

Specifications at the base of a Masonry Cavity Wall

This document contains THREE specifications using Thermoblock when used at the base of the internal leaf of a cavity wall with the following floor types

Junction Detail	Click the Hyper-link	SAP default ψ value	SBEM default ψ value	Guideline ψ values with Thermoblock
E5 Ground Floor to External Wall				
Cavity Masonry Wall – slab on ground (<i>insulation above slab</i>)	CMW1	0.32	0.36	0.02 – 0.06
Cavity Masonry Wall – slab on ground (<i>insulation below slab</i>)	CMW2	0.32	0.36	0.03 – 0.07
Cavity Masonry Wall – beam + block floor (<i>insulation below screed</i>)	CMW3	0.32	0.36	0.04 – 0.09



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.

**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/>.

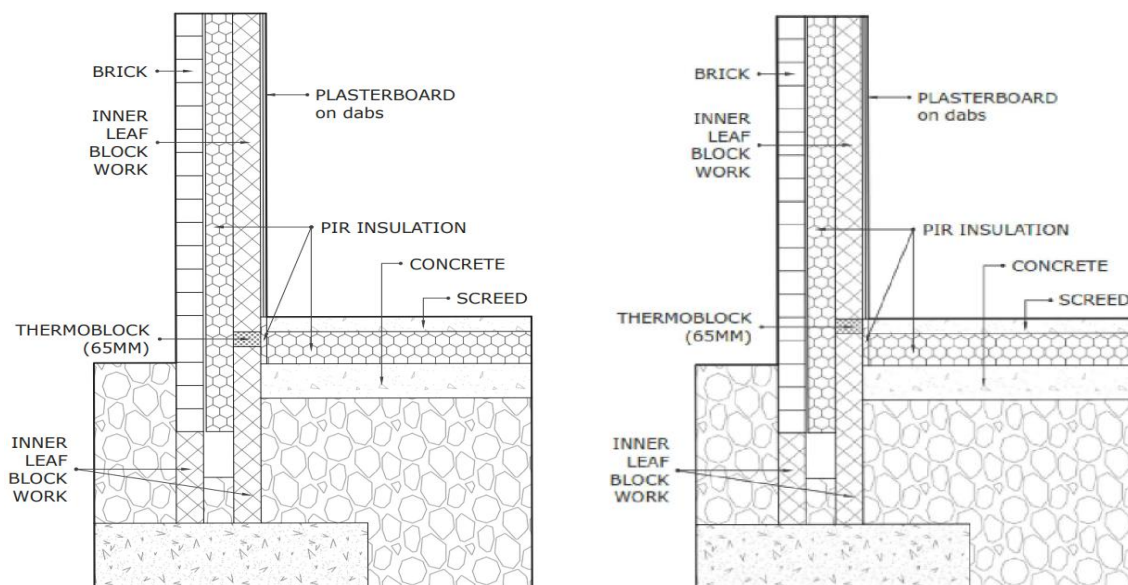
Product Use: Elimination or reduction in cold bridging at the wall to floor junction.
 Reduction in the ψ value used in SAP/SBEM or DEAP/NEAP calculations to enable compliance with UK / Irish building regulations.

Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of two 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/mm² (to EN772-1)
 Fire resistance >120minutes (to EN1365-1)
 Water Absorption <3.5% (to EN771-4).

Dimensions: Length = 600mm, Thickness = 65mm or 100mm, Width = 100mm, 140mm or 215mm

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.



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/m ² K)	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 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*
- *Thermoblock edges can be sealed together with a ribbon of Marmox MSP360 on the stepped edges to provide a waterproof barrier and improve air-tightness.*

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 layer 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)
 ISO9001 (Bureau Veritas)
 BRE – Certified Thermal Products Scheme, <http://www.bre.co.uk/certifiedthermalproducts/>
 Fire Resistance Certification: 16781B (Warrington Fire)

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.

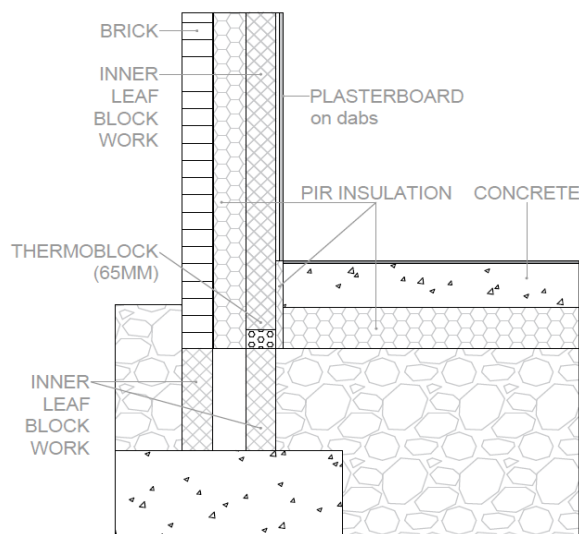
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of two rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating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

Properties: Average λ value of 0.05W/mK (to EN13164/EN13167)
 Mean compressive strength of 9.0N/mm² (to EN772-1)
 Water Absorption <3.5% (to EN771-4).

Dimensions: Length = 600mm, Thickness = 65mm or 100mm, Width = 100mm, 140mm or 215mm

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/m ² K)	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.

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
- Thermoblock edges are sealed together with a ribbon of Marmox MSP360 on the stepped edges to provide a waterproof barrier and improve air-tightness.
- 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)
 ISO9001 (Bureau Veritas)
 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.
- 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. A permanent waterproof barrier is created by sealing the block edges to each other with a sealant: Marmox MSP360, supplied in **300ml tubes**: -

Marmox Thermoblock 100mm wide require 1 cartridge per 36 blocks
 Marmox Thermoblock 140mm wide require 1 cartridge per 24 blocks
 Marmox Thermoblock 215mm wide require 1 cartridge per 20 blocks

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

Specification: CMW4 (*Cavity Masonry Wall #4*)
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.

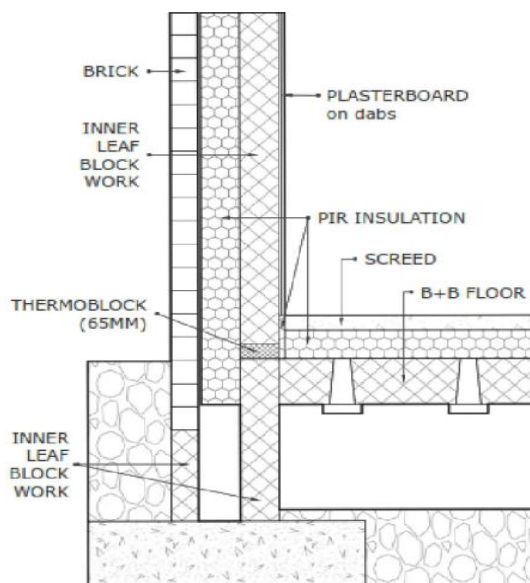
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of two rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating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

Properties: Average λ value of 0.05W/mK (to EN13164/EN13167)
 Mean compressive strength of 9.0N/mm² (to EN772-1)
 Water Absorption <3.5% (to EN771-4).
 Fire resistance >120minutes (to EN1365-1)

Dimensions: Length = 600mm, Thickness = 65mm or 100mm, Width = 100mm, 140mm or 215mm

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/m ² K)	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.

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
- Thermoblock edges are sealed together with a ribbon of Marmox MSP360 on the stepped edges to provide a waterproof barrier and improve air-tightness.
- *Thermoblock is waterproof so can therefore be used either above or below the DPC.*

Authorities: BBA certified (10/4778)
ISO9001 (Bureau Veritas)
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 layer 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. A permanent waterproof barrier is created by sealing the block edges to each other with a sealant: Marmox MSP360, supplied in **300ml tubes**: -

Marmox Thermoblock 100mm wide require 1 cartridge per 36 blocks
Marmox Thermoblock 140mm wide require 1 cartridge per 24 blocks
Marmox Thermoblock 215mm wide require 1 cartridge per 20 blocks