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Agrément Certificate
96/3215
Product Sheet 1

JABLITE FULL FILL CAVITY WALL INSULATION

JABFILL - HIGH PERFORMANCE (HP)

This Agrément Certificate Product Sheet(1) relates to Jabfill - High Performance (HP), a shape-moulded expanded polystyrene (EPS) board for use as full fill thermal insulation in external masonry cavity walls up to 25 m in height, in new buildings of a domestic and non-domestic nature (additional requirements apply for buildings above 12 metres in height). The product is installed during construction.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Thermal performance — the product has a declared thermal conductivity (λ_D) of 0.032 $W \cdot m^{-1} \cdot K^{-1}$ (see section 6).

Water resistance — the product will resist the transfer of water across the cavity (see section 7).

Condensation — the product can contribute to limiting the risk of condensation (see section 8).

Behaviour in relation to fire — the product has an E reaction to fire classification to BS EN 13501-1 : 2007 (see section 9).

Durability — the product is durable, rot-proof, water resistant and sufficiently stable to remain effective as insulation for the life of the building (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Sixth issue: 20 March 2017

John Albon – Head of Approvals Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 15 March 1996

Certificate amended on 21 March 2019 to include Regulation 7(2) for England and associated text.

The BBA is a UKAS accredited certification body – Number 113.

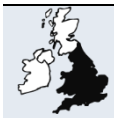
The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

Regulations

In the opinion of the BBA, Jabfill - High Performance (HP), if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**B3(4)**	**Internal fire spread (structure)**
Comment:		The product is restricted by this Requirement. See sections 9.1 to 9.3 and 9.5 of this Certificate.
Requirement:	**C2(a)**	**Resistance to moisture**
Comment:		The product can contribute to satisfying this Requirement. See section 7.1 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The product can contribute to satisfying this Requirement. See section 7.2 of this Certificate.
Requirement:	**C2(c)**	**Resistance to moisture**
Comment:		The product can contribute to satisfying this Requirement. See sections 8.1 and 8.4 of this Certificate.
Requirement:	**L1(a)(i)**	**Conservation of fuel and power**
Comment:		The product can contribute to satisfying this Requirement. See section 6 of this Certificate.
Regulation:	**7**	**Materials and workmanship (applicable to Wales only)**
Regulation:	**7(1)**	**Materials and Workmanship (applicable to England only)**
Comment:		The product is acceptable. See section 12 and the *Installation* part of this Certificate.
Regulation:	**7(2)**	**Materials and Workmanship (applicable to England only)**
Comment:		The product is restricted by this Regulation. See sections 9.1 to 9.3 and 9.5 of this Certificate.
Regulation:	**26**	**CO_2 emission rates for new buildings**
Regulation:	**26A**	**Fabric energy efficiency rates for new dwellings (applicable to England only)**
Regulation:	**26A**	**Primary energy consumption rates for new buildings (applicable to Wales only)**
Regulation:	**26B**	**Fabric performance values for new dwellings (applicable to Wales only)**
Comment:		The product can contribute to satisfying these Regulations. See section 6.2 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)**	**Durability, workmanship and fitness of materials**
Comment:		The product can contribute to a construction satisfying this Regulation. See section 12 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is restricted by this Standard with respect to clauses 2.6.5[(1)] and 2.6.6[(2)]. See sections 9.1, 9.4 and 9.5 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The product is restricted by this Standard with respect to clause 2.7.2[(2)]. See sections 9.1, 9.4 and 9.5 of this Certificate.

Standard:	3.4	Moisture from the ground
Comment:		The product can contribute to a construction satisfying this Standard, with reference to clause 3.4.1[(1)(2)]. See section 7.1 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product can contribute to satisfying this Standard, with reference to clause 3.10.1[(1)(2)] provided it complies with the conditions set out in section 7.2 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.15.1[(1)(2)], 3.15.4[(1)(2)] and 3.15.5[(1)(2)]. See sections 8.1 and 8.5 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying clauses, or parts of clauses, 6.1.1[(1)], 6.1.2[(2)], 6.1.6[(1)], 6.2.1[(1)(2)], 6.2.3[(1)], 6.2.4[(2)], 6.2.5[(2)] 6.2.9[(1)] and 6.2.11[(2)] of these Standards. See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and, therefore, will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4[(1)(2)] [Aspects 1[(1)(2)] and 2[(1)]], 7.1.6[(1)(2)] [Aspects 1[(1)(2)] and 2[(1)]] and 7.1.7[(1)(2)] [Aspect 1[(1)(2)]]. See section 6.1 of this Certificate.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		All comments given for the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	**23**	**Fitness of materials and workmanship**
Comment:		The product is an acceptable material. See section 12 and the *Installation* part of this Certificate.
Regulation:	**28(a)**	**Resistance to moisture and weather**
Comment:		The product can contribute to a construction satisfying this Regulation. See section 7.1 of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The product can contribute to satisfying this Regulation. See section 7.2 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		The product can contribute to satisfying this Regulation. See section 8.1 of this Certificate.
Regulation:	**35(4)**	**Internal fire spread - structure**
Comment:		The product is restricted by this Regulation. See sections 9.1, 9.3 and 9.5 of this Certificate.
Regulation:	**39(a)(i)**	**Conservation measures**
Regulation:	**40(2)**	**Target carbon dioxide emission rate**
Comment:		The product can contribute to satisfying these Regulations. See section 6 of this Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.4) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of Jabfill - High Performance (HP), other than in very severe exposure locations with fair-faced masonry; provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13163 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Jabfill - High Performance (HP), comprises a grey EPS 70 expanded polystyrene shape-moulded insulation board.

1.2 The boards have the nominal characteristics of:

- size (mm) 1200 by 450 (nominal)
- thickness(1) (mm) 75, 100, 125 and 150.

(1) Includes projecting flutes (see Figure 2).

1.3 Each board incorporates a tongue-and-groove edging on all four edges, enabling the boards to interlock when installed.

1.4 The external face of the board incorporates tapered flutes to provide a drainage plane, shedding water away from the internal leaf and acting as a guide to the construction of the outer leaf. Each board is marked to identify the correct orientation for installation (see Figures 1 and 2).

Figure 1 Jabfill - High Performance (HP) panel (all dimensions in mm)

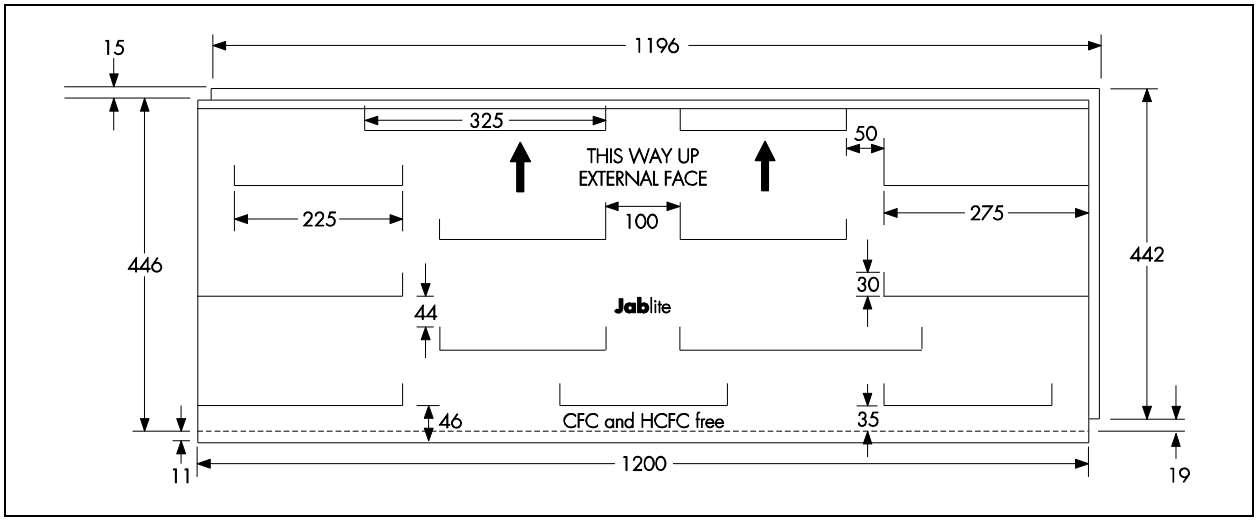
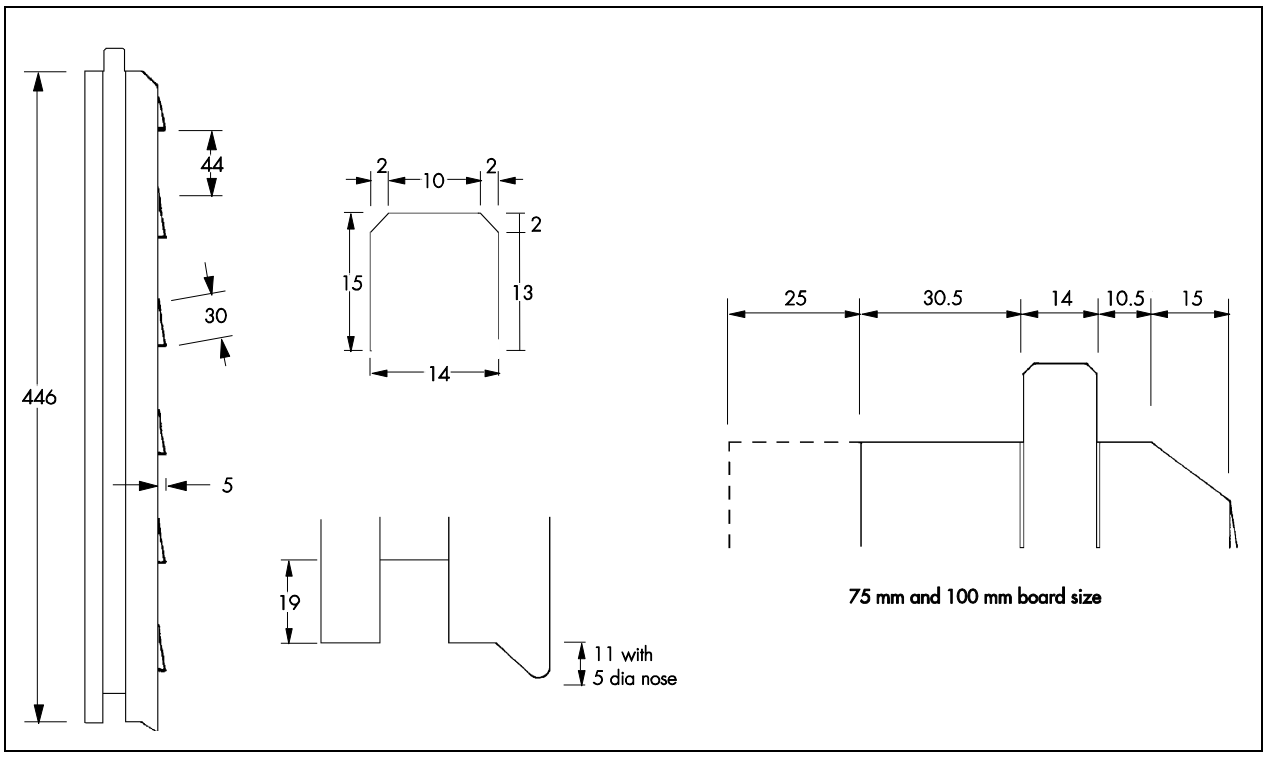


Figure 2 Jabfill - High Performance (HP) panel — side elevation (all dimensions in mm)



2 Manufacture

2.1 Jabfill - High Performance (HP) insulation is manufactured from carbon-enriched EPS (grey expanded polystyrene). The material comprises expandable beads of polystyrene pre-foamed and fused together in a steam-heated shape mould under pressure.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control being operated by the manufacturer are being maintained.

2.3 The management system of Jablite Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by British Standards Institute (Certificates FM/01260 and EMS/559414 respectively).

3 Delivery and site handling

3.1 The product is delivered to site in polythene wrapped packs. Each pack of boards contains a label with the manufacturer's name, board dimensions, and the BBA logo incorporating the number of this Certificate.

3.2 The product must be protected from prolonged exposure to sunlight, and stored dry, flat and raised above ground level (to avoid contact with ground moisture). If stored outside, they should be under cover, or protected with opaque polythene sheeting.

3.3 The product is light and easy to handle; care should be exercised to avoid crushing the edges or corners. If damaged the product should be discarded. If accidentally allowed to become wet, the boards should be allowed to dry fully before installation.

3.4 The boards must not be exposed to open flame or other ignition sources, or to solvents or other chemicals.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Jabfill - High Performance (HP).

Design Considerations

4 Use

4.1 Jabfill - High Performance (HP) is satisfactory for use as a full fill cavity wall insulation and is effective in reducing the thermal transmittance (U value) of external cavity walls with masonry inner and outer leaves (where masonry includes clay and calcium silicates bricks, concrete blocks, natural and reconstituted stone blocks). The product is for use in new domestic and non-domestic buildings up to 25 m in height. It is essential that such walls are designed and constructed to incorporate the precautions given in this Certificate to prevent moisture penetration.

4.2 This Certificate covers the use of the product in any exposure zone. However, use of the product does not preclude the need to apply any external render coat or other suitable finish in severe exposure zones where such application would be normal practice.

4.3 As with any other forms of cavity wall insulation, where buildings need to comply with *NHBC Standards*, specifiers should observe the requirements of that document.

4.4 Buildings subject to national Building Regulations should be constructed in accordance with the relevant recommendations of:

- BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006 and their respective UK National Annexes
- BS EN 845-1 : 2013 and BS 8000-3 : 2001.

4.5 Other new buildings not subjected to any of the above should also be built in accordance with the Standards given in section 4.4 of this Certificate.

4.6 Cavity wall ties and, if required, any additional ties to BS EN 845-1 : 2013, should be used for structural stability in accordance with BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006.

4.7 Care must be taken in the overall design and construction of walls incorporating the product to ensure the provision of appropriate:

- cavity trays and damp-proof courses (dpc's)
- cavity barriers and fire dampers

- resistance to the ingress of precipitation, moisture and dangerous gases from the ground
- resistance to sound transmission when flanking separating walls and floors.

Buildings over 12 metres high and up to and including 25 metres high

4.8 Where the walls of a building are between 12 and 25 m high, the following requirements also apply:

- from ground level, the maximum height of continuous cavity must not exceed 12 metres. Above 12 metres, the maximum height of continuous cavity must not exceed 7 metres. In both cases, breaks should be in the form of continuous horizontal cavity trays and weepholes discharging to the outside
- the area to be insulated must not be an infill panel in a framed structure
- the Certificate holder in association with the Architect, must carry out the detailed programme of assessment of the project including an examination of the quality of installation as work progresses. Above average site-supervision is recommended during installation.

5 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Thermal performance

6.1 Calculations of the thermal transmittance (U value) of specific external wall constructions should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE Report BR 443 : 2006, using the declared thermal conductivity (λ_D)* of 0.032 $W \cdot m^{-1} \cdot K^{-1}$.

6.2 The value of a completed wall will depend on the insulation thickness, number and type of fixings, the insulating value of the substrate masonry and its internal finish. Calculated U values for example constructions are given in Table 1.

Table 1 Example U values(1) — new buildings

U value requirement ($W \cdot m^{-2} \cdot K^{-1}$)	Jabfill - High Performance (HP) (full fill) — insulation thickness(2) (mm)	
	Plasterboard on dabs 100 mm AAC block(5)	13 mm dense plaster(3) 100 mm dense block(4)
0.18	150	—
0.19	150	—
0.22	125	150
0.25	100	125
0.26	100	125
0.27	100	125
0.28	100	125
0.30	75	100

(1) Assumes fixings correction for fully-penetrating stainless steel fixings (17 $W \cdot m^{-1} \cdot K^{-1}$) at 2.5 per m^2 with a cross-sectional area of 12.5 mm^2, nominal U value and 102 mm thick brick outer leaf.
(2) 3 mm residual cavity assumed fully filled with mortar squeeze, λ = 0.94 $W \cdot m^{-1} \cdot K^{-1}$.
(3) Plaster thermal conductivity of 0.57 $W \cdot m^{-1} \cdot K^{-1}$.
(4) Block and mortar thermal conductivity of 1.13 $W \cdot m^{-1} \cdot K^{-1}$ and 0.88 $W \cdot m^{-1} \cdot K^{-1}$ respectively.
(5) Block and mortar thermal conductivity of 0.12 $W \cdot m^{-1} \cdot K^{-1}$ and 0.88 $W \cdot m^{-1} \cdot K^{-1}$ respectively.

Junctions

6.3 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations. Advice can also be sought from the Certificate holder.

7 Water resistance

7.1 The product may be used in situations where it bridges the damp-proof course (dpc) in walls; dampness from the ground will not pass through to the inner leaf provided the wall is detailed in accordance with the requirements and provisions of the national Building Regulations.

7.2 Constructions incorporating the product, and built in accordance with the Standards listed in section 4.4, will resist the transfer of precipitation to the inner leaf and satisfy the national Building Regulations.

7.3 In all situations it is particularly important to ensure during installation that:

- installation is carried out to the highest level on each wall or the top edge of the insulation is protected by a cavity tray
- cavity trays are used with appropriate stop ends and weep holes at lintel level
- cavity battens and/or boards are used during construction to prevent bridging by mortar droppings
- wall ties are installed correctly and are thoroughly clean
- excess mortar is cleaned from the cavity face of the leading leaf and any debris removed from the cavity
- mortar droppings are cleaned from the exposed edges of installed boards
- dpc's at ground level do not project into the cavity as they can form a trap for mortar bridging
- insulation boards are properly installed and butt-jointed
- raked or recessed mortar joints are avoided in very severe exposure areas.

7.4 Window and door opening reveals should be constructed incorporating a cavity barrier/closer/dpc as required (see sections 14 and 15).

7.5 Wall corners are to be constructed incorporating a vertical dpc as noted in section 15.12.

8 Condensation

Interstitial condensation

8.1 Walls will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011, Annexes D and G, and the relevant guidance.

8.2 The product has a nominal vapour resistivity exceeding 145 $MN \cdot s \cdot g^{-1} \cdot m^{-1}$ and, therefore, will provide significant resistance to water vapour transmission.

8.3 If the product is to be used in the external wall of rooms expected to have high humidity, care must be taken to provide adequate permanent ventilation to avoid possible problems from the formation of interstitial condensation.

Surface condensation

8.4 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W \cdot m^{-2.K-1}$ at any point, and the junctions with other elements are designed in accordance the guidance referred to in section 6.3 of this Certificate.

8.5 For buildings in Scotland, constructions will be acceptable where the thermal transmittance (U value) of the wall does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point and the junctions with other elements are designed in accordance with the guidance referred to in BS 5250 : 2011, Annex G. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 6.3 of this Certificate.

9 Behaviour in relation to fire

9.1 The product has a reaction to fire classification* of Class E to BS EN 13501-1 : 2007.

9.2 In England, the product should not be used on buildings with a storey 18 m or more above ground level that contains; one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

9.3 In England for constructions not covered by section 9.2, and for constructions in Wales and Northern Ireland, the product is not classified as being of limited combustibility but the requirements of the national Building Regulations relating to fire spread in cavity walls can be satisfied in buildings of all-purpose groups without the need for cavity barriers, or restrictions on height or proximity to boundaries, provided the construction complies with the relevant provisions detailed in:

England and Wales — Approved Document B, Volume 1, Diagram 13, or Volume 2, Diagram 34
Northern Ireland — Technical Booklet E, Diagram 4.5.

9.4 In Scotland, the product is not classified as non–combustible but may be used without height restriction in a wall on, or less than 1 m from, a relevant boundary, provided it is installed in a cavity that is between two leaves of masonry at least 75 mm thick, and which has a cavity barrier around all openings in the wall and at the top of the wall head.

9.5 For constructions not covered by sections 9.3 or 9.4, the use of the product is restricted to buildings with no floor more than 18 m above the ground and cavity barriers must be provided to comply with the relevant provisions of the national Building Regulations.

9.6 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity closers and barriers, fire stopping of service penetrations and combustibility limitations for other materials and components used in the overall wall construction.

10 Proximity of flues and appliances

When installing the product in close proximity to certain flue pipes and/or heat-producing appliances, the relevant provisions of the national Building Regulations are applicable:

England and Wales — Approved Document J, sections 1 to 4
Scotland — Mandatory Standard 3.19, clauses 3.19.1[(1)(2)] to 3.19.9[(1)(2)]

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet L, sections 1 to 6.

11 Maintenance

As the product is confined within the wall cavity and it has suitable durability (see section 12), maintenance is not required.

12 Durability

The product is unaffected by the normal conditions in a wall, and is durable, rot-proof, water resistant and sufficiently stable to remain effective as an insulant for the life of the building.

13 Reuse and recyclability

Jablite expanded polystyrene (EPS) is fully recyclable.

14 General

14.1 The Certificate holder's specialists experienced in site practice and installation, on request, will attend the site to provide demonstrations to ensure correct installation from the outset.

14.2 Adequate supervision of the installation must be maintained and the Certificate holder's specialists should have right of access to site to ensure correct installation.

14.3 The internal leaf is constructed ahead of the external leaf. Any mortar protruding into the cavity space from the back of the internal leaf must be cleaned off before installing the product.

14.4 Vertical joints in the boards must be staggered and all joints tightly butted. Where protrusions occur in the cavity, the boards should be carefully cut to fit.

14.5 If installation of the boards is terminated below the highest level of the wall, the top edge of the insulation must be protected by a cavity tray and alternate perpend joints raked out, to provide adequate drainage of water from this tray.

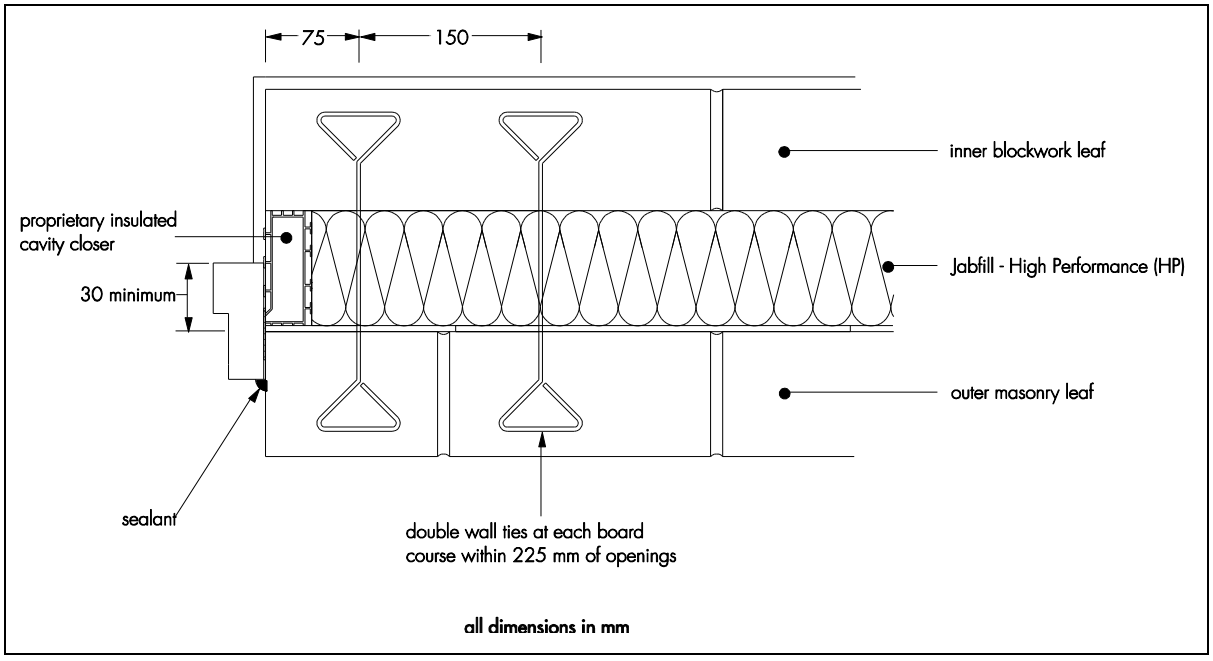
14.6 Where required, door and window reveals should incorporate a cavity barrier/closer (see Figure 3). It is recommended that BBA-approved cavity barriers/closers are used.

14.7 Double-triangle wall ties, without drips, but otherwise conforming to BS EN 845-1 : 2013, are suitable for use with this product. Other ties approved by the Certificate holder may also be suitable.

14.8 Additional ties may be required to satisfy the structural requirements of BS EN 845-1 : 2013, BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006, to ensure adequate retention of boards or cut pieces.

14.9 Additional wall ties at 300 mm vertical centres within 225 mm of all openings are recommended in BS EN 1996-2 : 2006. For this product, this would involve piercing the boards and may introduce an unacceptable risk of water penetration. Therefore, it is recommended that an additional wall tie is included within 225 mm of the opening on each board course level to satisfy the structural requirements of the wall (see Figure 3).

Figure 3 Reveal detail with double ties



14.10 Wall corners must be constructed in accordance with section 15.12 and must incorporate a vertical dpc as shown in Figure 6.

15 Procedure

15.1 A section of the internal leaf is built in the conventional manner, with the first row of wall ties at approximately 600 mm horizontal spacings, where the insulation is to begin. The wall ties should not be placed directly on the dpc. The first run of boards should commence below dpc level to provide some edge insulation for the floor (see Figure 4).

15.2 The external leaf is then built up to a course above the next row of wall ties, which are placed at a vertical spacing of 450 mm vertically, depending on the height of insulation being used and not more than 900 mm horizontally (see BS EN 1996-1-2 : 2005). Excess mortar should be cleaned from the cavity face of the internal leaf.

15.3 Boards are placed between the upper and lower wall ties to form a closely butt-jointed run. It is essential that all wall ties slope downwards towards the outer leaf, to shed water away from the internal leaf.

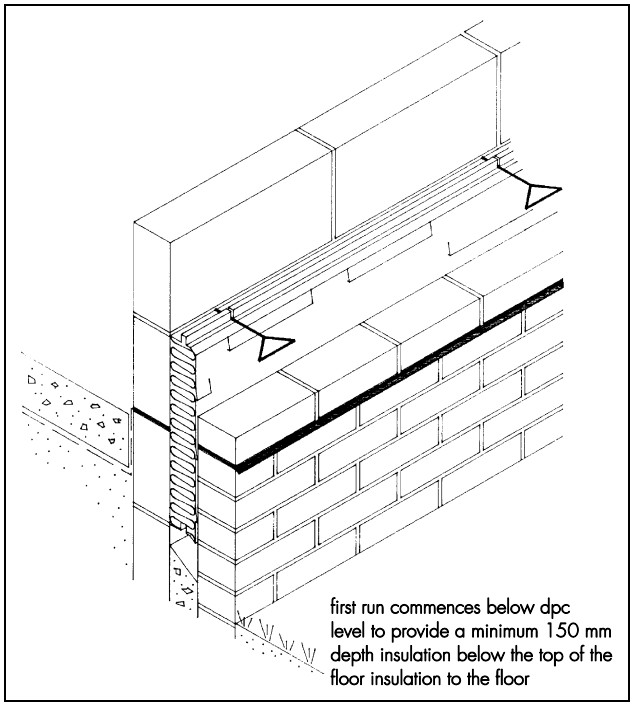
15.4 The boards incorporate a specially designed tongue-and-groove edging and are faced on one side with projecting tapered flutes. For this design to function correctly it is essential that the boards are positioned with the horizontal tongued edge uppermost and the fluted face against the outer leaf.

15.5 The tongued edge is cut with a sharp knife or fine-tooth saw to allow insertion of the double-triangle wall ties. Care must be taken to ensure that only minimal damage is incurred during this process.

15.6 The other leaf is built up to the same level as the boards, with its inner face in contact with the boards.

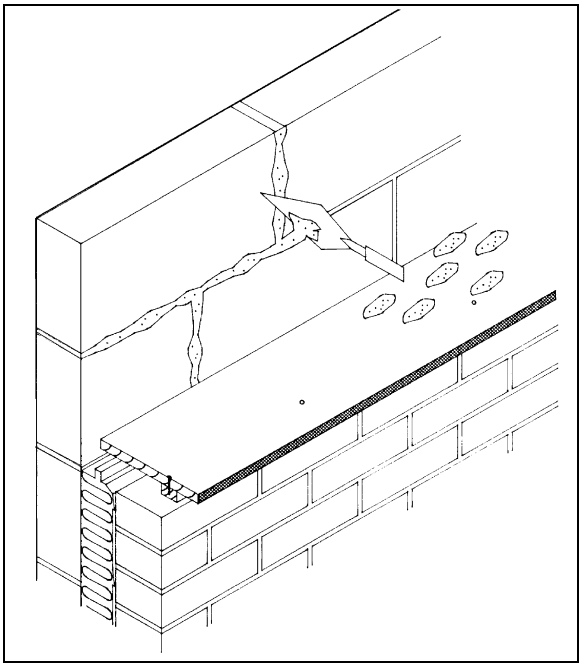
15.7 Successive sections of wall, incorporating wall ties, are constructed and the boards installed as work proceeds up to the required height.

Figure 4 Building in the first row of boards



15.8 After each section of the wall leaf is built, excess mortar should be removed and mortar droppings cleaned from exposed edges of the installed board before installation of the next section. Use of a cavity board is recommended to protect board edges and make cleaning easier (see Figure 5).

Figure 5 Use of cavity board when cleaning off excess mortar



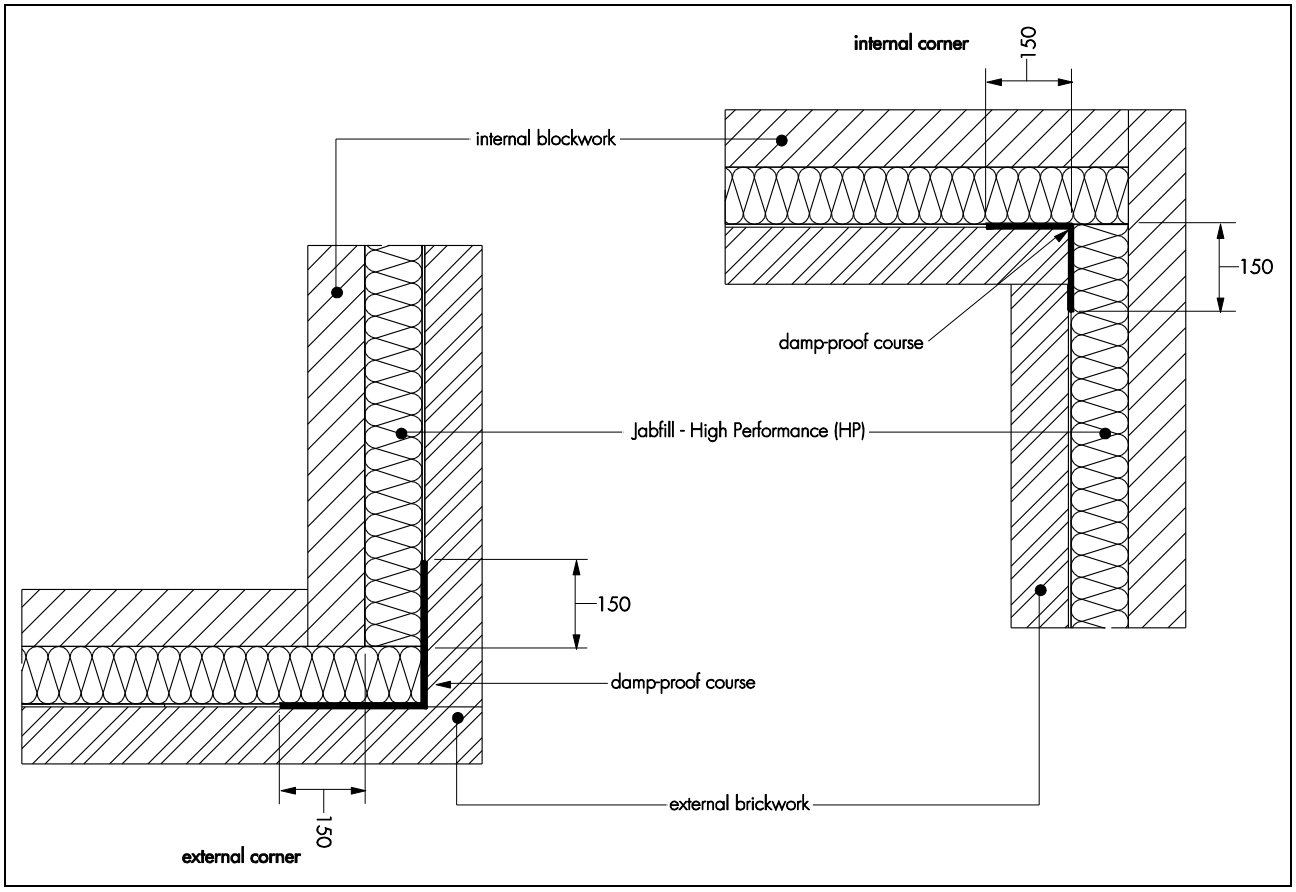
15.9 Boards can be cut using a fine-tooth saw, to fit around windows, doors, air bricks. It is essential that they are cut accurately so that the cut pieces completely fill the spaces for which they are intended and that no gaps are left in the insulation.

15.10 Where openings such as doors and windows are in close proximity, it is recommended that a continuous lintel is used. Damp-proofing at lintel level must be provided with stop ends and weepholes.

15.11 It must be ensured that proprietary cavity barriers/closers are correctly installed at window and door reveals, as illustrated in Figure 3.

15.12 Corner details are formed by interlocking the boards. It is important that they are closely butt-jointed and, therefore, the tongue should be carefully removed where necessary so that all interfaces are uninterrupted. The tapered flutes are removed at internal corners only. All corner details incorporate a vertical dpc with a 150 mm overlap beyond the board ends (at all courses) as shown in Figure 6.

Figure 6 Corner details (all dimensions in mm)



15.13 Exposed areas of board should always be covered at the end of a day's work or in driving rain.

Protection

15.14 All building involving the product, particularly interrupted work, must conform to BS EN 1996-2 : 2006, Sections 3.2 *Acceptance, handling and storage of materials* and 3.6 *Curing and protective procedures during execution*.

Technical Investigations

16 Tests

Results of tests were assessed to determine:

- resistance to rain penetration of an insulated cavity wall
- thermal conductivity
- dimensional accuracy
- compressive strength
- dimensional stability under specific temperature and humidity conditions
- water vapour transmission.

17 Investigations

17.1 Data on durability and properties in relation to fire were evaluated.

17.2 A condensation risk analysis was carried out.

17.3 A series of U value calculations was carried out.

17.4 A calculation was undertaken to confirm the thermal conductivity (λ_D).

17.5 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS EN 845-1 : 2013 *Specification for ancillary components for masonry — Wall ties, tension straps, hangers and brackets*

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BS EN 13163 : 2012 *Thermal insulation products for buildings — Factory made expanded polystyrene (EPS) products — Specification*

BS EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

BS EN ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental Management systems — Requirements with guidance for use*

BRE Report (BR 262 : 2002) *Thermal insulation: avoiding risks*

BRE Report (BR 443 : 2006) *Conventions for U-value calculations*

18 Conditions

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