marmox thermoblock
Reduce heat loss at the base of walls

Specifications at the base of External and ICF Walls

This document contains TWO specifications using Thermoblock when used at the base External walls and also with 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	EXTWALL	0.32	0.36

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Specification to eliminate or reduce thermal bridge at the base of a solid masonry 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.

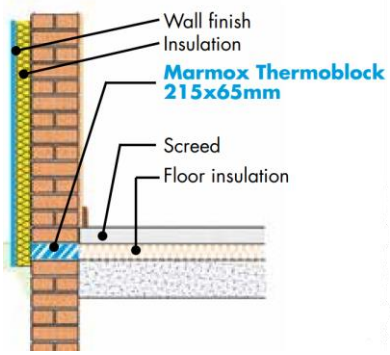
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of two rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating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

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

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

Thermoblock is positioned at the base of the solid wall or outer leaf of a wall at a height where it can connect with the floor insulation.
Thermoblock does not absorb moisture, it can therefore be used above and below ground level.
A protective cement-based layer must be applied to the exposed face.

Example Specification



- Using standard sand/cement mortar, a single course of Thermoblock is mortared onto the foundation blocks of the outer leaf or solid masonry wall in line with the floor insulation.
- It is essential that the stepped edges are sealed together using a bead of Marmox MSP-360
- If the vertical surface is to be subsequently rendered: A piece of mesh/scrim tape should be folded over the top of the Thermoblock when mortaring the blocks on top so that it falls down covering the exposed polystyrene face. Not necessary is EWI is to be subsequently placed over the vertical surface
- Lay bricks/blocks on top using a standard mortar. If using aircrete blocks or Porotherm blocks, this initial layer of mortar should be at least 15mm.
- Apply a cement-based render or cementitious boarding over the vertical face of the Thermoblock is it is exposed.

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

Treatment: The vertical sides of the Marmox Thermoblock must not 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.*

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*)

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.

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 depth and width as the 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.

Authorities: ISO9001 (Bureau Veritas)
BRE – Certified Thermal Products Scheme, *http://www.bre.co.uk/certifiedthermalproducts/*
Fire Safety Report: 16781B (Warrington Fire)

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.

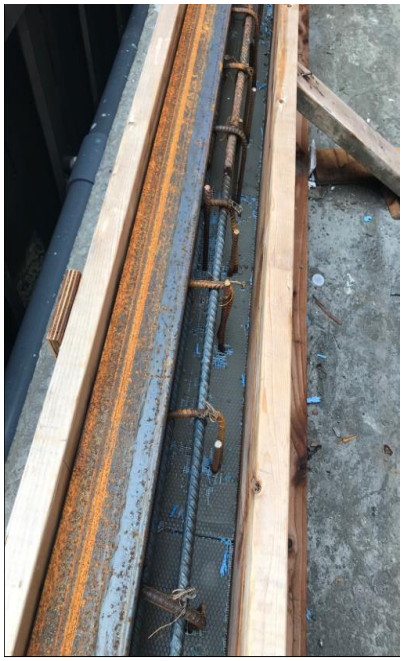
Description: Marmox Thermoblock is a load-bearing heat-insulating building block consisting of two rows of load-carrying epoxy-concrete columns of low thermal conductivity bonded to polymer concrete layers reinforced with fibreglass mesh which comprise the upper and lower surfaces. Thermally insulating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

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

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.

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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 (Bureau Veritas)
BRE – Certified Thermal Products Scheme, http://www.bre.co.uk/certifiedthermalproducts/
Fire Safety Report: 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. 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.

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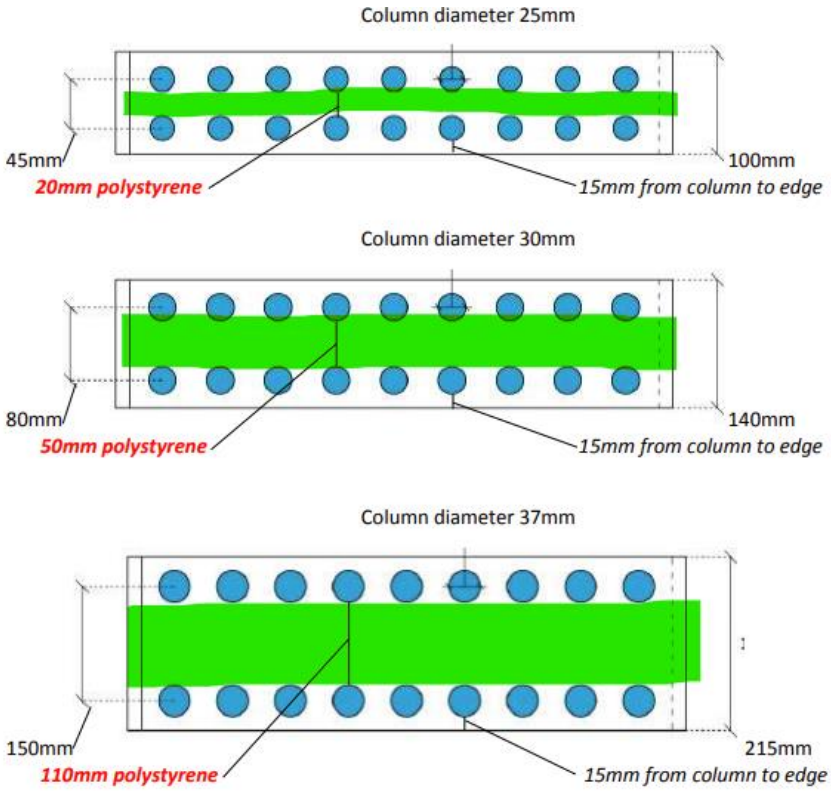
Specification to eliminate or reduce thermal bridge within a REBAR Reinforced Concrete Wall

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

- *20mm wide corridor with the 100mm block*
- *50mm wide corridor with the 140mm block*
- *110mm wide corridor with the 215mm block*.



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.