marmox thermoblock
Reduce heat loss at the base of walls

Specifications at the base of SIP or Timber Frame Wall

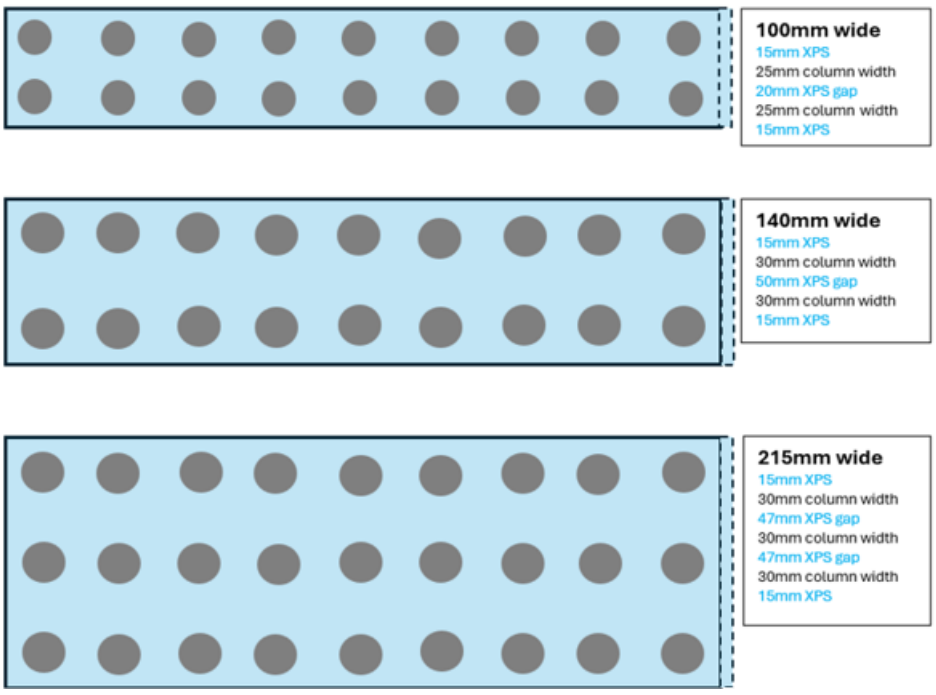
This document contains THREE specifications for using Thermoblock as the base of a SIP or timber frame wall for the following floor types

Junction Detail	Click the Hyper-link	SAP default ψ value	SBEM default ψ value	Guideline ψ values with Thermoblock
E5 Ground Floor to External Wall				
Timber Frame Wall – slab on ground (*insulation above slab*)	TFW1	0.32	0.36	0.04 - 0.05
Timber Frame Wall – slab on ground (*insulation below slab*)	TFW2	0.32	0.36	0.14 - 0.15
Timber Frame Wall - beam + block floor	TWF3	0.32	0.36	

The final column on the right shows the calculated ψ value in **BRE's Certified Thermal Details** using a typical BRE junction design into which Marmox Thermoblock has been incorporated.

Location of concrete columns

This diagram shows the locations of the load-bearing epoxy-concrete columns within the various Thermoblocks. These specifications require screws or bolts to pass through the Thermoblock to connect whatever is being fixed down (*for example a sole plate*) to the concrete block or concrete slab which the Thermoblock itself if fixed on to. In these situations, the fixings must pass through the part of the blocks which is XPS, not epoxy-concrete.



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Specification to eliminate or reduce thermal bridge at the junction of a timber frame or SIP wall with the floor (not suspended)

INSULATION ABOVE SLAB

Specification:	**TFW1** *(Timber Frame Wall #1)*
Product ref:	**Marmox Thermoblock (Standard Type)**
Junction Type:	**E5**
Manufacturer:	**Marmox UK, Caxton House, 101 Hopewell Drive, Chatham, Kent ME5 7NP. 01634 835290; Email: sales@marmox.co.uk; http://www.marmox.co.uk/.**

Product Use: Elimination or reduction in cold bridging where the base of a timber frame wall / SIP wall unit meets the floor.
Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

Description: Marmox Thermoblock is a load-bearing thermal break for use in walls. It comprises load-carrying epoxy-concrete columns which are bonded to the upper and lower surfaces which are polymer-concrete reinforced with fibreglass mesh. Thermally insulating Extruded Polystyrene surrounds these columns.

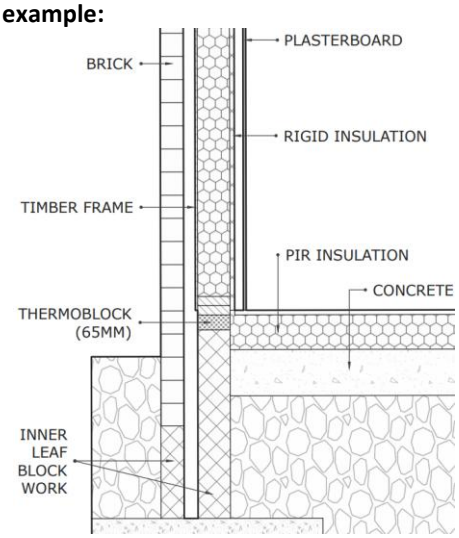
Properties: Declared λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Fire resistance >120minutes (*to EN1365-1*)
Water Absorption <3.5% (*to EN771-4*).

Dimensions: Length = 600mm, Thickness = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

Thermoblock is mortared into position directly underneath the sole plate which is mechanically fixed through the Thermoblock into the blocks below. *(Inclusion of Thermoblock means that perimeter insulation between the slab and the foundation wall is not necessary)*

Using SIPs - see additional notes on page 3

For example:



Example of ψ values with various wall types

Block conductivity (W/mK)	Wall U-value (W/m²K)	ψ-value (W/mK)	Temperature factor
0.85	0.20	0.046	0.92
0.85	0.17	0.053	0.92
0.85	0.16	0.049	0.93

These ψ values are guaranteed when used as with the materials and dimensions detailed in the BRE document: 'Certified Thermal Details' For variations and other details, Marmox UK is approved to calculate specific ψ values.

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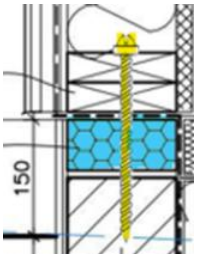
INSULATION ABOVE SLAB

A single course of Marmox Thermoblock: 600mm(l) x 100/140/215mm(w) x 65/100mm(ht) is used as the base onto which the sole plate sits. It should be positioned where it connects the floor insulation to the cavity insulation.

- Thermoblock is fixed to the foundation blocks with normal bricklayers' mortar.
- The length of Thermoblocks can be cut using a brick saw.
- At corners where a 90 degree angle is required, a flat short edge can be achieved either by cutting the block with a brick saw or cutting off the overlap which can be done using a hand saw
- To provide a continuous waterproof barrier and improve airtightness, Thermoblock are sealed together with the sealant Marmox MSP-360 by applying a couple of vertical and horizontal stripes to the stepped polystyrene edges. *Approximately 1 tube (300ml) of MSP-360 will be sufficient for 25 blocks.*
- The damp proof membrane from the floor is usually lapped over the row of Thermoblock (*secured in place with a bead of sealant, Marmox MSP-360*)

The wooden sole plate should be at least 150mm above ground height. If this is not achieved by it just sitting on the Thermoblock layer, a layer of concrete blocks should be used beneath the Thermoblocks to raise to sole plate to the required level.

- If levelling is necessary to provide a flat bed for the sole plate, packing with mortar on top of the Thermoblock (or DPM) can be done. If the Thermoblock base is completely flat, a bead of sealant/adhesive Marmox MSP-360 can be applied along the length of the Thermoblock layer to seal to the sole plate.
- The sole plate is now fixed directly onto the Thermoblock using mechanical fixings or straps.
- Fixing bolts / resin anchors are placed through the sole plate and then the Thermoblock halfway across its width into the solid base underneath. These *must penetrate the concrete / foundation blocks by at least 60mm*



Screw, bolt or resin fixing (*shown in yellow*) penetrating through the centre of the Thermoblock (*shown in blue*) into the blockwork below

- To avoid penetrating the DPM or when it is not possible to place a bolt halfway across the Thermoblock's width, straps or brackets are used. These must be fixed to the masonry components directly underneath the Thermoblock, not the Thermoblock itself

Authorities: BBA certified (10/4778) (*The scope of this current certificate does not yet include the 140mm high blocks*)
ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*
Fire Resistance Certification: 16781B (*Warrington Fire*)

September 2025

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Specification to eliminate or reduce thermal bridge at the junction of a timber frame or SIP wall with the floor (not suspended)

INSULATION ABOVE SLAB

Important notes:

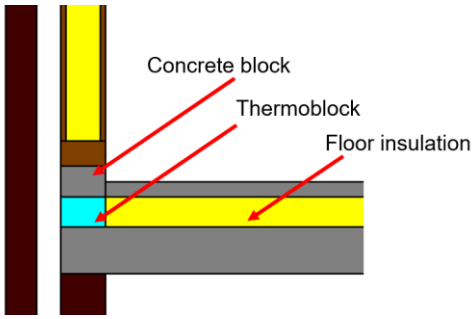
1) Thermoblocks should be fully supported and not span voids.
2) The sole plate on top of the Thermoblock cannot be more than 15mm narrower than the width of the Thermoblock.
3) The sole plate can be wider than the Thermoblock but should be placed centrally.
4) If it has to be placed eccentrically then the over-sail should be no more than 20% of the width of the Thermoblock.
5) Use one course only. Thermoblocks should not be laid on top of each other – *a 140mm height can be achieved by using a Thermoblock on top of a coursing block*.

ALTERNATIVE DETAIL

This approved method allows the sole plate to be fixed conventionally to the material directly underneath it. A Thermoblock will provide the same physical properties and stability of a conventional concrete block within an upstand therefore the fixing bolt need only be fixed into that block in top, it does not need to penetrate into the foundation/floor structure.

- A row of concrete blocks is mortared on top of the row of Thermoblocks
- The sole plate is fixed conventionally into those concrete blocks above the Thermoblock layer.

This method may also allow the floor insulation to be continuous with the Thermoblock.



Waterproofing: *Although when sealed together Thermoblock creates a permanent waterproof barrier, Thermoblock is not classified as a DPM.* A separate Damp Proof Membrane should therefore be included in the detail. The DPM can be fixed directly above or below the Thermoblock but because Thermoblock is waterproof, typically it is fixed above the Thermoblock layer.

MSP-360 can also be used to seal the top surface of Thermoblock to the DPM/sole plate.

Extra Considerations when using with SIPs

With some SIPs, the OSB sheets are longer than the length of the frame so overhangs the base plate. These are designed so that the base plate rests on a timber sole plate with the two OSB overlapping wings encapsulating it. The SIP is secured by horizontally nailing those overlapping wings into the sole plate.

The sole plate cannot be replaced with a Thermoblock because it cannot be nailed into horizontally. As with a conventional timber frame, the sole plate must be fixed on top of a Thermoblock.

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Specification to eliminate or reduce thermal bridge at the junction of a timber frame or SIP wall with the floor (not suspended)

INSULATION BELOW SLAB

Specification:	**TFW2** *(Timber Frame Wall #2)*
Product ref:	**Marmox Thermoblock (Standard Type)**
Junction Type:	**E5**
Manufacturer:	**Marmox UK, Caxton House, 101 Hopewell Drive, Chatham, Kent ME5 7NP. 01634 835290; Email: sales@marmox.co.uk; http://www.marmox.co.uk/.**

Product Use: Elimination or reduction in cold bridging where the base of a timber frame or SIP wall meets the floor.
Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

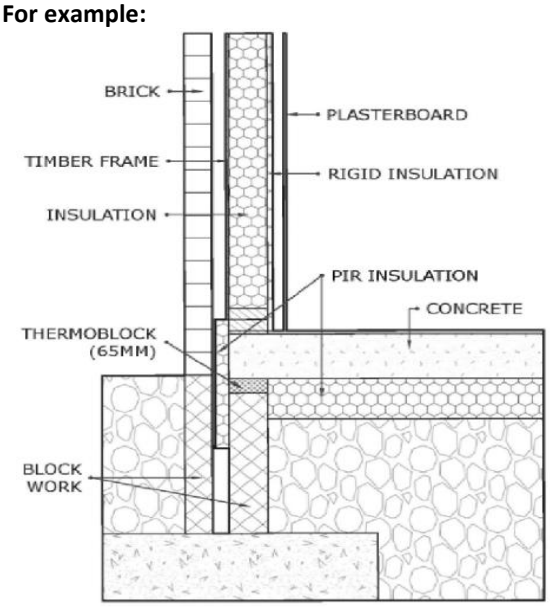
Description: Marmox Thermoblock is a load-bearing thermal break for use in walls. It comprises load-carrying epoxy-concrete columns which are bonded to the upper and lower surfaces which are polymer-concrete reinforced with fibreglass mesh. Thermally insulating Extruded Polystyrene surrounds these columns.

Properties: Declared λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Water Absorption <3.5% (*to EN771-4*).

Dimensions: Length = 600mm, Thickness = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

A course of Thermoblock sits on top of the foundation blocks supporting the slab ideally connecting the floor and cavity insulation.

For example:



Example of ψ values with various wall types

Block conductivity (W/mK)	Wall U-value (W/m²K)	ψ-value (W/mK)	Temperature factor
0.85	0.20	0.142	0.88
0.85	0.17	0.148	0.89
0.85	0.16	0.147	0.89

These ψ values are guaranteed when used as with the materials and dimensions detailed in the BRE document: 'Certified Thermal Details' For variations and other details, Marmox UK is approved to calculate specific ψ values.

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Specification to eliminate or reduce thermal bridge at the junction of a timber frame wall with the floor (not suspended)

INSULATION BELOW SLAB

- One course of Marmox Thermoblock (*600mm x 100mm/140mm/215mm x 65 or 100mm*) is fixed on the concrete/aircrete foundation blocks using ordinary bricklayers' mortar. It should be positioned so that as much of the floor insulation is in contact with the Thermoblock.
- The length of Thermoblocks can be cut using a brick saw.
- At corners where a 90 degree angle is required, a flat short edge can be achieved either by cutting the block with a brick saw or cutting off the overlap which can be done using a hand saw
- To provide a continuous waterproof barrier and improve airtightness, Thermoblock are sealed together with the sealant Marmox MSP-360 by applying a couple of vertical and horizontal stripes to the stepped polystyrene edges. *Approximately 1 tube (300ml) of MSP-360 will be sufficient for 25 blocks.*
- The concrete slab sits directly on the Thermoblock and must extend over the whole width of the Thermoblock.
- The top and bottom surfaces of the Thermoblock are cement-based therefore the slab can, if necessary, be fixed to the Marmox blocks using ordinary bricklayers' mortar.

Authorities: BBA certified (10/4778) (*The scope of this current certificate does not yet include the 140mm high blocks*)
ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*
Fire Resistance Certification: 16781B (Warrington Fire)

Important notes:

1. Thermoblocks should be fully supported and not span voids.
2. The foundation blocks which the Thermoblock are on must not be narrower.
3. **Use one course only.** Thermoblocks should not be laid on top of each other.

Specification to eliminate or reduce thermal bridge at the junction of a timber frame or SIP wall with a beam + block floor

Specification:	**TFW3** *(Timber Frame Wall #3)*
Product ref:	**Marmox Thermoblock (Standard Type)**
Junction Type:	**E5**
Manufacturer:	**Marmox UK, Caxton House, 101 Hopewell Drive, Chatham, Kent ME5 7NP. 01634 835290; Email: sales@marmox.co.uk; http://www.marmox.co.uk/.**

Product Use: Elimination or reduction in cold bridging where the base of a timber frame or SIP wall meets the floor.
Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

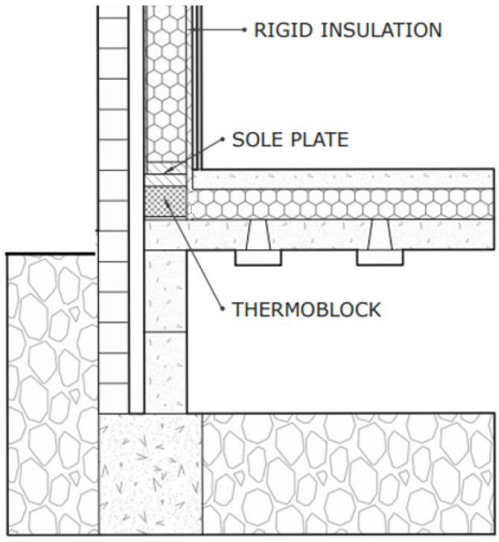
Description: Marmox Thermoblock is a load-bearing thermal break for use in walls. It comprises load-carrying epoxy-concrete columns which are bonded to the upper and lower surfaces which are polymer-concrete reinforced with fibreglass mesh. Thermally insulating Extruded Polystyrene surrounds these columns.

Properties: Declared λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Water Absorption <3.5% (*to EN771-4*).

Dimensions: Length = 600mm, Thickness = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

A course of Thermoblock is used as the upstand or part of the upstand on top of the B+B floor slab, directly or indirectly underneath the sole plate.

This example shows a 100mm high Thermoblock



This example shows the Marmox Thermoblock the same height as the floor insulation – that is not essential.

65mm or 100mm high Thermoblocks are typically used in combination with coursing blocks to create upstands raising the sole plate height by the necessary 150mm as shown in the following examples

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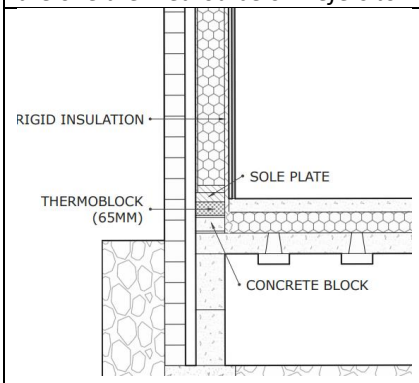
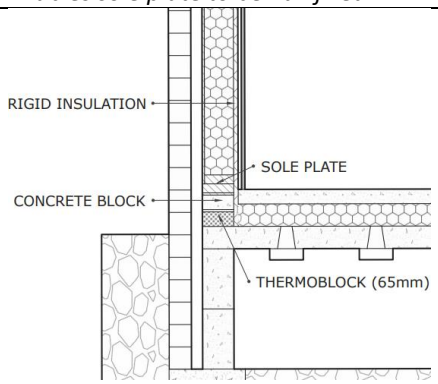
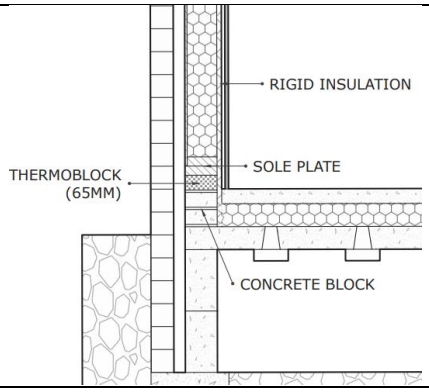
Specification to eliminate or reduce thermal bridge at the junction of a timber frame wall with a suspended floor

Thermoblock, which is mortared to a coursing block, is directly below the soleplate. *This is the most common detail and is the one the method below refers to.*	Thermoblock is mortared to the deck with a coursing block on top – and it's to the coursing block which the soleplate is fixed to. *Enables sole plate to be nail fixed.*	Thermoblock is directly below the soleplate on two coursing blocks (*or one taller block – preferably aircrete*).
		

If a single, 100mm high Thermoblock placed below the sole plate would rise the sole plate at least 150mm from the ground level, one single Thermoblock is sufficient to comprise the upstand.
If the height needs to be raised, a single course of Marmox Thermoblock is used as the top part of an upstand onto which the sole plate sits.

- The 600mm long Thermoblocks can be trimmed to any lengths using a brick saw down to 100mm.
- At corners where a 90^{O} angle is required, a flat short edge can be achieved by cutting off the 15mm overhang using a hand saw.
- To create a curve, an angle of up to 45O can be cut across the width.
- To provide a continuous waterproof barrier and improve airtightness, Thermoblock are sealed together with the sealant Marmox MSP-360 by applying a couple of vertical and horizontal stripes to the stepped polystyrene edges. *Approximately 1 tube (300ml) of MSP-360 will be sufficient for 25 blocks*.
- Thermoblock is fixed to the foundation blocks with normal bricklayers' mortar so that the sole plate is at least 150mm above the floor height.
- The damp proof membrane from the floor is usually lapped over the row of Thermoblock (*some self-adhesive membranes come with primers - do not use the primers on the Thermoblock)*
- The sole plate is fixed directly onto the Thermoblock with mechanical anchoring into solid base underneath. These *must penetrate the concrete / foundation blocks by at least 60mm.*
- Marmox MSP-360 may be used to seal the top of the Thermoblock to the underside of the SIP/sole plate.

ALTERNATIVELY, if more convenient (*although slightly less thermally efficient*), the row of Thermoblock can be placed below a concrete block.

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Specification to eliminate or reduce thermal bridge at the junction of a timber frame wall with a suspended floor

Authorities: BBA certified (10/4778) (*The scope of this current certificate does not yet include the 140mm high blocks*)
ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

Important notes:

- An improvement in the ψ value may be achieved by having insulation in the wall cavity adjacent to the Thermoblock and running up to a height above the location of the sole plate.
- Thermoblocks should be fully supported and not span voids.
- **Use one course only**. Thermoblocks should not be laid on top of each other.

Waterproofing:

A separate Damp Proof Membrane should be included in the detail. The DPM can be fixed directly above or below the Thermoblock but because Thermoblock is waterproof, typically it is fixed above the Thermoblock layer.
Additionally, To provide a continuous waterproof barrier and improve airtightness, Thermoblock are sealed together with the sealant Marmox MSP-360 by applying a couple of vertical and horizontal stripes to the stepped polystyrene edges. *Approximately 1 tube (300ml) of MSP-360 will be sufficient for 25 blocks.*

If adhering a DPM to the vertical side of the Thermoblock (*the blue polystyrene*), do not apply a solvent-based primer to the surface. Priming the XPS is not necessary, the DPM will adhere to the XPS without being primed and some primers can make the surface powdery.

Perimeter Insulation
The detail shown in the example includes perimeter insulation – that is not necessary if: -

1) The Thermoblock is in the bottom location
2) If a 100mm or 140mm high Thermoblock is used in the top location.