marmox thermoblock
Reduce heat loss at the base of walls

Applications and Specifications

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				
Cavity Masonry Wall – slab on ground *(insulation above slab*)	CMW1	0.32	0.36	0.02 – 0.06
Cavity Masonry Wall – slab on ground (*insulation below slab*)	CMW2	0.32	0.36	0.03 – 0.07
Cavity Masonry Wall – beam + block floor (*insulation below screed*)	CMW3	0.32	0.36	0.04 – 0.09
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	0.03 – 0.04
Steel Frame Wall – suspended + ground bearing slab (*insulation below slab*)	SFW1	0.32	0.36	0.12
Steel Frame Wall – suspended + ground bearing slab (*insulation below slab*)	SFW2	0.32	0.36	
Beneath an **ICF Wall** / **Rebar** reinforced concrete wall	REBAR	0.32	0.36	
Beneath a **solid** masonry wall / **external** leaf	EXTWALL	0.32	0.36	
Door **Threshold** junction	THRESH	0.32	0.36	0.06
E3 Window Sill				
Beneath windowsill in cavity wall	SILL	0.10	0.12	
E14 Flat Roof				
External wall to timber flat roof	FLTROOF	0.16	0.27	
E15 Flat Roof with Parapet				
External wall to flat roof + parapet	PARAPET	0.30	0.27	0.10
E22 Basement Wall				
Internal basement wall to floor junction	BASEMENT	0.22	*N/A*	
Non-SAP Additional Specifications and Applications				
Insulating the base of an internal wall	INTWALL	*N/A*	*N/A*	
Fixing Thermoblock onto a steel beam	STEEL BEAM	*N/A*	*N/A*	
Staggered sloping roof line of insulation on a gable wall	ROOFLINE	*N/A*	*N/A*	

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.

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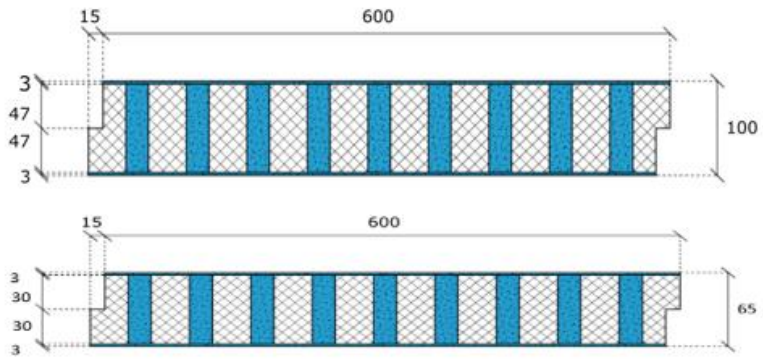
Location of concrete columns

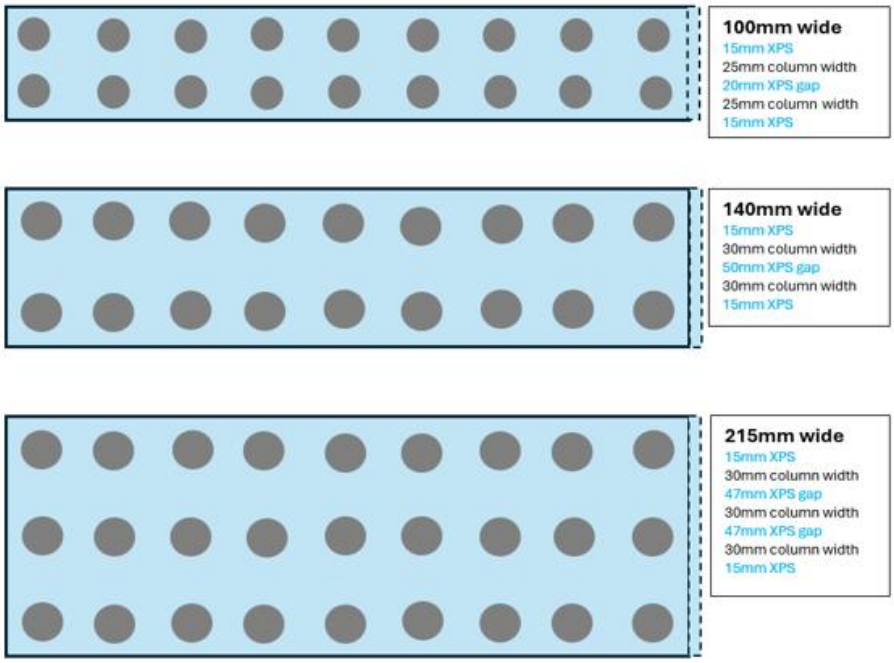
This diagram shows the locations of the load-bearing epoxy-concrete columns within the various Thermoblocks.

Several of the specifications in this document 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.

Two heights are supplied: 100mm and 65mm



Three widths are supplied: 100mm, 140mm and 215mm. The 100 and 140mm versions have two rows of columns whereas the 215mm version has three rows as shown below.



Specification to eliminate or reduce thermal bridge at the junction of a masonry cavity wall with a ground floor (not suspended)

INSULATION ABOVE SLAB / UNDER SCREED

Specification:	**CMW1** *(Cavity Masonry 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/.**

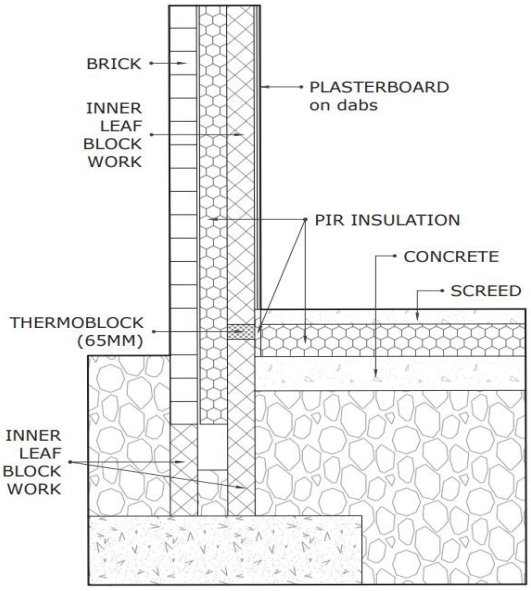
Product Use: Elimination or reduction in cold bridging at the wall to floor junction.
Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

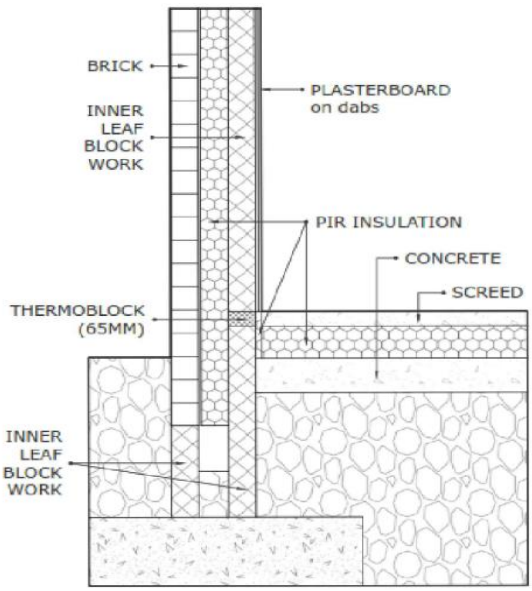
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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, Height = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

Thermoblock replaces one course of concrete or AAC blocks near the base of the inner leaf at the wall to thermally isolate the internal leaf from contact with the outside.





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Specification to eliminate or reduce thermal bridge at the junction of a masonry cavity wall with a ground floor (not suspended)

INSULATION ABOVE SLAB / UNDER SCREED

BRE CERTIFIED THERMAL DETAILS

These ψ values are guaranteed when used 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.

Block conductivity (W/mK)	Wall U-value (W/m²K)	ψ-value (W/mK)	Temperature factor
0.85	0.18	0.061	0.94
0.18	0.17	0.033	0.95
0.11	0.16	0.025	0.95

Example with a wall made of Medium Density Concrete Blocks with a λ 0.85W/mK.

- With no thermal break, this junction's ψ value = 0.15W/mK
- With 65mm high Thermoblocks as indicated in either of the above examples, ψ value = 0.061W/mK
- Using a 100mm high Thermoblock as indicated in these details makes minimal difference, ψ value = 0.054W/mK

Fixing Detail

- A single course of Marmox Thermoblock: 600mm(l) x 100/140/215mm(w) x 65/100mm(ht) is used as the starter course of the inner leaf so that its top surface will be below the final floor level.
- Thermoblock is fixed to the foundation blocks with normal bricklayers' mortar.
- Normal mortar is used to fix the subsequent courses of bricks/blocks on top of the Thermoblock.
- Thermoblock is itself a waterproof barrier so can therefore be used either above or below the DPM.

- 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.*

Please note:

- Thermoblocks must be fully supported and not span voids.
- Thermoblocks must not be wider than the blocks they are mortared on to or the blocks laid on top of them - they should be approximately the same width.
- If using lightweight blocks, this initial layer of mortar on top of the Thermoblock should be at least 15mm.
- If necessary, two or even three Thermoblocks can be laid side by side to create a wide base.
- **Thermoblocks cannot be stacked** – only one single layer is permitted

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)

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Specification to eliminate or reduce thermal bridge at the junction of a masonry cavity wall with a ground floor (not suspended)

INSULATION BELOW SLAB

Specification:	**CMW2** *(Cavity Masonry 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 at the wall to floor junction.
Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

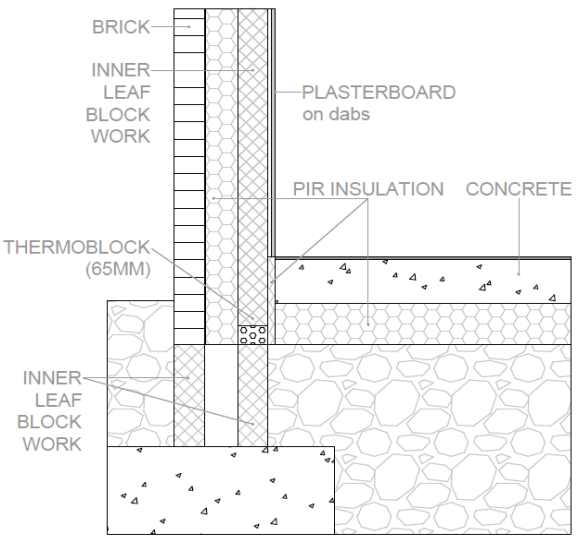
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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, Height = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

Thermoblock replaces one course of concrete or AAC blocks near the base of the inner leaf at the wall which ideally should connect the floor insulation to the 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	0.18	0.070	0.95
0.18	0.17	0.042	0.95
0.11	0.16	0.034	0.95

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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marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the junction of a masonry cavity wall with a ground floor (not suspended)

INSULATION BELOW SLAB

A single course of Marmox Thermoblock: 600mm(l) x 100/140/215mm(w) x 65/100mm(ht) is used as the starter course of the inner leaf at a position 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.*
- Normal mortar is used to fix the subsequent courses of bricks/blocks on top of the Thermoblock.
- *Thermoblock is waterproof so can therefore be used either above or below the DPC*.

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/*

Please note:

- Thermoblocks should be fully supported and not span voids.
- Thermoblocks must not overhang what they are fixed onto – they must not be wider than the base they are mortared on to.
- The blocks mortared on top of the Thermoblocks cannot be narrower. They should be approximately the same width or slightly wider.
- If using lightweight blocks, this initial layer of mortar on top of the Thermoblock should be at least 15mm.
- If necessary, two or even three Thermoblocks can be laid side by side to create a wide base.
- **Thermoblocks cannot be stacked** – only one single layer is permitted

Waterproofing: *Although when sealed together Thermoblock creates a permanent waterproof barrier, Thermoblock is not officially 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.

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Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the junction of a masonry cavity wall with a beam + block floor

INSULATION BELOW SCREED

Specification:	**CMW3** *(Cavity Masonry 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 at the wall to floor junction.
Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

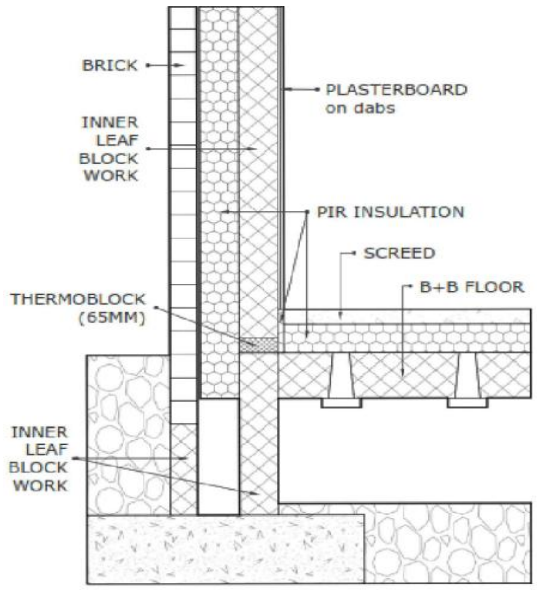
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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*).
Fire resistance >120minutes (*to EN1365-1*)

Dimensions: Length = 600mm, Height = 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 replaces the first course of concrete / AAC blocks directly on the B+B floor.

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	0.13	0.087	0.92
0.18	0.12	0.052	0.95
0.11	0.11	0.041	0.95

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.

Variations to this example can be used – for example a course of Thermoblock can be used on top of the foundation blocks directly supporting the b+b floor.

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Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the junction of a masonry cavity wall with a beam + block floor

INSULATION BELOW SCREED

- A single course of Marmox Thermoblock: 600mm(l) x 100/140/215mm(w) x 65/100mm(ht) is mortared onto the infill b+b block that is built into the wall (it is replacing the first course of blocks of the inner leaf)
- Thermoblock is fixed to the floor 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.*
- *Thermoblock is waterproof so can therefore be used either above or below the DPC*.

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)

Please note:

- Thermoblocks should be fully supported and not span voids.
- Thermoblocks must not overhang what they are fixed onto – they must not be wider than the base they are mortared on to.
- The blocks mortared on top of the Thermoblocks cannot be narrower. They should be approximately the same width or slightly wider.
- If using lightweight blocks, this initial layer of mortar on top of the Thermoblock should be at least 15mm.
- If necessary, two or even three Thermoblocks can be laid side by side to create a wide base.
- **Thermoblocks cannot be stacked** – only one single layer is permitted

Waterproofing: *Although when sealed together Thermoblock creates a permanent waterproof barrier, Thermoblock is not officially 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.

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Reduce heat loss at the base of walls

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 heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

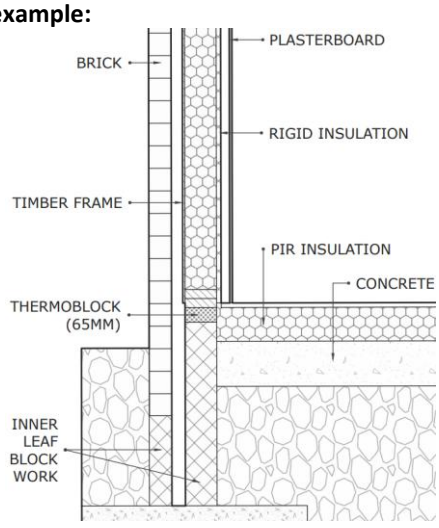
Properties: Declared λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Fire resistance >120minutes (*to EN1365-1*)
Water Absorption <3.5% (*to EN771-4*).

Dimensions: Length = 600mm, Height = 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.

marmox thermoblock
Reduce heat loss at the base of walls

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

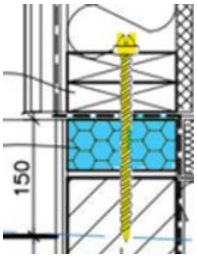
INSULATION ABOVE SLAB

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)

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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.

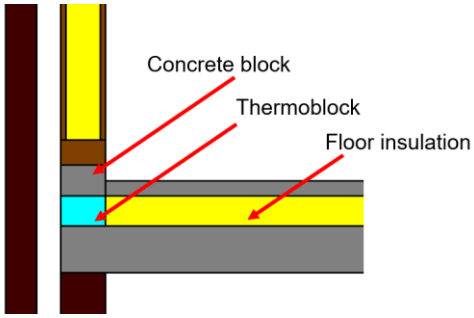
5) Use one course only. Thermoblocks should not be laid on top of each other – *a 140mm height can be achieved by using a Thermoblock on top of a coursing block*.

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.

marmox thermoblock
Reduce heat loss at the base of walls

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.

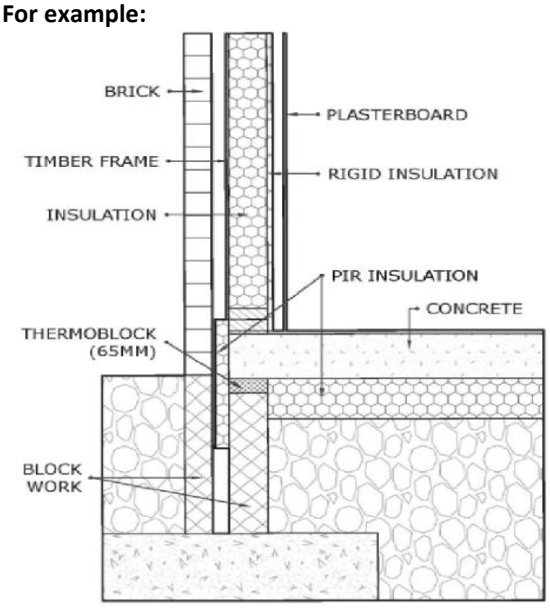
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the 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, Height = 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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marmox thermoblock
Reduce heat loss at the base of walls

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.

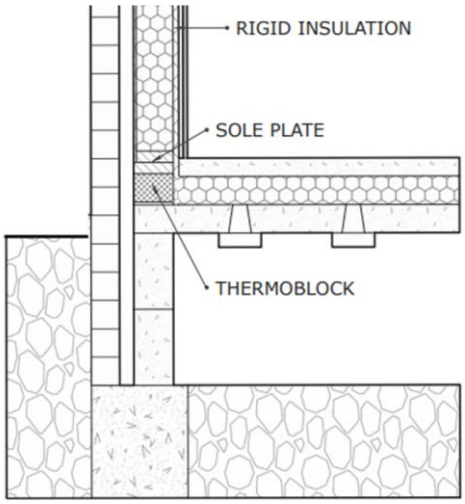
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the 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, Height = 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

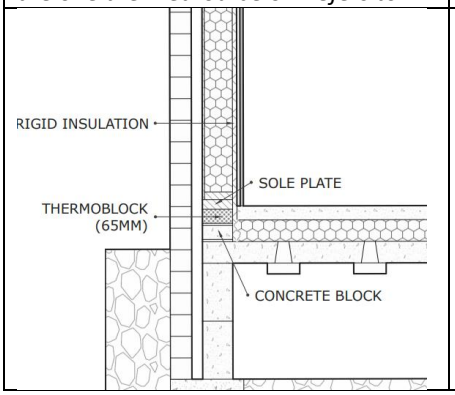
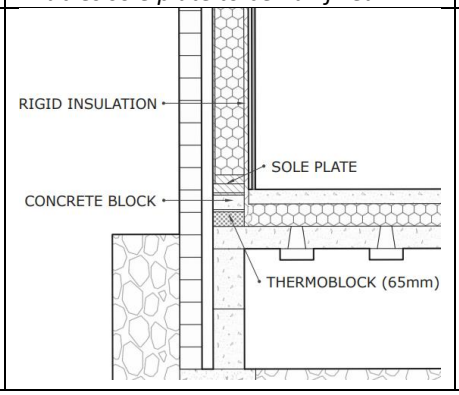
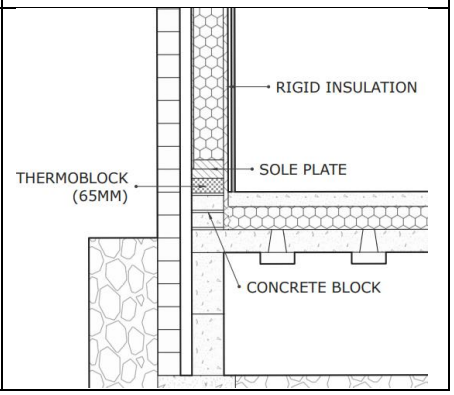


This example shows the Marmox Thermoblock the same height as the floor insulation – that is not essential.

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

marmox thermoblock
Reduce heat loss at the base of walls

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.

marmox thermoblock
Reduce heat loss at the base of walls

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.

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the junction of a steel frame wall with a suspended OR ground bearing slab

INSULATION BELOW SLAB

Specification:	**SFW1** *(Steel 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 steel frame wall is attached to a suspended concrete floor slab.
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 heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

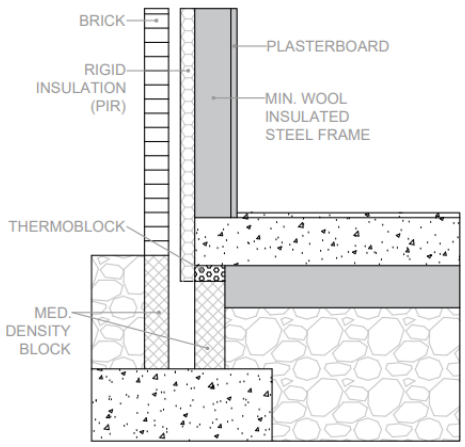
Properties: Declared λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Water Absorption <3.5% (*to EN771-4*).

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

Specification with a suspended slab with insulation below
Thermoblocks are placed below the slab - The base track plate is not fixed directly onto the Thermoblocks.

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

Example: ground bearing slab



Example of ψ values with various wall types

Block conductivity (W/mK)	Wall U-value (W/m^{2}K)	Y value (W/mK)	Temperature factor
0.85	0.18	0.121	0.91

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.

It would be a similar application with a suspended slab.

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marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the junction of a steel frame wall with a suspended OR ground bearing slab

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 10 – 15mm of 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: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

Important notes:

1. Thermoblocks should be fully supported and not span voids.
2. The Thermoblock must be approximately the same width as the blocks they are on top of.
3. **Use one course only**. Thermoblocks should not be laid on top of each other in any load-bearing wall.
4. **The base track plate is not fixed directly onto the Thermoblocks**
5. 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.

Specification to eliminate or reduce thermal bridge at the base of a steel frame wall with a suspended OR ground bearing slab

INSULATION ABOVE SLAB

Specification:	**SFW2** (*Steel 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 steel frame wall is attached to a suspended concrete floor slab.
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 heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

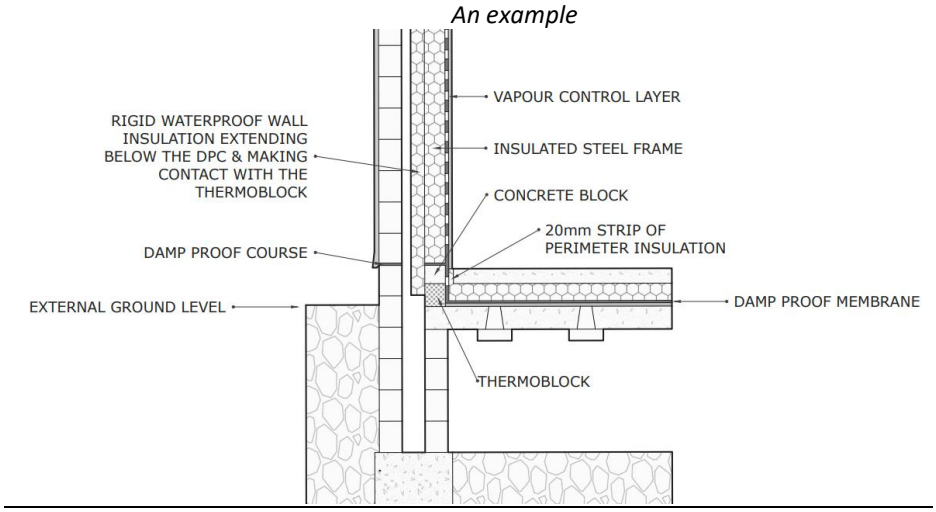
Properties: Declared λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Water Absorption <3.5% (*to EN771-4*).

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

Specification with a suspended OR ground bearing slab with insulation above
The base of the steel frame is not placed directly on top of the Thermoblock.

Thermoblocks are used as part of the upstand.
Thermoblocks should not be placed directly below the sole plate but typically one block/brick below it as shown in the example.

An example



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marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the base of a steel frame wall with a suspended OR ground bearing slab

INSULATION ABOVE SLAB

DPM: 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.

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.

- One course of Marmox Thermoblock (600mm x 100mm/140mm/215mm x 65 or 100mm) is mortared on the foundation blocks or bricks or concrete slab using c.10mm of bricklayers' mortar.
- It should be positioned so that as much of the floor insulation is in contact with the Thermoblock as possible.
- The concrete block on top of the Thermoblock that is level with the screed should ideally be insulated on the side opposite to the screed.
- 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.*

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

Important notes:

4. Thermoblocks should be fully supported and not span voids.
5. The Thermoblock must be approximately the same width as the blocks they are on top of, *they must not be significantly wider*.
6. **Use one course only**. Thermoblocks should not be laid on top of each other in any load-bearing wall.
7. **The base track plate is not fixed directly onto the Thermoblocks**

Specification to eliminate or reduce thermal bridge at the base of a masonry outer leaf wall

Specification:	**EXTWALL** (External Wall)
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/Reduction of cold bridge base of a wall exposed to the outside in contact with the ground.

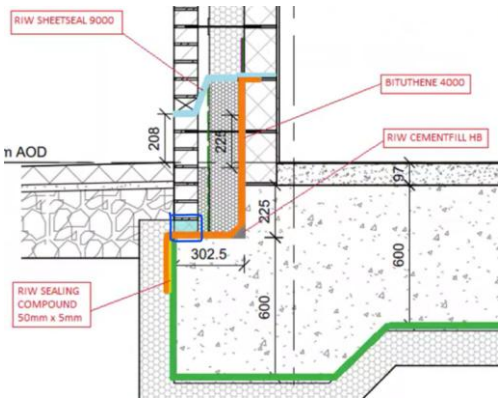
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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*).....*Resistant to frost damage*

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

Thermoblock is positioned at the base of the outer leaf of a brick wall directly on top of the floor raft.

Example Specification



- Using standard sand/cement mortar, a single course of 60mm wide x 65mm high Thermoblock is mortared onto the toe of the floor raft.
- 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 block is water resistant so can be positioned above the DPM and it will still provide the same insulation properties.*
- The single row of Thermoblock which has a concrete upper surface is the base for the subsequent brick wall. The bricks are mortared onto the Thermoblock layer in the same fashion as mortaring to a concrete base.

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the base of a masonry outer leaf wall

THE VERTICAL FACE IS POLYSTYRENE SO CANNOT BE LEFT EXPOSED

It is unaffected by moisture and weather but is susceptible to long-term UV radiation and can also be damaged by impact and gnawing rodents. Furthermore the surface is a Class E material so cannot be left exposed.

EWI may be bonded over the surface of the Thermoblocks. When applying the insulation slabs to the wall with adhesive, ensure that they are bonded to the surface of the Thermoblock as well.

Render may be bonded over the surface of the Thermoblocks. To enhance the bonding, it is advised to place a strip of mesh/scrim tape on to the polystyrene surface before rendering. A common method to hold this in place is to fold a strip of scrim tape over the top of the Thermoblock when either fixing the sole plate or mortaring the blocks on top so that it falls down covering the exposed polystyrene face.

Do not use solvent-based primers – primers will make the surface powdery.

Decorative stone, ceramic tiles or brick slips fixed to the surface of the Thermoblocks. Mortar and tile adhesive will bond to the polystyrene surface but with the rendering method, we advise the addition of scrim tape to enhance the strength of the bond.

WITH MASONRY WALL

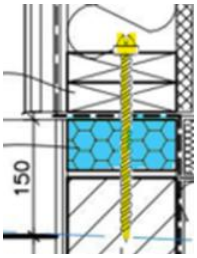
- Lay bricks/blocks on top using a standard mortar.

WITH AIRCRETE AND POROTHERM BLOCKS

- Lay bricks/blocks on top using a standard mortar which should be at least 15mm.

WITH A TIMBER FRAME /SIP

- 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 approximately 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, fixing with straps or brackets are an alternative. These must be fixed to the masonry components directly underneath the Thermoblock, not the Thermoblock itself.

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marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the base of a masonry outer leaf wall

DPM: 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.

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.

Important notes:

- Thermoblocks should be fully supported and not span voids.
- The upstand of the outer leaf/solid wall must have the same footprint area as the footprint of the Thermoblock layer which is mortared onto it. The length of Thermoblocks can be cut down and they can be laid side by side to create a wider base if required.
- The footprint of the wall mortared on top of the Thermoblocks cannot be smaller than the footprint of the Thermoblock layer. ***i.e. the wall above AND below the layer of Thermoblocks should be the same width as each other and also be the same as the Thermoblock layer.***
- **Thermoblocks should not be stacked**. If part of a supporting wall, use only one course.
- If used on an outer leaf, it should not be in a location where the blocks may come into regular contact with petroleum or organic solvents.

Specification to eliminate or reduce thermal bridge at the junction of an internal wall with a ground floor

INSULATION ABOVE SLAB

Specification:	**INTWALL**
Product ref:	**Marmox Thermoblock (Standard Type)**
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 an internal wall would otherwise sit on the floor slab / foundation layer causing a break in the continuity of the floor insulation and reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

This specification relates to internal walls, not party walls, i.e. separating walls within a single building or dwelling and NOT walls between separate buildings or dwellings.

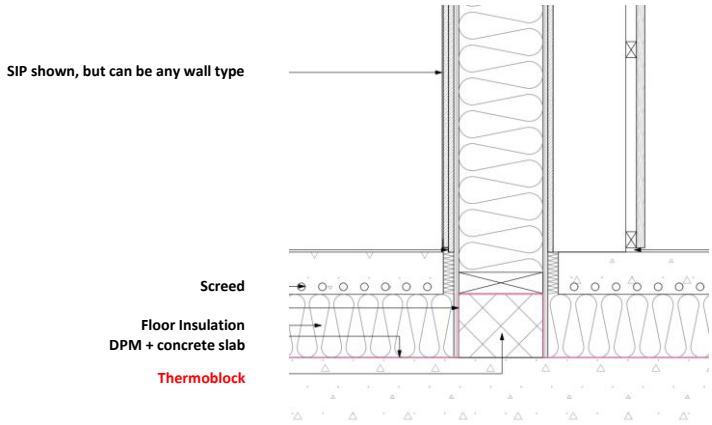
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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, Height = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

Thermoblock is positioned at the base of the internal wall below the level of the screed. It is mortared to the floor slab or foundation blocks forming a load-bearing base for the wall (*masonry or timber frame*).

Detail example: Insulation under screed



Variations to the above examples can be used – masonry or timber frame wall
Insulation can be above or below the slab – in whichever case, Thermoblock is below the level of the floor.

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the junction of an internal wall with a ground floor

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 for the wall at a position where it connects the floor insulation to the cavity insulation.
- The length of Thermoblocks can be cut using a brick saw.

MASONRY WALL

- Fix to the concrete floor or foundation blocks using a standard brick/block laying sand and cement mortar.
- 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.
- Lay bricks/blocks on top using a standard brick laying sand and cement mortar. If using aircrete blocks or Porotherm blocks, this initial layer of mortar should be at least 15mm.

TIMBER FRAME WALL

- Fix to the concrete floor or foundation blocks using a standard brick/block laying sand and cement mortar.
- 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 blocksFix the sole plate onto the row of Thermoblock bolting through the Thermoblocks approximately halfway across its width anchoring it in the slab/foundation blocks below. (*Resin anchors such as Rawlplug R-KER II are suitable*)
- A ribbon of Marmox MSP-360 is also applied between the top of the Thermoblock and the sole plate.

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/*

Please note:

- Thermoblocks should be fully supported and not span voids.
- The width of the wall sitting directly on top of the Thermoblocks cannot be narrower than the width of the Thermoblock. *They should be approximately the same width or slightly wider*.
- If necessary, two or even three Thermoblocks can be laid side by side to create a wide base.
- **Thermoblocks cannot be stacked** – only one single layer is permitted.

Waterproofing:

- 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.
- Do not apply solvent-based primer to the vertical surfaces - it is not necessary and can reduce adhesion to a polystyrene surface.

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at base of an External wall with a timber flat roof

Specification:	**FLTROOF**
Product ref:	**Marmox Thermoblock (Standard Type)**
Junction Type:	**E14**
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 of the cold bridge at the junction of a flat roof with an external wall to reduce heat loss from the room below.
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 heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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*).

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

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

With insulation above a wooden joisted roof
Where a timber roof plate is fixed on top of the inner leaf, the top course of blocks is replaced with one course of Marmox Thermoblocks and the roof plate is fixed onto that by screwing it through the Thermoblock into the solid block below.

Important notes:

1. Thermoblock's **vertical face must be clad** either with a cement board or by incorporating a layer of scrim tape, a coating of cement-based render or plaster. Even if in the roof void, the blue coloured vertical face must be covered.
2. Timber roof joists should not be lain directly on top of Thermoblocks at 90^O which would impose a point load. A load-spreading roof plate must first be present.
3. Thermoblocks should be fully supported and not span voids.
4. The width of the Thermoblocks should be approximately the same width as the blocks which they are on and the same width as the roof plate.
5. **Thermoblocks cannot be stacked** – only one single layer is permitted
6. The standard version of Thermoblock must not be used when there would be potential contact with flame applied bitumen membranes. (*heat applied with a flame gun could distort the shape*)

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at base of an External wall with a timber flat roof

- A single course of Marmox Thermoblock of the same width as the blocks comprising the inner leaf is fixed on top of those blocks using ordinary 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 timber 'roof plate' which would normally be screw fixed onto the top layer of blocks is now screw fixed to that top layer of blocks but through the middle of the Thermoblocks
- Fixing bolts / resin anchors are placed through the sole plate and then the Thermoblock approximately halfway across its width into the solid base underneath. These *must penetrate the concrete blocks by at least 60mm*
- The roof joists are now fixed to the roof plate as normal.

DPM:

1. Although when sealed together with MSP-360 a row of Thermoblocks creates a permanent waterproof barrier below the roof plate a further DPM is usually still required. A DPM can be positioned above or below the Thermoblock. Because its top and bottom layers are concrete, it can be treated in the same way any concrete unit can be treated.
2. 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.

Specification to eliminate or reduce thermal bridge at base of a Parapet Wall
INSULATION ABOVE SLAB (WARM ROOF)

Specification:	**PARAPET**
Product ref:	**Marmox Thermoblock (Standard Type)**
Junction Type:	**E15**
Manufacturer:	**Marmox Ltd**
Address:	**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 of the cold bridge of the parapet wall with the internal surfaces in the room below.
The parapet wall insulation slab is not needed when using Thermoblock
Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

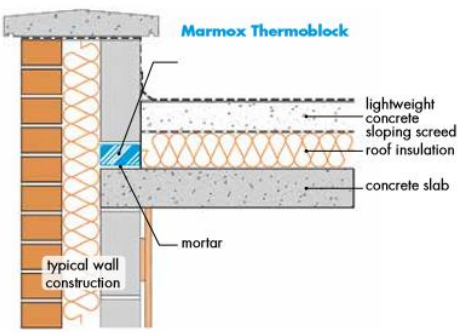
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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*).

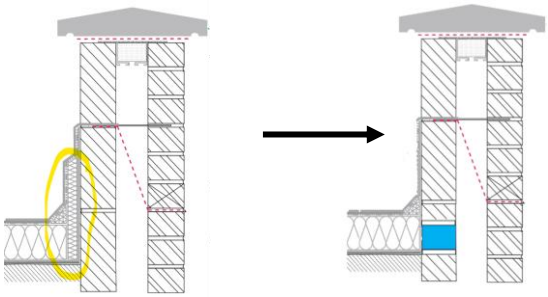
Dimensions: Length = 600mm, Height = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

With insulation Above the Roof Slab
Thermoblock is used as the parapet wall's starter course on the roof slab. It is positioned so that it connects the insulation above the slab
It can also be used in the location on the right as part of the extending inner leaf.

Typical Detail (parapet wall built on slab)



Detail with Thermal break in inner leaf
showing that the upstand insulation is not needed



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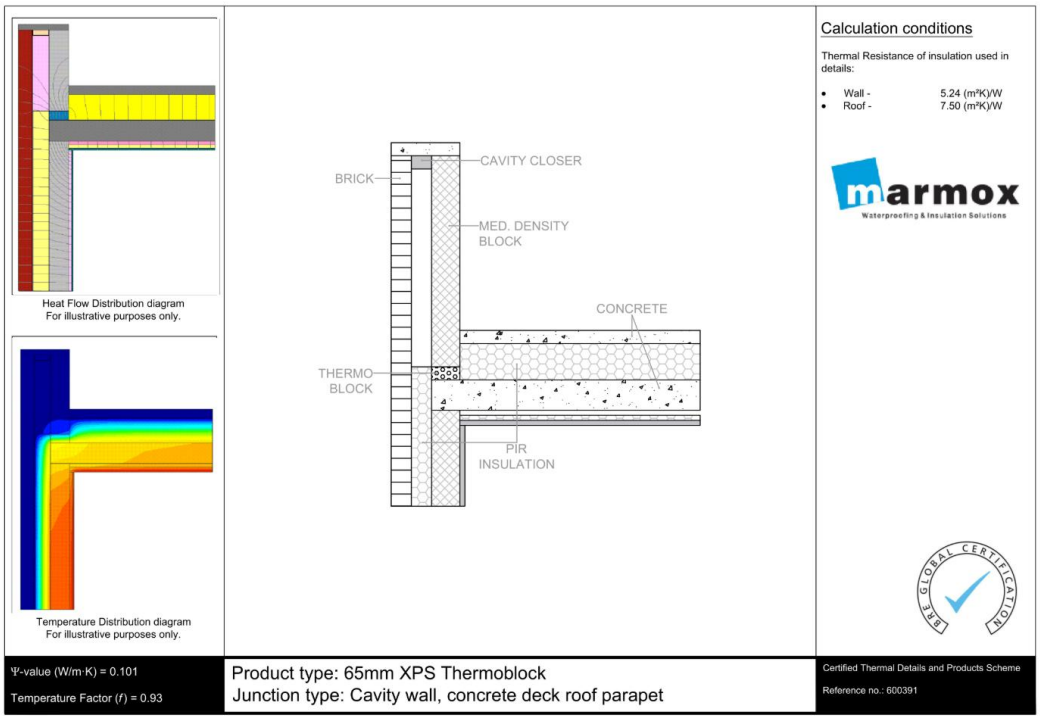
marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at base of a Parapet Wall
INSULATION ABOVE SLAB (WARM ROOF)

A single course of Marmox Thermoblock: 600mm(l) x 100/140/215mm(w) x 65/100mm(ht) is used as the starter course of the inner leaf at a position where it connects the roof insulation to the cavity insulation if present.

- Thermoblock is fixed to the slab with c.10mm 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
- Thermoblock edges are sealed together with a ribbon of Marmox MSP360 on the stepped edges to provide a waterproof barrier to protect the insulation within the wall. *Approximately 1 tube (300ml) of MSP-360 will be sufficient for 25 blocks.*
- Normal mortar is used to fix the subsequent courses of bricks/blocks on top of the Thermoblock.

ψ value estimation: Marmox Thermoblock (*140mm wide x 65mm high*) is a BRE Certified Thermal Product when used at the base of a parapet wall. In the following example, the heat loss (ψ) is reduced to 0.10W/mK which is just one third of the default value.



BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

marmox thermoblock
Reduce heat loss at the base of walls

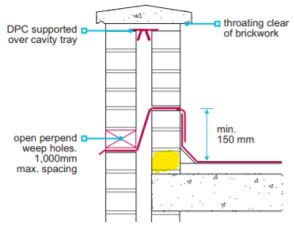
Specification to eliminate or reduce thermal bridge at base of a Parapet Wall
INSULATION ABOVE SLAB (WARM ROOF)

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*
Fire Safety Report: 16781B (Warrington Fire)

Important notes:

1. Thermoblocks should be fully supported and not span voids.
2. The width of the Thermoblocks should be approximately the same width as the blocks which are being laid on top of them.
3. **Thermoblocks cannot be stacked** – only one single layer is permitted
4. Thermoblocks must not be used when there would be potential contact with flame applied bitumen membranes. (*heat applied with a flame gun could distort the shape*)

DPM: Although when sealed together with MSP-360 a row of Thermoblocks creates a permanent waterproof barrier, a DPM is still required. This can be applied to the parapet wall design as though the Thermoblock were simply just another brick in the wall. Typically, the DPM is fixed to the brick/block one or two courses above the Thermoblock: -



However, if necessary, a DPM can be fixed directly on to the surface of a Thermoblock using standard bricklayers' mortar.

Specification to eliminate or reduce thermal bridge at the base of an external wall with the basement floor

Specification:	**BASEMENT**
Product ref:	Marmox Thermoblock (Standard Type)
Junction Type:	**E22**
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/Reduction of cold bridge at the base of the external wall where it mees the basement floor.
Being waterproof, it can be also used as part of the drainage system.

Description: Marmox Thermoblock is a waterproof, thermal insulation product designed to sit at the base of a load-bearing wall. It comprises a block of extruded polystyrene with a polymer-concrete facing on its top and bottom surfaces which are connected by low conductive epoxy-concrete columns there to provide the block with its resistance to compression.

Properties: Average 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, Height = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

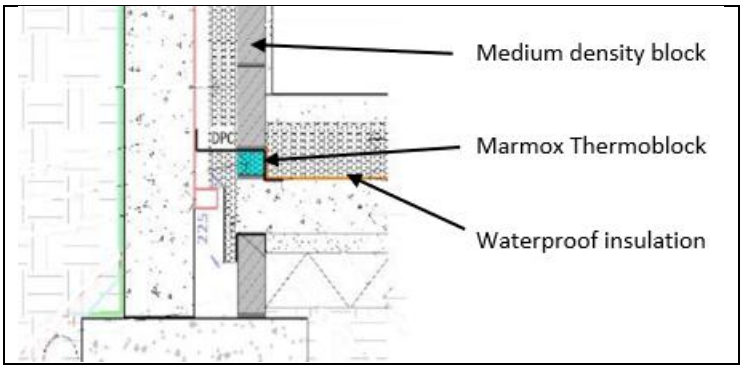
Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

A course of Thermoblock replaces the first course of concrete or AAC blocks directly on the basement floor or as the bottom of the basement wall's internal leaf.

Example

SAP default ψ value = 0.220W/mK
SAP ψ value this example = 0.004W/mK

A 98% reduction in the ψ value compared with the default value



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marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at the base of an external wall with the basement floor

A single course of Marmox Thermoblock: 600mm(l) x 100/140/215mm(w) x 65/100mm(ht) is used as the starter course of the inner leaf at a position where it connects the floor insulation to the cavity insulation.

- Thermoblock is fixed to the foundation blocks or concrete slab 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.*
- Normal mortar is used to fix the subsequent courses of bricks/blocks on top of the Thermoblock.

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

Please note:

- Thermoblocks should be fully supported and not span voids.
- Thermoblocks must not overhang what they are fixed onto – they must not be wider than the base they are mortared on to.
- The blocks mortared on top of the Thermoblocks cannot be narrower. They should be approximately the same width or slightly wider.
- If using lightweight blocks, this initial layer of mortar on top of the Thermoblock layer should be at least 15mm.
- **Thermoblocks cannot be stacked** – only one single layer is permitted

AS PART OF A DRAINAGE SYSTEM

- Marmox Thermoblocks are not affected by water and can be used in the wettest conditions. If laid with some separation between each other, Thermoblocks can be used to provide drainage channels.
- By using a hand saw to cut off just one of the 15mm interlocks from each block, a block with one 15mm overhang and one straight end results. These can be laid together to create 15mm wide drainage channels every 600mm.

Specification to eliminate or reduce thermal bridge within a REBAR Reinforced Concrete Wall

Specification:	**REBAR**
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: To limit the vertical heat transfer up or down a reinforced concrete wall comprising **either** hollow concrete blocks or constructed between shuttering or ICF blocks.
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 heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

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

Thermoblocks are safely pierced vertically through the polystyrene parts to allow Rebars to pass through them. Concrete is poured onto the Thermoblock which forms the base of that section of wall.

1. With shuttering and some ICF blocks

With reinforcing bars already present prior to construction of the wall (*fixed in the trench protruding upwards through the foundation/footing*) Holes are made in the Thermoblocks approximately half-way across the width to allow the rebar to pass through.

1. Ensure these holes are not along the outside edges where the concrete columns are.
2. Drill holes in the Thermoblocks to allow the Rebars to pass through.
3. Placing the bars through the holes and mortar a single course of Thermoblock to the floor using ordinary bricklayers' mortar.
4. Marmox MSP-360 (*sealant*) is used on the edges to seal them together. One tube is typically sufficient for 25 blocks.
5. MSP-360 can also used to seal the hole housing the rebar.
6. Once the mortar has cured, the Thermoblocks' concrete top layer is now effectively the floor onto which the ICF is placed on top of / around.

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge within a REBAR Reinforced Concrete Wall

2. With hollow concrete and some ICF blocks

1. One course of Thermoblock is mortared to the floor using ordinary bricklayers' mortar.
2. 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**.
3. Holes are drilled in the Thermoblocks to allow the Rebars to pass through (*holes should be positioned approximately in the middle of the block – see limitation #6*)
4. Once the mortar has cured, the Thermoblocks' upper concrete layer is now effectively the floor onto which the wall of hollow concrete blocks is built upon.
5. *Before inserting the reinforcing rods, if possible, place a blob of waterproofing MSP-360 into or on top of the pre-drilled holes.*
6. Place the reinforcing bars into the hollows and into the pre-drilled holes in the Thermoblocks.

Properties: Average 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*).

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*
Fire Resistance Certification: 16781B (Warrington Fire)

Fixing system: Fix to the concrete floor slabs, blocks, beams or DPM exactly as if it was a masonry unit using standard sand and cement mortar.
Ensure the Thermoblock is supported by an even base across its whole width.

Limitations: 1) Use one course only – Thermoblocks should not be laid on top of each other or the 9N compressive strength is not guaranteed.

2) Temperatures in excess of 75^{O}C are not appropriate

3) What is placed on top of the Thermoblock cannot be narrower than the width of the Thermoblock.

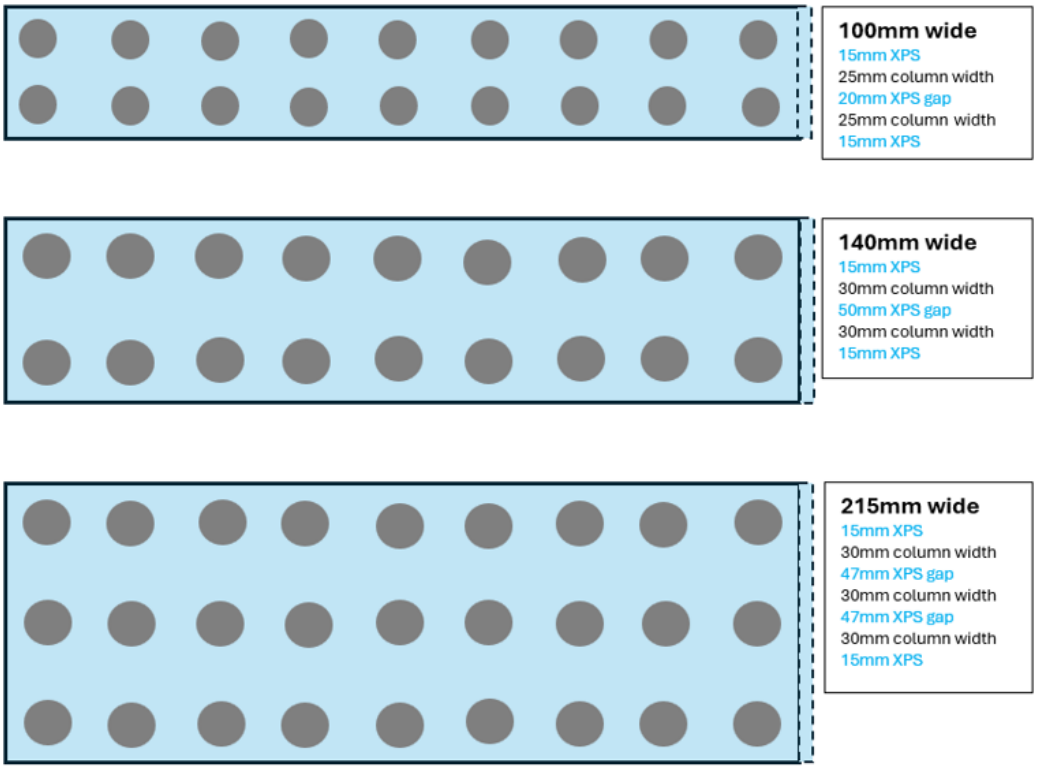
4) Must not be used in environments where organic solvents such as petrol may come into contact with them.

5) Must not be used with any adhesives, sealants, waterproofing treatments that contain organic solvents.

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge within a REBAR Reinforced Concrete Wall

6) Holes in the Thermoblocks can only be made where there are no concrete columns present. The diagram shows the safe areas (*marked in blue*) which can be drilled through: -



7) The rebar is itself a small thermal bridge and so a low conductive version is preferable such as FRP or stainless steel rather than carbon steel (*Heat flow through carbon steel is three times faster than through stainless steel*.)

8) When possible, placing some MSP-360 between the steel bar and the concrete floor will be thermally beneficial.

Specification to eliminate or reduce thermal bridging where a pitched roof abuts a gable wall

Specification:	**ROOFLINE**
Product ref:	**Marmox Thermoblock**
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: A sloping roof line of an extension built against an existing gable wall can create a cold bridge which can be reduced incorporating a sloping line of Thermoblocks into that wall.

Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

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

Marmox Thermoblocks are positioned within a gable wall form a thermal break in the along the line of the adjoining lower roof rafters by overlapping their ends but ensuring at least half their length is supported above and below structural masonry units.

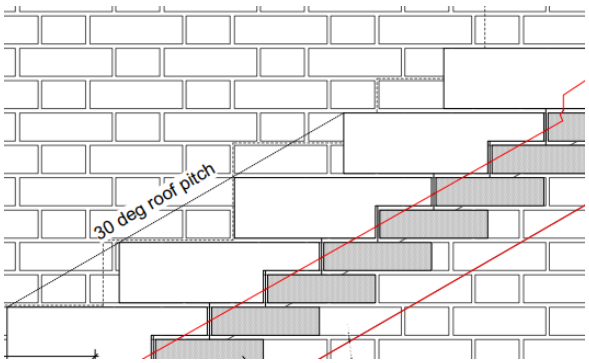
Conditions:

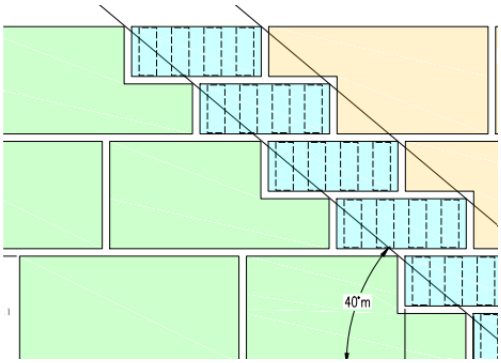
1) The bricks or blocks of the wall are no narrower than the width of the Thermoblock.

2) Thermoblocks can be overlapped but at least 50% of their total length must be in contact with a masonry unit. This is enabled by cutting the length of the Thermoblocks which is determined by the angle of the roof line.

3) The minimum length they can be reduced to is 250mm.

EXAMPLE SPECIFICATIONS -
Can be used in brick walls, block walls or combinations of both.
65mm high Thermoblocks can replace bricks whereas two rows of 100mm high Thermoblocks "semi-stacked" can replace one 215mm high block as the following examples show.





- In all applications, no more than 50% of the length of each Thermoblock touches another Thermoblock.
- Thermoblock is fixed with exactly the same mortar as is used to fix the concrete blocks and bricks.

marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridging where a pitched roof abuts a gable wall

Properties: Average 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*).

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

Treatment: The vertical sides of the Marmox Thermoblock **must not be visibly exposed**. It is unaffected by moisture and weather but is susceptible to long-term UV radiation and can also be damaged by gnawing rodents and insects.

The exposed face must be completely covered either with: -

- External insulation, continued from the rest of the wall
- A sand/cement + polymer render which keys onto the mesh/scrim tape.
- Decorative stone, ceramic tiles or brick slips fixed to the vertical polystyrene surface *(+ scrim*) with a sand/cement + polymer mortar (*or flexible tile adhesive*)

Limitations: 1) No fixings, including that of the pitched roof can be mechanically secured into the Thermoblocks.

2) Must not be used with any adhesives, sealants, waterproofing treatments that contain organic solvents. The compatibility of ANY non-standard material should be determined by checking whether that material is compatible with polystyrene – if it is not, then it cannot be used with Thermoblock.

Specification to eliminate or reduce thermal bridge under a Window Sill

Specification:	**SILL**
Product ref:	**Marmox Thermoblock (Standard Type)**
Junction Type:	**E3**
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 of the cold bridge from the base of the window frame to the masonry wall.
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 heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

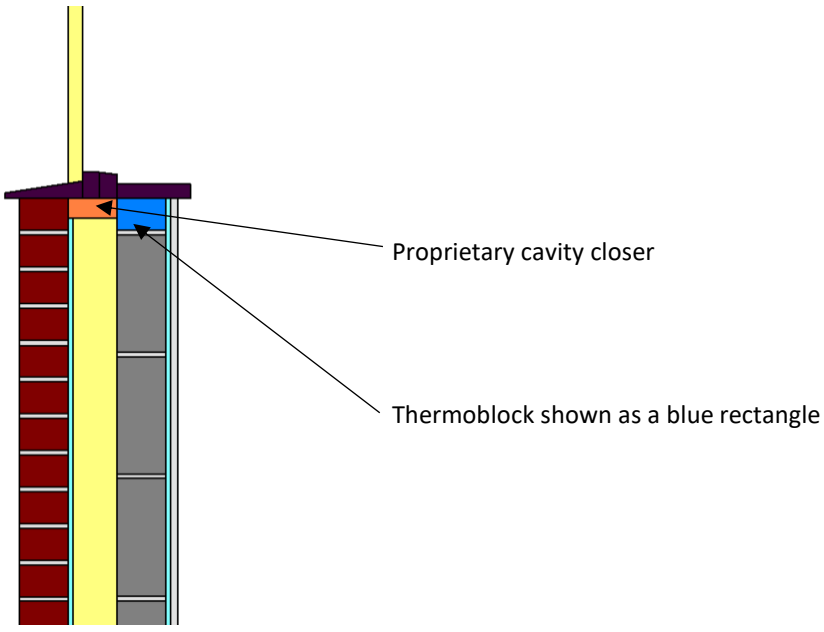
Properties: Average λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Water Absorption <3.5% (*to EN771-4*).

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

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

Marmox Thermoblock replaces the top 65 or 100mm of the inner leaf directly below the window frame.

Typical Detail



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marmox thermoblock
Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge under a Window Sill

- A single course of Marmox Thermoblock of the same width as the blocks comprising the inner leaf is fixed on top of those blocks using ordinary bricklayers' mortar.
- The length of Thermoblocks can be cut using a brick 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 Thermoblocks present a strong and stable base for the window sill but the sill cannot be simply screwed into Thermoblocks below. *The sill can be fixed either by: -*

  A) Adhering it to the row of Thermoblocks with Marmox MSP-360

  B) Screw fixing the sill through the middle of the Thermoblocks into the concrete blocks underneath.

Important notes:

- The width of the Thermoblocks should be approximately the same width as the blocks which they are fixed onto.

- **Thermoblocks cannot be stacked** – only one single layer is permitted.

- 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.

Specification to reduce thermal bridge from a steel lintel to a load-bearing external wall

Specification:	**STEELBEAM**
Product ref:	**Marmox Thermoblock**
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 / reduction in cold bridging between the steel beam or lintel and a solid masonry load-bearing wall placed on top. Its use is likely to result in the elimination or reduction of surface condensation and possible mould growth on the internal wall and an improvement in heating costs and a reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations.

Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

Properties: Average 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, Height = 65mm or 100mm, Width = 100mm, 140mm or 215mm
(*140mm high blocks can be produced and supplied for certain projects upon request*)

Marmox Thermoblock is fixed to a steel beam in the exact same way as a concrete block would be fixed, using the exact same mortar which would be used to fix a concrete block.

The Thermoblocks must not be wider than the width of the steel beam.
The Thermoblocks must not be wider than the blocks which will be placed on top.

- A single course of Marmox Thermoblock: 600mm(l) x 100/140/215mm(w) x 65/100mm(ht) is mortared to the steel beam as the starter course in place of the bottom row of blocks.
- 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*.
- Concrete or aircrete blocks are laid on top of the single course of Thermoblock using normal mortar**.** (*Minimum thickness of mortar = 10mm*).

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744

marmox thermoblock
Reduce heat loss at the base of walls

Specification to reduce thermal bridge from a steel lintel to a load-bearing external wall

Limitations:

1) only use ONE COURSE of Thermoblocks – do not stack Thermoblocks.

2) Thermoblocks must not be placed where they are visible but always behind a curtain wall, behind concrete, behind cementitious boarding etc.

If this row of Thermoblocks is on the external face of the wall it must be covered with render. To enable better adhesion of render to the exposed polystyrene surface, a piece of fibreglass mesh should be fixed to that outer surface. Fold a piece of fibreglass scrim over the top of the Thermoblock when mortaring the brick on top so that it falls down covering the exposed polystyrene face.

3) Temperatures in excess of 75^{O}C are not appropriate

4) Must not be used with any adhesives, sealants, waterproofing treatments that contain organic solvents. The compatibility of ANY non-standard material should be determined by checking whether that material is compatible with polystyrene – if it is not, then it cannot be used with Thermoblock.

5) 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.

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Reduce heat loss at the base of walls

Specification to eliminate or reduce thermal bridge at a door Threshold

Specification:	**THRESH**
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/Reduction of cold bridge at threshold junction.

Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating Extruded Polystyrene surrounds the columns.

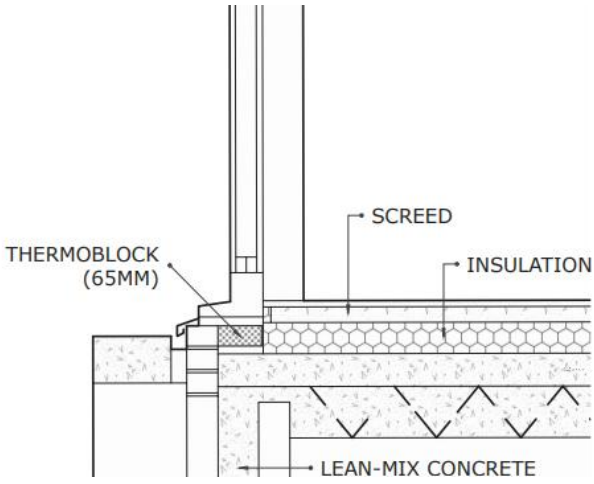
Properties: Average λ value of 0.05W/mK (*to EN13164/EN13167*)
Mean compressive strength of 9.0N/mm^2 (*to EN772-1*)
Fire resistance >120minutes (*to EN1365-1*) *Applicable to some details*
Water Absorption <3.5% (*to EN771-4*).

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

Authorities: ISO9001 + ISO14001 + European Technical Assessment 20/0744
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*

Thermoblock is fixed to the blockwork or concrete ideally directly below the base of the door or window frame in a position where both its vertical faces are concealed or covered.
Thermoblock does not absorb moisture, it can therefore be used above and below ground level.

In principle, the Thermoblock sits underneath the door frame to create a thermal break such as shown below.



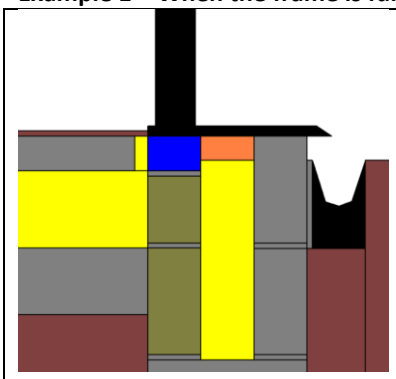
If the design has the Marmox Thermoblock on the outer leaf, then its 'exposed' vertical side should be covered with a cement board which can be bonded to the vertical surface with Marmox MSP-360. Alternatively, a cementitious render can be applied to the 'exposed' vertical side.

marmox thermoblock

Reduce heat loss at the base of walls

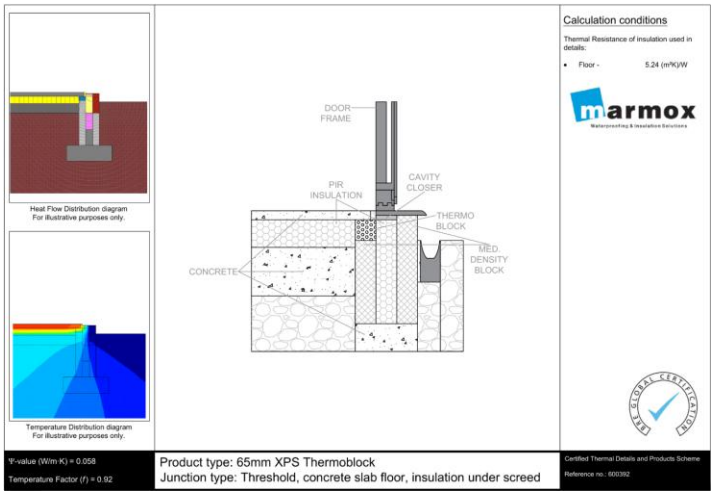
Specification to eliminate or reduce thermal bridge at a door Threshold

Example 1 – When the frame is fully supported on the inner leaf

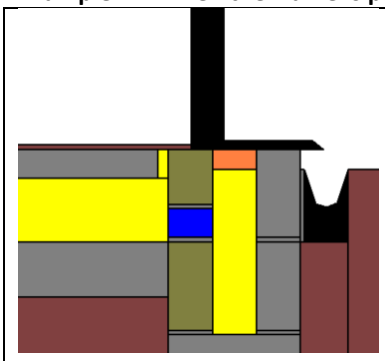


The ψ value of this particular junction has been calculated and published by the BRE in their Certified Thermal Details Scheme giving a ψ value of 0.058W/mK

- Using standard sand/cement mortar, a single course of Thermoblock is mortared onto the inner leaf blocks directly underneath the door frame.
- The row of Thermoblock is not in line with the floor insulation therefore a perimeter insulation strip (e.g. 25mm PIR/XPS) is required.
- The frame is mechanically fixed through the centre of the Thermoblock (*approx. half-way across its width*) into the blockwork that the Thermoblock is on top of.
- Marmox MSP360 is used to seal the base of the frame to the Thermoblock's top surface, to seal the bolt holes and to seal the interlocking edges of the Thermoblocks together.

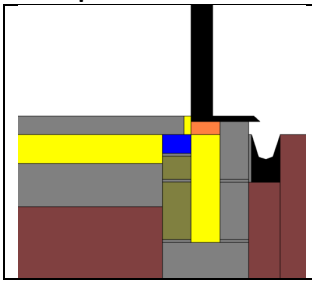


Example 2 – When the frame is partially supported on the inner leaf



- Using standard sand/cement mortar, a single course of Thermoblock is laid onto the inner leaf blocks in line with the floor insulation.
- A concrete or AAC block is mortared on top of the row of Thermoblocks up to floor height.
- The frame would subsequently be fixed into the concrete block which is above the Thermoblocks.
- ***A perimeter insulation strip*** *(as shown)* ***can be included however this makes only a very minimal improvement to the insulation.***

Example 3 – When the frame is supported on the outer leaf



- Using standard sand/cement mortar, a single course of Thermoblock is mortared onto the inner leaf blocks in line with the floor insulation.
- The screed is placed above.

A perimeter insulation strip *(as shown)* ***can be included however this makes only a very minimal improvement to the insulation***

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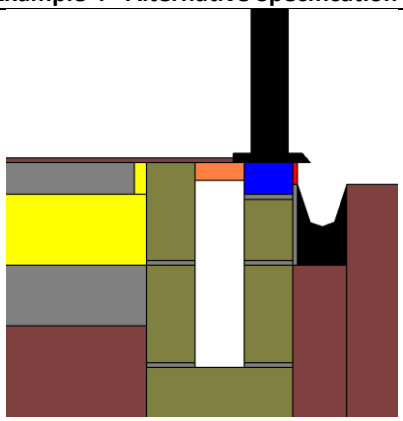
Reduce heat loss at the base of walls

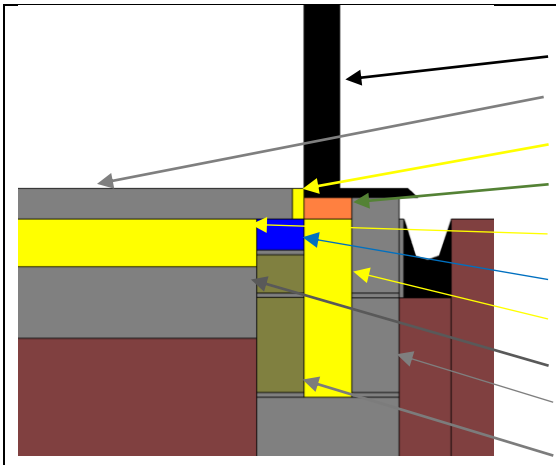
Specification to eliminate or reduce thermal bridge at a door Threshold

Example 4 - Alternative Specification on the outer leaf



- Using sand/cement mortar, a single course of Thermoblock is mortared onto the outer leaf blocks directly underneath the door frame.
- If this is a twin leaf wall, using an additional Thermoblock between the top of that wall and the floor can be considered but a perimeter insulation strip used there, as shown in yellow would, although to a lesser extent, also be effective.
- The frame is mechanically fixed through the centre of the Thermoblock into the blockwork that the Thermoblock is on top of.
- Marmox MSP360 is used to seal the base of the frame to the Thermoblock's top surface, to seal the bolt holes and to seal the interlocking edges of the Thermoblocks together.

The exposed face of the Thermoblock must be covered with a cement-based render or a strip of cement board (*shown in red in this diagram*). To aid adhesion to the polystyrene face, a piece of mesh/scrim tape should be folded over the top of the Thermoblock when fixing the door frame on top so that it falls down covering the exposed polystyrene face.



Key to materials used in ALL the above examples

Door and frame

Screed

PIR Perimeter insulation (λ = 0.021W/mK)

Cavity closer (λ = 0.034W/mK)

PIR Floor insulation (λ = 0.021W/mK)

Marmox Thermoblock, 65mm (λ = 0.05W/mK)

Below ground cavity insulation (λ = 0.034W/mK)

Concrete slab

Dense concrete block (λ = 1.60W/mK)

Medium density concrete block (λ = 0.062W/mK)

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, Marmox MSP-360 should be used to seal the short edges of the Thermoblocks together. This creates a permanent waterproof barrier.

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.

Important notes:

1) If fixing the frame directly on top of the Thermoblocks, the width of the frame must not be narrower than the width as the Thermoblock.
2) Thermoblocks should not be laid on top of each other if part of a supporting wall - use only one course.