

Cavity-Wall Insulation: Partial-Fill

Jablok

Jablok is a tongued-and-grooved partial-fill cavity-wall insulation system designed to be incorporated into new masonry walls during construction to satisfy the Building Regulations' U-value requirements. The insulation is retained against the inner leaf by clips on the wall ties.

- **Low thermal transmittance**

Depending primarily on the block chosen for the construction of the inner leaf, 75mm thickness of Jablok will typically improve the U-value of a cavity wall to 0.35W/m²K.

- **Maintains the cavity**

The use of Jablok ensures that an air gap is maintained in the cavity-wall construction. This means, subject to compliance with its British Board of Agrément Certificate, that the boards can be used in walls in exposed situations.

- **Fully interlocking**

Jablok is tongued-and-grooved on all four sides for a positive fit and to prevent water penetration at the joints.

- **Permanent**

Jablok is rot-proof and durable and will remain effective for the life of the building; the recommended fixing methods will retain the boards permanently in position.

- **Rapid, economical construction**

The boards are available in sizes to suit block coursing and tie centres, and are simply clipped into position as construction of the wall proceeds. Adjoining Jablok boards provide mutual support and fewer retaining clips are required, thus speeding construction.

Table 14. Maximum allowable total exposure factors

Construction	Maximum allowable exposure factor, E, calculated in accordance with BS 5618
All external masonry walls protected by rendering to BS 5262; tile or slate hanging; timber, plastic or metal weatherboarding or cladding	no restriction
One or more masonry walls constructed from clay facing bricks or natural stone, with a porosity exceeding 20% by volume. Mortar joints must be flush-pointed or weatherstruck.	100
One or more masonry walls constructed from calcium-silicate bricks, concrete blocks, or natural or reconstituted stone, with a porosity not exceeding 20% by volume, or any material with raked mortar joints.	88
Any buildings above 12m high, and not exceeding 25m: a maintained cavity of 50mm is required. The exposure factor E must not exceed 120.	

- **Easy to cut and fit**

If required, boards can be easily cut to length using a sharp trowel or knife. No specialised trades or equipment are required.

- **Easy to handle**

Jablok is manufactured from expanded polystyrene (EPS), and is lightweight and easy to handle.

APPROVALS

Jablok has been assessed and approved by the British Board of Agrément for use in cavity walls to a maximum height of 25m with a 50mm cavity, and 12m with a 25mm cavity; Certificate number 89/2179.

TYPE

Jablok is supplied as EPS 70 as defined in BS EN 13163. Flame-retardant additive material is available to order.

DIMENSIONS

1213 x 463mm (cover size 1200 x 450mm)
Standard size, 1200 x 450mm.
Thickness, 40, 50, 60 and 75mm;
other thicknesses available to order.

SHAPE

Jablok boards are tongued-and-grooved on all four edges.

U-VALUES

Table 15 describes a selection of common cavity-wall constructions using a range of materials for both the inner and outer leaf, and gives the thickness of Jablok required to achieve a U-value of 0.35W/m²K. Their calculation complies with the calculation procedures contained in the 'Conventions for U-value calculations' document accompanying the Building Regulations. This takes into account, mortar joints, air gap connections, wall ties and linings as necessary.

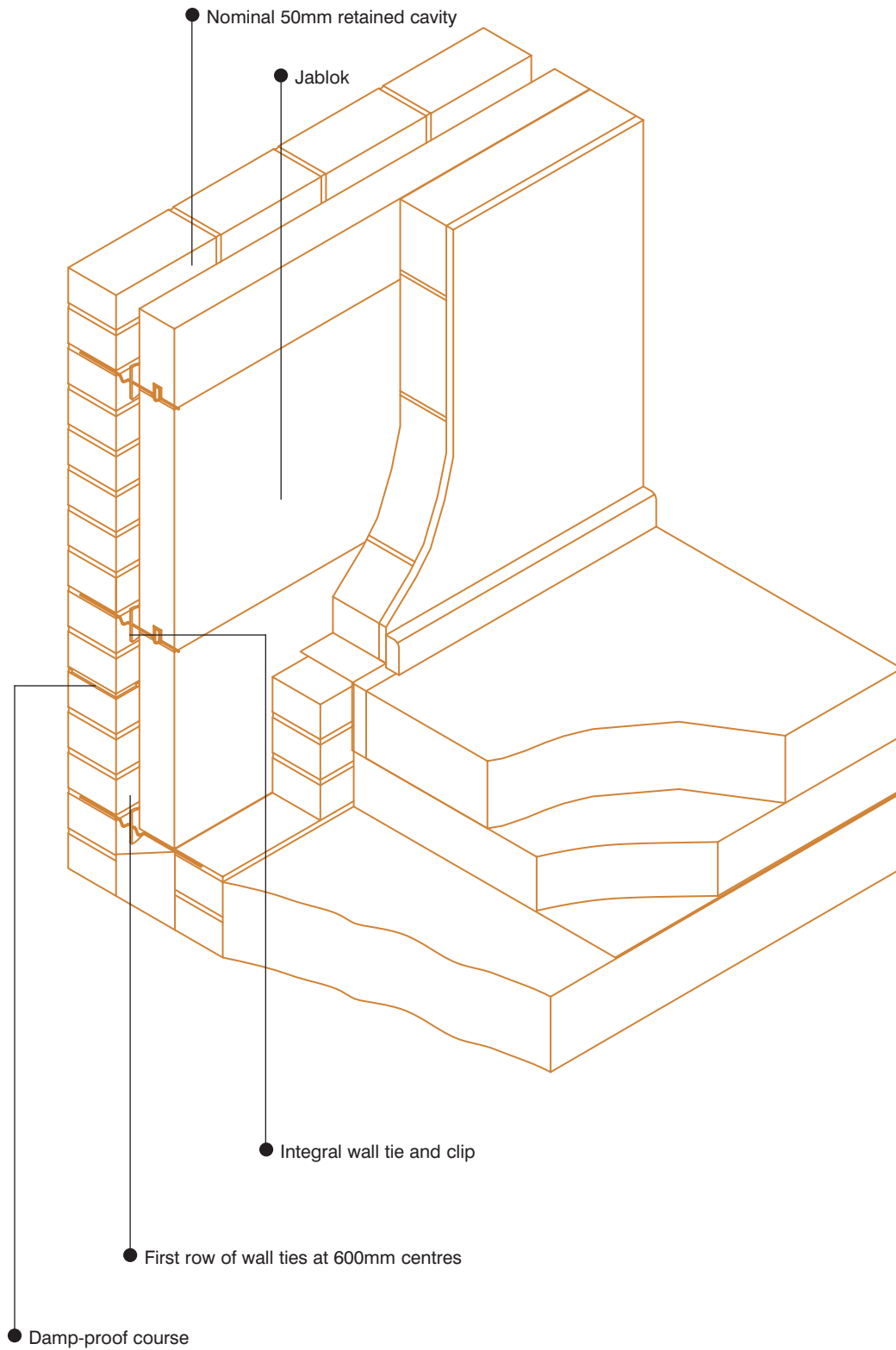
The values given are based on a k-value of 0.038W/mK for the insulation.

In most cases, the actual thickness of Jablok required according to this calculation will not correspond with the nominal thicknesses available. The next thickest nominal size should be used which will provide a performance which better the required U-value.

Cavity-Wall Insulation: Partial-Fill

Jablok

Figure 55.



Cavity-Wall Insulation: Partial-Fill

Jablok

THERMAL RESISTANCE

The thermal resistance, R-value, of Jablok for each thickness is as follows:

40mm	1.05m ² K/W
50mm	1.30m ² K/W
60mm	1.55m ² K/W
75mm	1.95m ² K/W

These figures can be used for calculating U-values for constructions not described in Table 15.

WATER PENETRATION

Water penetration should not occur in external walls where a cavity of 50mm or more is maintained, and this allows Jablok to be incorporated into walls in any exposure zone. A nominal 50mm cavity also satisfies the requirements of the NHBC.

The conditions of the BBA Certificate (number 89/2179) state that if the maintained cavity is 50mm or more, then Jablok can be used in buildings up to 25m high in any exposure zone. If the cavity is less than 50mm but not less than 25mm, the height restriction is reduced to 12m where the Exposure Factor is within the limits set out in Table 14.

In order to minimise the risk of water penetration, in all situations it is particularly important to ensure that the following procedures are carried out:

- Jablok should be installed to the highest level on each wall, or the top edge of the wall should be protected by a cavity tray with appropriate weep holes in the mortar joints.

- Wall ties and fixings must be correctly installed, sloping towards the external leaf and free from mortar droppings or other debris.
- Excess mortar should be cleaned from the cavity face of the inner leaf, and any debris removed from the cavity.
- Mortar droppings should be cleaned from the exposed edges of the Jablok boards as installation proceeds.

The tongued-and-grooved edge detail of Jablok has been designed to minimise the risk of water penetration through the joints.

Water-vapour transmission

Jablok should not be regarded as a damp-proof membrane (DPM) or vapour-control layer.

FIRE

When properly installed, Jablok is fully protected by the masonry and will have no adverse effect on the fire resistance of the wall. Although Jablok is a combustible material, it is unlikely that there will be sufficient air present in the cavity to support combustion.

Where the cavity exceeds 100mm in width, fire-resisting cavity barriers should be incorporated into the construction as required by the Building Regulations.

In all cases, the cavity should be 'closed'.

Euroclass E, flame-retardant additive material is available to order.

INSTALLATION

Figure 56 gives a typical installation of Jablok, showing how the insulation should be extended below the damp-proof course (DPC) level to provide floor-edge insulation. The illustration also shows the tongued-and-grooved board-to-board joints, and the correct use of insulation-retaining clips on the wall ties.

The clips, which should be of a BBA-approved design, should be placed so as to secure the boards at the top and bottom edges, ensuring that the minimum cavity dimension is maintained. It is important to use the correct length of wall tie in relation to the thickness of the insulation and the width of the cavity wall. Further information can be obtained by consulting the wall-tie manufacturer's literature.

Damp-proof membrane

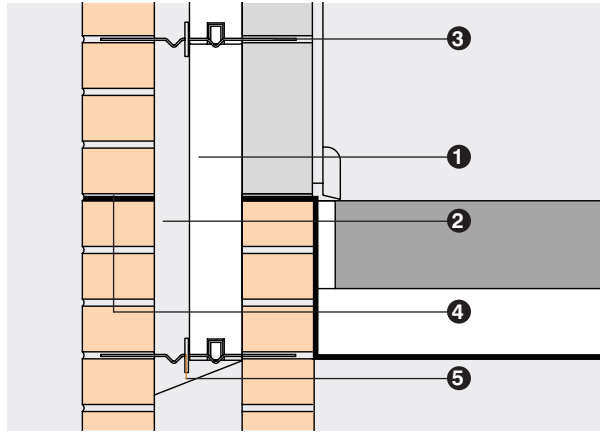
Jablok should not be regarded as a DPM and both vertical and horizontal DPCs should be installed as required in accordance with normal good practice.

For buildings where the floor structure penetrates the external-wall cavity, for example at balcony positions, a horizontal damp-proof tray should be installed immediately above the upper limit of the insulation in order to avoid the transfer of moisture to the inner leaf.

Cavity-Wall Insulation: Partial-Fill

Jablok

Figure 56.
Wall/floor junction detail



1. Jablok
2. Nominal 50mm retained cavity
3. Integral wall tie and clip
4. Damp-proof course
5. First row of wall ties at 600mm centre

Cavity-Wall Insulation: Partial-Fill

Jablok

Construction procedure

The walls are constructed in the normal way but the inner leaf should be advanced to sufficient height to allow the insulation boards to be installed and fixed before continuing the construction of the outer leaf.

The first row of insulation-retaining ties should be positioned at the base of the lowest insulation board but not directly on the DPC; the ties should be located at 600mm horizontal centres. Subsequent ties should be placed at 450mm centres vertically, and 600mm horizontally, to suit the vertical coursing configuration and the insulation board retention requirements.

When the first row of boards needs trimming to height to meet course requirements, this must be carried out on the bottom edge of the boards. The clips are fitted onto the ties so as to restrain the top and bottom edges of the boards as the work proceeds.

The boards should be installed in such a way that the edges are tightly butted and interlocked.

If the construction sequence requires the external leaf to be raised before the inner, then the insulation should be installed against the outer leaf in the same way as described above. This form of construction also has BBA approval.

After raising each section of the inner leaf, excess mortar should be removed and any mortar droppings cleaned from the top edges of the insulation boards.

The use of a cavity board is recommended to protect the edges of the insulation during construction and to facilitate cleaning. Similarly, a cavity batten will protect the installed boards and help to keep the cavity clean as the following section of wall is constructed.

BS 5628: Part 3 gives further information on the protection of work in progress.

Cutting

The insulation boards can be cut with a craft knife or a fine-tooth saw to fit around apertures in the brick or blockwork. For general cutting to length, a sharp-edged trowel gives a good line of cleavage.

REFERENCES

BS 5262 Code of practice for external renderings.

BS 5628 Code of practice for use of masonry: Part 3, materials and components, design and workmanship.

BS EN 13163 Thermal insulation products for buildings - Factory made products of expanded polystyrene (EPS) - Specification.

SJLW

Walls

Table 15. Thickness of Jablok required to achieve U-value of 0.35W/m²K

Inner leaf construction and finish	Outer leaf construction and finish:																				
	150mm stone			102.5mm brickwork			100mm dense concrete block			100mm lightweight concrete block			100mm AAC block			100mm SAAC block					
	fair-faced	render	tiles	fair-faced	render	tiles	fair-faced	render	tiles	fair-faced	render	tiles	fair-faced	render	tiles	fair-faced	render	tiles			
102.5mm brick																					
fair-faced	90	85	85	90	85	85	90	90	85	85	85	85	85	85	85	75	75	75	75	75	75
13mm dense plaster	90	85	85	90	85	85	90	85	85	85	85	85	85	85	85	75	75	75	75	75	75
13mm lightweight plaster	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	75	75	75	75	75	75
12.5mm plasterboard on dabs	85	85	85	85	85	85	85	85	85	85	85	85	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on studs	85	75	75	85	75	75	85	85	75	75	75	75	75	75	75	75	75	75	75	75	75
100mm dense concrete block																					
fair-faced	90	90	85	90	90	85	90	90	90	85	85	85	85	85	85	75	75	75	75	75	75
13mm dense plaster	90	90	85	90	85	85	90	90	85	85	85	85	85	85	85	75	75	75	75	75	75
13mm lightweight plaster	85	85	85	85	85	85	90	85	85	85	85	85	85	85	85	75	75	75	75	75	75
12.5mm plasterboard on dabs	85	85	85	85	85	85	85	85	85	85	85	85	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on studs	85	85	75	85	85	75	85	85	85	75	75	75	75	75	75	75	75	75	75	75	75
100mm lightweight concrete block																					
fair-faced	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	75	75	75	75	75	75
13mm dense plaster	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	75	75	75	75	75	75
13mm lightweight plaster	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	75	75	75	75	75	75
12.5mm plasterboard on dabs	85	75	75	85	75	75	85	75	75	75	75	75	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on studs	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
100mm aerated concrete block																					
fair-faced	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
13mm dense plaster	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
13mm lightweight plaster	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on dabs	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on studs	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
100mm super-aerated concrete block																					
fair-faced	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
13mm dense plaster	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
13mm lightweight plaster	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on dabs	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on studs	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
100mm super-aerated concrete block																					
fair-faced	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
13mm dense plaster	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
13mm lightweight plaster	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on dabs	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
12.5mm plasterboard on studs	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75

Key

