standards.

Product Benefits

- Excellent thermal performance
- Low CO_2 system
- Speeds up the build process
- High compressive strength able to withstand foot traffic during the installation process
- Supplied in plot specific quantities

Technical Information

	insuBEAM	
	iB-U, iB-G	iB-6, iB-3, iB-S, iB-X, iB-T, iB-F
Thermal Conductivity (W/mK)	0.033	0.034
Compression Strength @ 10% BS 826 (kPa)	250	200

insuBEAM insulation blocks have been independently tested by LUCIDEON Laboratories (report No. UK202367).

Specification Assistance

FASTRACKCAD ARCHITECTURAL CAD DATABASES

Available on bimstore.co

NBS Source

NETWORK·RIBA·CPD PROVIDERS

Third Party Accreditation & Approvals

ISO 9001: 2015

ISO 14001: 2015

Engineered Floor Systems

UKCA

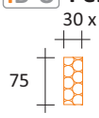
Environmental Credentials

GWP <5

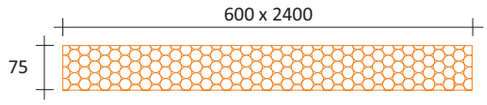
zero ODP

Dimensions

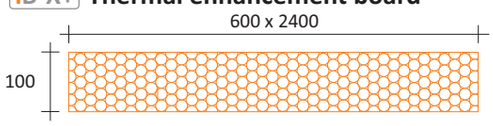
iB-U Perimeter edge up-stand



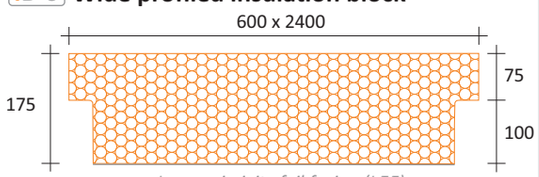
iB-X Thermal enhancement board



iB-X+ Thermal enhancement board

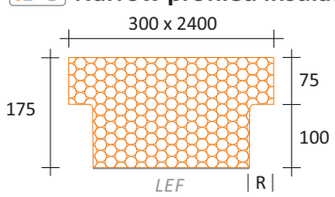


iB-6 Wide profiled insulation block

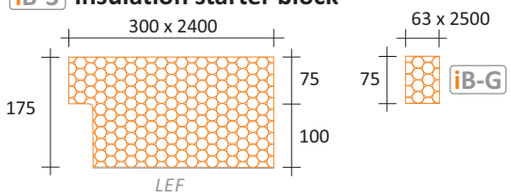


Low emissivity foil facing (LEF)

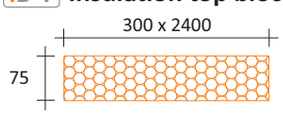
iB-3 Narrow profiled insulation block



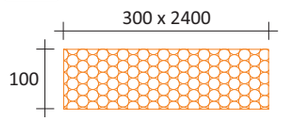
iB-S Insulation starter block



iB-T Insulation top block



iB-F Insulation in-fill block



To provide superior thermal performance, insuBEAM **iB-6**, **iB-3** and **iB-S** blocks have a BRE certified low emissivity foil facing

Standards & Codes of Practice

HM Building Regulations - Approved Document L, Conservation of Fuel and Power, Volume 1: Dwellings

HM Building Regulations - Approved Document L, Conservation of Fuel and Power, Volume 2: Buildings other than dwellings

HM Building Regulations 2003 - Approved Document E: 2010 Edition: Resistance to the Passage of Sound

Welsh Government Building Regulations - Approved Document L1A & L1B: Conservation of Fuel and Power in Dwellings

Welsh Government Building Regulations - Approved Document L2A & L2B: Conservation of Fuel and Power in Buildings Other Than Dwelling

Welsh Government Building Regulations 2003 - Approved Document E: Resistance to the Passage of Sound

Scottish Building Standards - Section 5: Noise

Scottish Building Standards - Section 6: Energy

Building Research Establishment Document BR 262: 2002 Thermal Insulation: Avoiding Risks. 3rd edition

CIBSE Guide A: Environmental Design, Section A3: Thermal Properties of Building Structures

BS EN 15037-1:2008
Precast concrete products. Beam-and-block floor systems - Beams

BS EN 15037-4:2010+A1:2013
Precast concrete products. Beam-and-block floor systems - Expanded polystyrene blocks

BS EN ISO 13370: 2017 - Thermal performance of buildings: heat transfer via the ground: Calculation methods

BS 5250: 2021 - Management of moisture in buildings. Code of practice

BS 8215: 1991 - Code of practice for design and installation of damp proof courses in masonry construction

BS EN 12667: 2001 - Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods: Products of high and medium thermal resistance

BS EN 13163: 2012+A2:2016 - Thermal insulation products for buildings. Factory made expanded polystyrene (EPS) products: Specification

BS EN 826: 2013 - Thermal insulating products for building applications: Determination of compression behaviour

BS EN ISO 11925-2: 2020 - TC - Reaction to fire tests. Ignitability of products subjected to direct impingement of flame. Single-flame source test

BS EN 13501-1:2018 - TC - Fire classification of construction products and building elements. Classification using test data from reaction to fire tests

BS EN 1992-1-1:2004+A1:2014 - Eurocode 2: Design of concrete structures - General rules and rules for buildings

BS EN 15978:2011 - Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method

BS EN 15804:2012+A2:2019 - Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products

Glossary

Thermal conductivity (Lambda value -λ): This is a measure of the rate at which a material will pass heat and is expressed in units of Watts per metre per degree of temperature difference **(W/mK)**

U-value: This is a measure of how much heat will pass through a square metre of a structure when the air temperatures on either side differ by one degree. U-values are expressed in units of Watts per square metre per degree of temperature difference (**W/m^2K**)

Thermal bridging: A thermally conductive material which penetrates or bypasses an insulation system; such as a metal fastener, concrete beam, slab or column. Heat will flow along the easiest path from the heated space to the outside - the path with the least resistance. This will not necessarily be the path perpendicular to the surfaces. Frequently heat will "short circuit" through an element which has a much higher conductivity than surrounding material, which can be described as a thermal bridge

Typical effect of thermal bridges are:

- Decreased interior surface temperatures, in the worst case this can result in condensation problems, particularly at corners
- Significantly increased heat losses and cold areas in buildings

Psi values (ψ): The measure of the thermal transmittance of a thermal bridge

Y-Values: The heat loss through the non-repeating thermal bridging areas of a building

Further Information

CELLECTA and The Environment

CELLECTA operates a progressive, sustainable environmental policy, with all our insulation products manufactured under **ISO 9001** & **14001** management controls. insuBEAM blocks are made from polystyrene which is fully recyclable.

Architectural Drawings

Architects and designers can quickly and easily insert insuBEAM into their drawings by either downloading the specific detail from www.cellecta.co.uk or contacting CELLECTA's technical team who will email the relevant FASTRACKCAD or **Bim** file.

Specification Clauses

Architects, designers and specifiers can quickly and easily insert insuBEAM into their specification document, by either downloading the specific NBS clause from CELLECTA's website, contacting the technical team on Tel. 01634 29-66-77 or email info@insubeam.com, who will email the relevant clause.

Specification Assistance

FASTRACKCAD ARCHITECTURAL CAD DATABASES

Available on bimstore.co

NBS Source

NETWORK · RIBA · CPD PROVIDERS

Fire Classification

insuBEAM carries a Class F reaction to fire classification in accordance with BS EN 13501-1 : 2007.

When properly installed, the products will not add significantly to any existing fire hazard. The products will be contained within the floor by the overlay until the overlay itself is destroyed.

UKCA Marking

UK CA

insuBEAM insulation boards are manufactured in accordance with United Kingdom legislation.

Third Party Certification

insuBEAM is BM Trada Q-Mark third party certified

Engineered Floor Systems — bmtrada Q-MARK CERTIFICATION

Packaging

CELLECTA thermal insulation products are packed in recyclable polythene bags or film with a recycled content of >30%.

On-site Handling & Storage

When storing insuBEAM blocks on site, it is important to protect them from long-term exposure to direct sunlight, otherwise surface degradation may occur. To reduce this, packs should be covered with a light-coloured sheeting. insuBEAM blocks are resistant to attack by mould and microbial growth.

Health and Safety

Copies of safety data sheets for all CELLECTA products are available upon request.

Notes

CELLECTA reserves the right to amend product specifications without prior notice. Colours shown are for illustration purposes. Product technical data stated is typical. The information included in this technical manual is based on CELLECTA's experience and is believed to be reliable. Values quoted and applications illustrated are typical and should not be taken as a basis for design.

CELLECTA, as the manufacturer, has no control over the installation of its products. The purchaser should evaluate the product's suitability and is responsible for adhering to any laws or regulations in this respect, making the purchaser also liable for observing any third party rights.

CELLECTA®
INNOVATION IN INSULATION

CELLECTA's insuBEAM, along with its extensive range of high performance thermal insulation, acoustic treatments and underfloor heating systems are supported by a technical advice line staffed by experienced consultants who can provide a number of useful services:

- Technical and installation advice
- insuBEAM floor designs
- U-value and imposed load calculations
- Architectural drawings and NBS specs
- Site surveys and take-off service
- Present RIBA certified CPDs

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