marmox thermoblock
Reduce heat loss at the base of walls

Specifications at the base of Solid, External leaf and ICF Walls

This document contains TWO specifications using Thermoblock when used at the base of Solid Walls, External Leaves or ICF walls, with (*or without*) Rebars with the following floor types

Junction Detail	Click the Hyper-link	SAP default ψ value	SBEM default ψ value
Beneath an **ICF Wall** / **Rebar** reinforced concrete wall	REBAR	0.32	0.36
Beneath a **solid** masonry wall / **external** leaf	EXTERNAL	0.32	0.36

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

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.

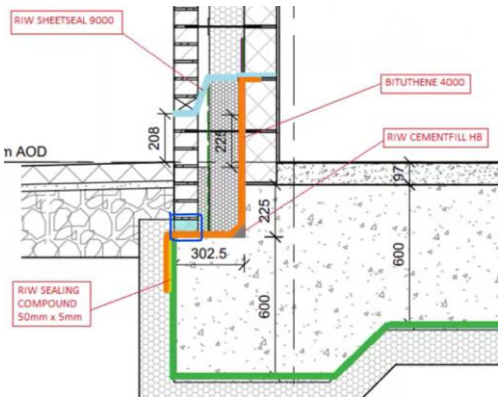
Description: Marmox Thermoblock is a load-bearing thermal break for use in walls. It comprises load-carrying epoxy-concrete columns which are bonded to the upper and lower surfaces which are polymer-concrete reinforced with fibreglass mesh. Thermally insulating Extruded Polystyrene surrounds these columns.

Properties: 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, Thickness = 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.

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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

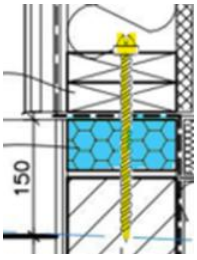
- Lay bricks/blocks on top using a standard mortar.

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

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

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 – *see limitation #6*
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. A bead of Marmox MSP-360 (*sealant*) is used along the short width of the Thermoblock edges to seal them together.
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.

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. A bead of Marmox MSP-360 (*sealant*) is used along the short width of the Thermoblock edges to seal them together.
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.

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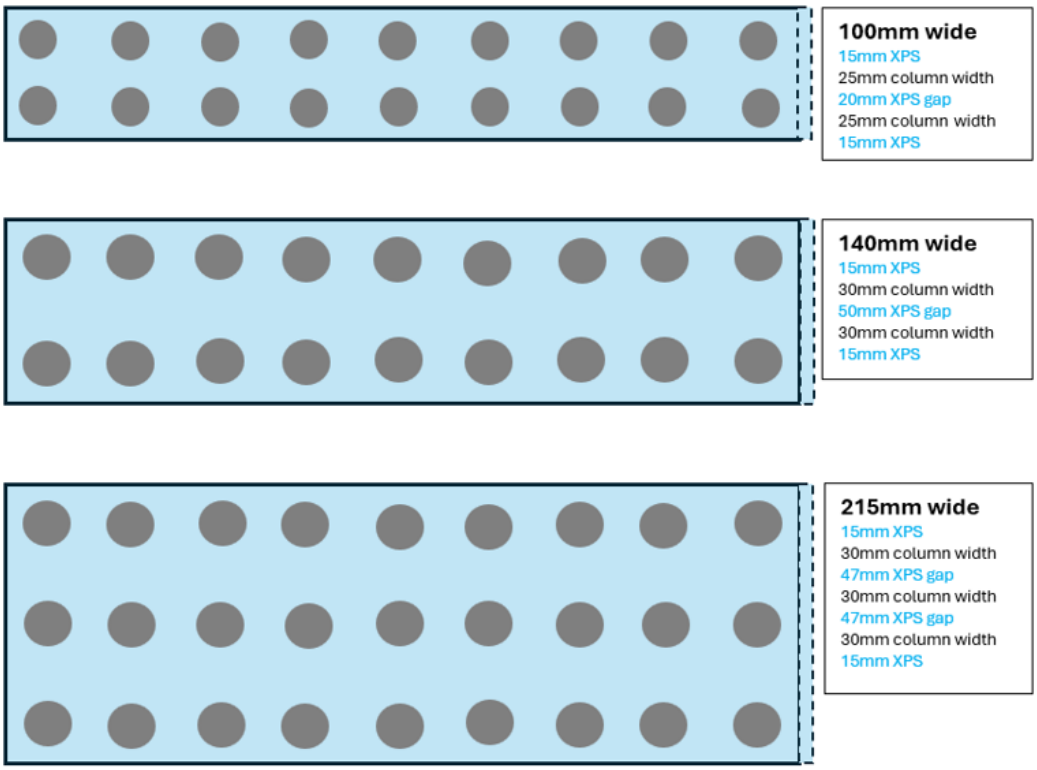
Specification to eliminate or reduce thermal bridge within a REBAR Reinforced Concrete Wall

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.