

Specifications at the base of Thresholds

This document contains TWO specifications using Thermoblock used under door thresholds and under windowsills.

Junction Detail	Click the Hyper-link	SAP default ψ value	SBEM default ψ value
E5 Door Thresholds			
Door Threshold junction	<u>THRESHOLD</u>	0.32	0.36
E3 Window Sill			
Beneath windowsill in cavity wall	<u>SILL</u>	0.10	0.12

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 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.

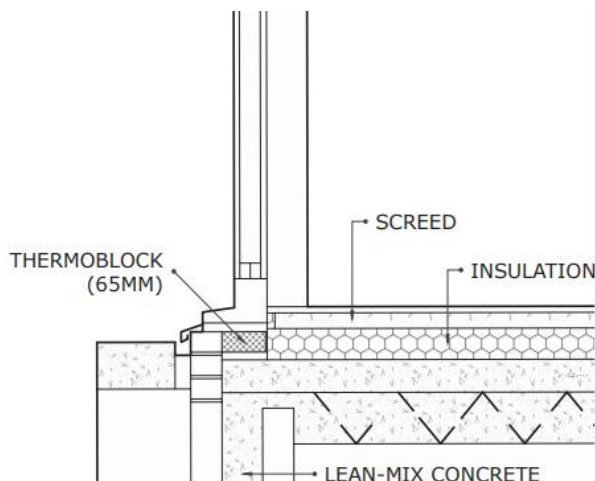
Properties: Average λ value of 0.05W/mK (to EN13164/EN13167)
 Mean compressive strength of 9.0N/mm² (to EN772-1)
 Fire resistance >120minutes (to EN1365-1) Applicable to some details
 Water Absorption <3.5% (to EN771-4).

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

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.

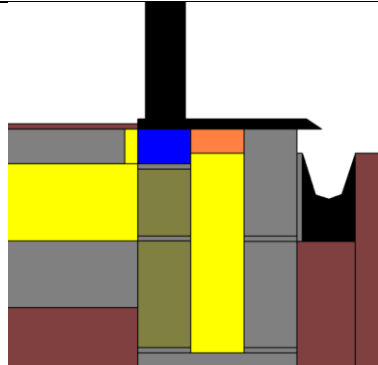
In principle, the Thermoblock sits underneath the door frame to create a thermal break such as shown below.



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.

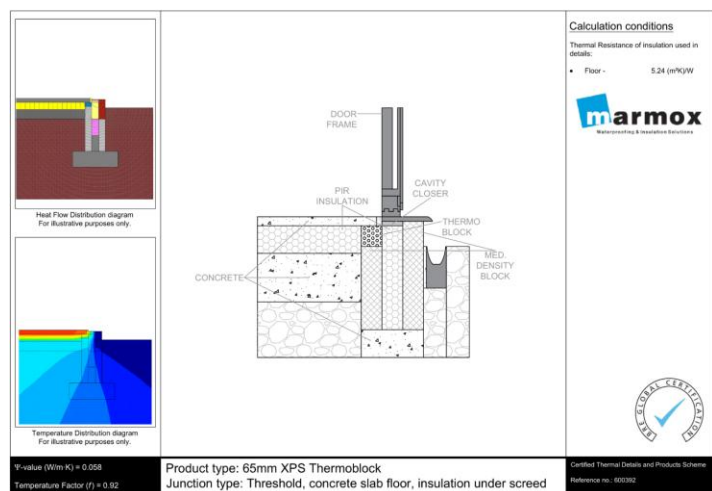
Specification to eliminate or reduce thermal bridge at a door Threshold

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

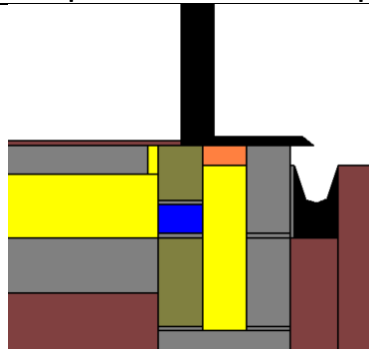


The ψ value of this particular junction has been calculated and published by the BRE in their Certified Thermal Details Scheme giving a ψ value of 0.058W/mK

- 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.

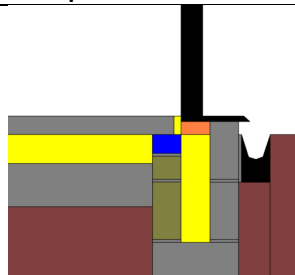


Example 2 – When the frame is partially supported on the inner leaf



- 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.**

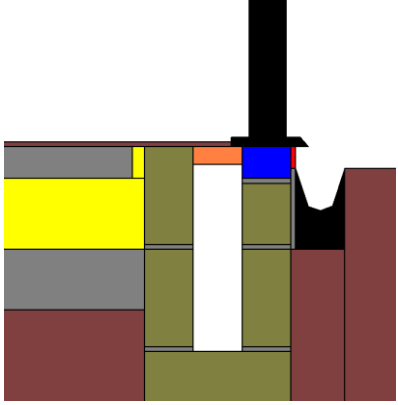
Example 3 – When the frame is supported on the outer leaf



- 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**

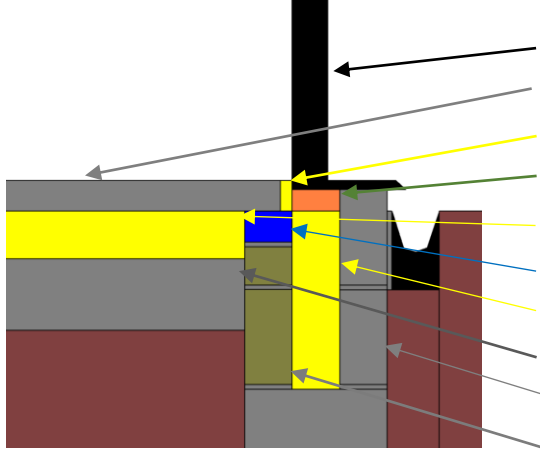
Specification to eliminate or reduce thermal bridge at a door Threshold

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 ($\lambda = 0.021\text{W/mK}$)
- Cavity closer ($\lambda = 0.034\text{W/mK}$)
- PIR Floor insulation ($\lambda = 0.021\text{W/mK}$)
- Marmox Thermoblock, 65mm ($\lambda = 0.05\text{W/mK}$)
- Below ground cavity insulation ($\lambda = 0.034\text{W/mK}$)
- Concrete slab
- Dense concrete block ($\lambda = 1.60\text{W/mK}$)
- Medium density concrete block ($\lambda = 0.062\text{W/mK}$)

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 underneath a supporting wall - use only one course.

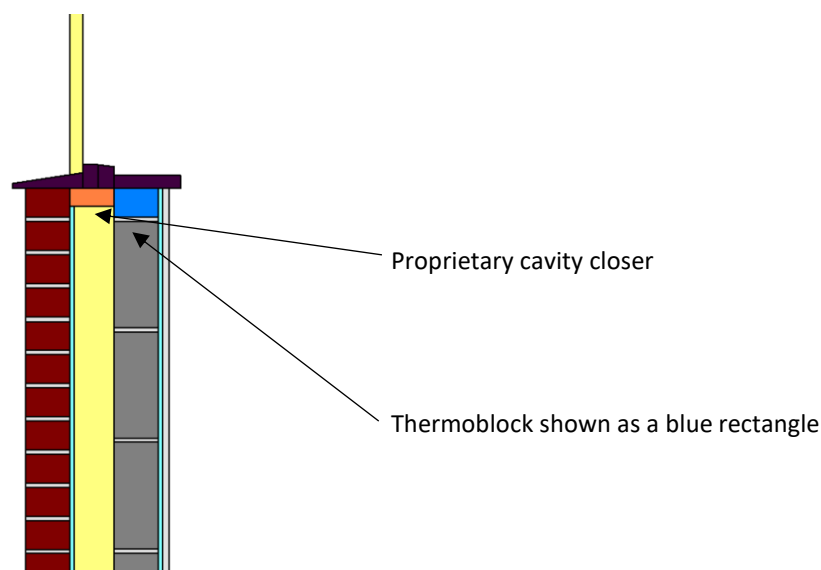
Specification to eliminate or reduce thermal bridge under a Window Sill

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

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

Typical Detail



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.