

## Jablite Limited

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Agrément Certificate  
**87/1796**  
Product Sheet 2

## JABLITE FLOOR INSULATION

### JABFLOOR 100 AND 150

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Jabfloor 100 and 150, rigid expanded polystyrene (EPS) boards for use as thermal insulation in ground-bearing or suspended concrete ground-floors in new and existing non-domestic buildings.

(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 products have declared thermal conductivities ( $\lambda_p$ )\* of  $0.036 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$  for Jabfloor 100 and  $0.035 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$  for Jabfloor 150 (see section 6).

**Condensation risk** — the products can contribute to limiting the risk of condensation (see section 7).

**Floor loading** — the products, when installed in accordance with this Certificate, can support a design loading for non-domestic applications (see section 9).

**Durability** — the products are dimensionally stable and, when installed with the overlays specified, will remain effective as insulating material for the life of the building in which they are incorporated (see section 12).



The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

*Claire Curtis-Thomas*

Date of Fourth issue: 14 September 2017

John Albon — Head of Approvals

Claire Curtis-Thomas

Originally certificated on 9 June 2000

Construction Products

Chief Executive

*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.*

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# Regulations

In the opinion of the BBA, Jabfloor 100 and 150, 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)

<b>Requirement:</b> A1	<b>Loading</b>
Comment:	The products can contribute to satisfying this Requirement. See section 9.2 of this Certificate.
<b>Requirement:</b> C2(c)	<b>Resistance to moisture</b>
Comment:	The products can contribute to satisfying this Requirement. See sections 7.1 and 7.4 of this Certificate.
<b>Requirement:</b> L1(a)(i)	<b>Conservation of fuel and power</b>
Comment:	The products can contribute to satisfying this Requirement. See section 6 of this Certificate.
<b>Regulation:</b> 7	<b>Materials and workmanship</b>
Comment:	The products are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 26	<b>CO<sub>2</sub> emission rates for new buildings</b>
<b>Regulation:</b> 26A	<b>Primary energy consumption rates for new buildings (applicable to Wales only)</b>
Comment:	The product can contribute to satisfying these Regulations. See section 6 of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b> 8(1)	<b>Durability, workmanship and fitness of materials</b>
Comment:	The products are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 9	<b>Building standards applicable to construction</b>
<b>Standard:</b> 1.1(b)	<b>Structure</b>
Comment:	The products can contribute to satisfying this Standard, with reference to clause 1.1.1 <sup>(2)</sup> . See section 9.2 of this Certificate.
<b>Standard:</b> 3.15	<b>Condensation</b>
Comment:	The products can contribute to satisfying this Standard, with reference to clauses 3.15.1 <sup>(2)</sup> , 3.15.4 <sup>(2)</sup> and 3.15.5 <sup>(2)</sup> . See sections 7.1 and 7.5 of this Certificate.
<b>Standard:</b> 6.1(b)	<b>Carbon dioxide emissions</b>
<b>Standard:</b> 6.2	<b>Building insulation envelope</b>
Comment:	The products can contribute to satisfying these Standards, with reference to clauses, or parts of, 6.2.1 <sup>(2)</sup> , 6.2.4 <sup>(2)</sup> , 6.2.5 <sup>(2)</sup> and 6.2.8 <sup>(2)</sup> to 6.2.13 <sup>(2)</sup> . See section 6 of this Certificate.
<b>Standard:</b> 7.1(b)	<b>Statement of sustainability</b>
Comment:	The products 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 products can contribute to a construction meeting a higher level of sustainability as defined in this Standard with reference to clauses 7.1.4 <sup>(2)</sup> [Aspect 1 <sup>(2)</sup> ], 7.1.6 <sup>(2)</sup> [Aspect 1 <sup>(2)</sup> ] and 7.1.7 <sup>(2)</sup> [Aspect 1 <sup>(2)</sup> ]. See section 6.1 of this Certificate.
<b>Regulation:</b> 12	<b>Building standards applicable to conversions</b>
Comment:	Comments made in relation to these products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(2)</sup> and Schedule 6 <sup>(2)</sup> . (2) Technical Handbook (Non-Domestic).



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

<b>Regulation:</b> 23	<b>Fitness of materials and workmanship</b>
Comment:	The products are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 29	<b>Condensation</b>
Comment:	The products can contribute to satisfying this Regulation. See section 7.1 of this Certificate.
<b>Regulation:</b> 30	<b>Stability</b>
Comment:	The products can contribute to satisfying this Regulation. See section 9.2 of this Certificate.
<b>Regulation:</b> 39(a)(i)	<b>Conservation measures</b>
<b>Regulation:</b> 40	<b>Target carbon dioxide emission rate</b>
Comment:	The products can contribute to satisfying these Regulations. See section 6 of this Certificate.

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

In the opinion of the BBA, Jabfloor 100 and 150, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 5.1 *Substructure and ground bearing floors* and 5.2 *Suspended ground-floors*.

### CE marking

The Certificate holder has taken the responsibility of CE marking the products 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

Jabfloor 100 and 150 comprise EPS 100 and EPS 150 rigid expanded polystyrene boards with the nominal characteristics given in Table 1.

Table 1 *Nominal characteristics*

Size (mm)	1200 x 2400
Thickness <sup>(1)</sup> (mm)	25, 30, 40, 50, 60, 75, 100, 120, 150 and 200
Nominal density (kg·m <sup>-3</sup> )	20 (Jabfloor 100) and 25 (Jabfloor 150)
Flatness (mm/m)	Class P(30)
Edge detail	Plain
Minimum compressive stress at 10% compression* (kPa)	100 (Jabfloor 100) and 150 (Jabfloor 150)

(1) Other thicknesses available on request.

### 2 Manufacture

2.1 Jabfloor 100 and 150 are manufactured from expanded polystyrene (EPS). The material comprises expandable beads of polystyrene, pre-foamed and fused together in a steam-heated mould under pressure. This produces a block of material, up to 7314 mm long, which is then cut to size and shape.

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 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).

### 3 Delivery and site handling

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

3.2 The products must be protected from prolonged exposure to sunlight and should be stored either under cover or protected with opaque polythene sheeting.

3.3 The products must be stored fully supported and flat on a firm, level, dry base, protected from the weather and raised above damp surfaces. The products must be discarded if damaged or contaminated and, if accidentally allowed to become wet, should be allowed to dry fully before installation.

3.4 The products must not be exposed to open flame or other ignition sources. Care must be taken to avoid contact with solvents and materials containing organic components.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Jabfloor 100 and 150.

### Design Considerations

#### 4 Use

4.1 Jabfloor 100 and 150 are satisfactory for use as floor insulation and are effective in reducing the thermal transmittance (U value) of ground-bearing or suspended concrete ground-floors in new and existing non-domestic buildings. The products can also be used on suitably-designed beam-and-block floors incorporating Type R2 semi-resisting or resisting blocks to BS EN 15037-2 : 2009 and self-bearing beams to BS EN 15037-1 : 2008.

4.2 Ground bearing floors should only be used where the depth of compacted fill is less than 600 mm and is defined as non-shrinkable. Shrinkable fills are defined as material containing more than 35% fine particles (silt and clay) and having a Plasticity Index of 10% or greater (shrinkable fills are susceptible to clay heave).

4.3 Ground-bearing concrete and suspended concrete ground-floors incorporating the products must include a suitable damp-proof membrane (dpm) laid beneath the insulation, in accordance with the relevant clauses of CP 102 : 1973 and BS 8215 : 1991 (see sections 14.5 and 14.6 of this Certificate).

4.4 Suspended concrete ground-floors incorporating the insulation boards must include suitable ventilation of the sub-floor void (minimum 150 mm void between the underside of the floor and the ground surface) or a dpm. For suspended floors in locations where clay heave is anticipated, an additional void of up to 150 mm may be required to accommodate the possible expansion of the ground below the floor. In such cases where the risk of clay heave has been confirmed by geotechnical investigations by a competent individual, a total void of up to 300 mm may be required.

4.5 The overlay to the insulation boards should be:

- a vapour control layer (VCL) (see section 7.3), and
- a cement-based floor screed of minimum 65 mm thickness<sup>(1)</sup>, laid in accordance with the relevant clauses of BS 8204-1 : 2003 and/or BS 8204-2 : 2003, and BS 8000-9 : 2003
- a wood-based floor, eg tongue-and-groove plywood to BS EN 636 : 2012, flooring grade particle board (types P5 to P7) to BS EN 312 : 2010 or oriented strand board (OSB) of type OSB/3 or OSB/4 to BS EN 300 : 2006, of a suitable thickness to be determined by a suitably qualified and experienced individual, installed in accordance with DD CEN/TS 12872 : 2007, and BS EN 12871 : 2010, or
- a concrete slab to BS EN 1992-1-1 : 2004.

4.6 Where a concrete screed or slab finish is laid directly over the product, a polyethylene separating layer/VCL must be installed between the insulation and the concrete to prevent seepage between the boards (see section 14.7). Any gaps between insulation boards or around service openings, visible prior to installing the concrete, must be filled with expanding foam or strips of insulation.


4.7 Loadbearing internal walls must not be built on the floor.

(1) NHBC only accept ground-bearing concrete floor slabs of at least 100 mm thickness, including monolithic screed where appropriate.

#### 5 Practicability of installation

The products are designed to be installed by a competent general builder, or a contractor, experienced with these types of products.

#### 6 Thermal performance

 6.1 Calculations of the thermal transmittance (U value) of a floor should be carried out in accordance with BS EN ISO 6946 : 2007, BS EN ISO 13370 : 2007 and BRE Report BR 443 : 2006 using the declared thermal conductivity ( $\lambda_D$ )\* value of 0.036 W·m<sup>-1</sup>·K<sup>-1</sup> for Jabfloor 100 and 0.035 W·m<sup>-1</sup>·K<sup>-1</sup> for Jabfloor 150.

6.2 The U value of a completed floor will depend on the insulation thickness, the perimeter/area ratio and the floor type. Calculated U values for example constructions are given in Table 2.

Table 2 Example U values<sup>(1)</sup> ( $W \cdot m^{-2} \cdot K^{-1}$ ) – ground floor construction

Floor type	Perimeter/area ratio	EPS	Minimum insulation thickness (mm)					
			Target U value ( $W \cdot m^{-2} \cdot K^{-1}$ )					
			0.13	0.15	0.18	0.20	0.22	0.25
Ground-bearing concrete floor	0.2	Jabfloor 100 (White)	150	115	80	60	45	30
			195	160	125	105	90	70
			215	180	140	120	105	90
			225	190	150	130	115	95
			230	195	155	135	120	100
	0.4	Jabfloor 150 (White)	145	110	75	60	45	30
			190	155	120	100	85	70
			210	175	135	120	105	85
			220	185	145	130	110	95
			225	190	150	135	120	100
Suspended concrete floor	0.2	Jabfloor 100 (White)	170	140	105	85	70	50
			205	175	140	120	105	85
			215	190	150	130	115	95
			225	195	155	135	120	105
			230	200	160	140	125	105
	0.4	Jabfloor 150 (White)	165	140	100	85	70	50
			200	170	135	115	100	80
			210	180	145	125	110	95
			220	190	150	135	120	100
			220	195	155	140	125	105

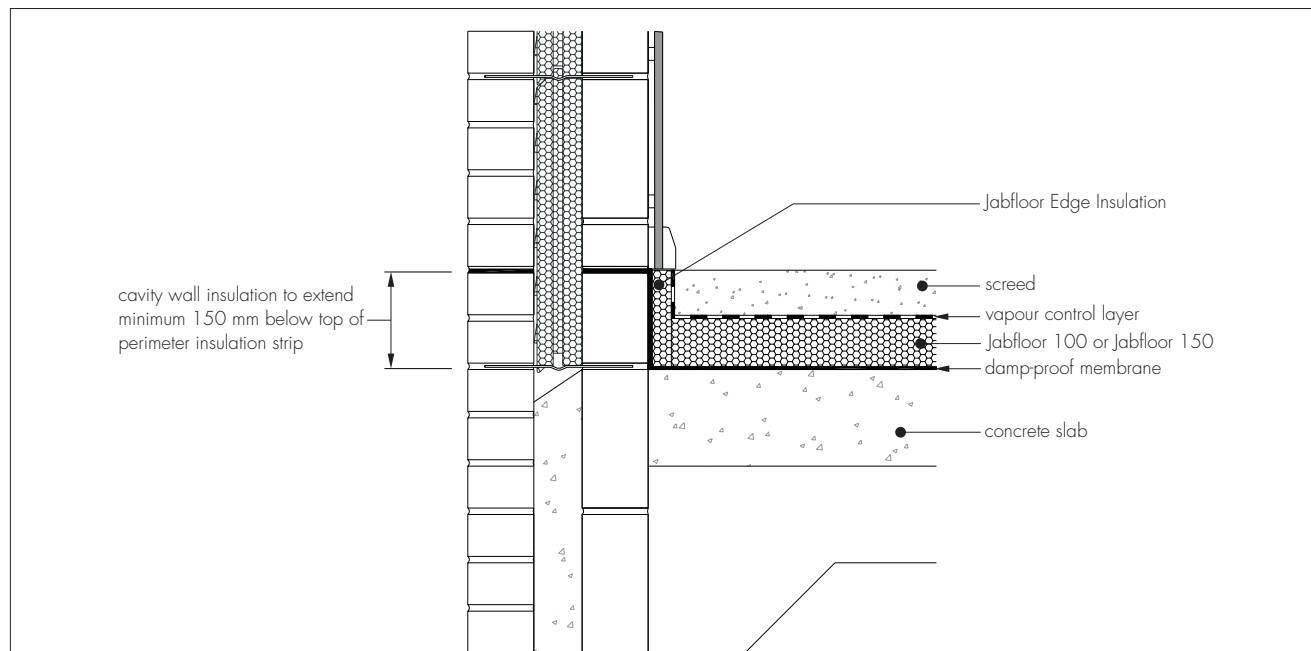
(1) Construction used:

- 300 mm thick perimeter wall with U value of  $0.35 W \cdot m^{-2} \cdot K^{-1}$
- 100 mm concrete slab with conductivity  $2.06 W \cdot m^{-1} \cdot K^{-1}$  and a minimum 65 mm concrete screed with conductivity  $1.15 W \cdot m^{-2} \cdot K^{-1}$
- underfloor ventilation area is  $0.0015 m^2 \cdot m$  (applies to suspended concrete floors only; minimum 150 mm clear ventilated void beneath the floor)
- ground conductivity is  $1.5 W \cdot m^{-2} \cdot K^{-1}$
- all other parameters are default values from BRE Report BR 443 : 2006.

## Junctions

6.3 The products can contribute to maintaining continuity of thermal insulation at junctions with other elements and minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations. An example of an acceptable junction detail is shown in Figure 1.

Figure 1 Junction between the floor and the wall



## 7 Condensation risk

### Interstitial condensation

7.1 Floors will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011 Annex F and the relevant guidance.

7.2 The products have a water vapour resistivity exceeding  $150 MN \cdot s \cdot g^{-1} \cdot m^{-1}$ .

7.3 When the products are used above the dpm on a ground-bearing floor, or on a suspended concrete floor, a VCL is installed on the warm side of the insulation to inhibit the risk of interstitial condensation unless a risk assessment shows this is not necessary.

### Surface condensation



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



7.5 Floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed  $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$  at any point. Guidance may be obtained from BS 5250 : 2011 Annex F. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 6.3 of this Certificate.

## 8 Behaviour in relation to fire

8.1 The products have a Class F reaction to fire classification\* in accordance with BS EN 13501-1 : 2007, but can also be supplied as Class E when requested.

8.2 When properly installed, the products will not add significantly to any existing fire hazard. The products will be contained within the floor by the overlay until the overlay itself is destroyed. Therefore, the products will not contribute to the development stages of a fire or present a smoke or toxic hazard.

8.3 Electrical cables running within the polystyrene should be enclosed in a suitable conduit, eg rigid PVC.

## 9 Floor loading

9.1 The Certificate holder has declared designation codes of CS(10)100 for Jabfloor 100 and CS(10)150 for Jabfloor 150 in accordance with BS EN 13163 : 2012 (compressive stress at 10% deformation\* to BS EN 826 : 2013).



9.2 The products are suitable for the non-domestic occupancies defined in this Certificate when covered with a suitable floor overlay (see section 4.5) and are capable of resisting a uniformly distributed load of  $3 \text{ kN}\cdot\text{m}^{-2}$  for category B (offices) and  $4 \text{ kN}\cdot\text{m}^{-2}$  for category C33 (non-domestic), or a concentrated load of 2.7 kN for category B (offices) and 4.5 kN for category C33 (non-domestic) as defined in BS EN 1991-1-1 : 2002, National Annex Table NA.2, or BS 6399-1 : 1996 Table 1. Further assessment is necessary in the case of duty walkways and floors subject to physical activities.

9.3 The performance of the floor construction will depend on the insulation properties and type of floor overlay used (including thickness and strength). Where the products are used under a concrete slab, resistance to concentrated and distributed loads is a function of the slab specification. Further guidance on the suitability of floor coverings can be found in BS EN 13810-1 : 2002, DD CEN/TS 13810-2 : 2003, BS 8204-1 : 2003 and BS EN 312 : 2010, and from the flooring manufacturer.

## 10 Incorporation of services

10.1 De-rating of electrical cables should be considered where the insulation restricts air cooling of cables; the boards must not be used in direct contact with electrical heating cables or hot water pipes.

10.2 Where possible, electrical conduits, gas and water pipes or other services should be contained within ducts or channels within the concrete slab of ground-bearing floors. Where this is not possible, the services may be accommodated within the insulation, provided they are securely fixed to the concrete slab. Electrical cables should be enclosed in a suitable conduit. With hot pipes, the insulation must be cut back to maintain an air space.

10.3 Where water pipes are installed, either within the slab or the insulation, they must be pre-lagged with close-fitting pipe insulation eg extruded polyethylene foam.

10.4 Where the products are installed on a floor of a suspended beam-and-block design, all services must be installed so as not to impair the floor performance.

10.5 On overlay board floors, in situations where access to the services is desirable, a duct may be formed by mechanically fixing to the floor, timber bearers of the same thickness as the insulation to provide support for a particle board cover. The duct should be as narrow as possible and not exceed 400 mm in width or the maximum particle board spans given in DD CEN/TS 12872 : 2007 without intermediate support. Services should be suitably fixed to the floor base and not to the insulation boards.

## 11 Maintenance

As the products are confined within the floor and have suitable durability (see section 12), maintenance is not required.

## 12 Durability



The products are rot-proof, dimensionally stable and, when installed with the overlays specified in this Certificate, will remain effective as an insulating material for the life of the building in which they are incorporated.

### 13 Reuse and recyclability

Jabfloor 100 and 150 expanded polystyrene (EPS) is fully recyclable.

## Installation

### 14 General

14.1 Installation of Jabfloor 100 and 150 must be in accordance with the Certificate holder's installation instructions and the requirements of this Certificate.

14.2 Typical methods are shown in Figures 2 to 4. Reference should also be made to BRE Report BR 262 : 2002.

Figure 2 *Ground-bearing concrete floor – concrete slab overlay*

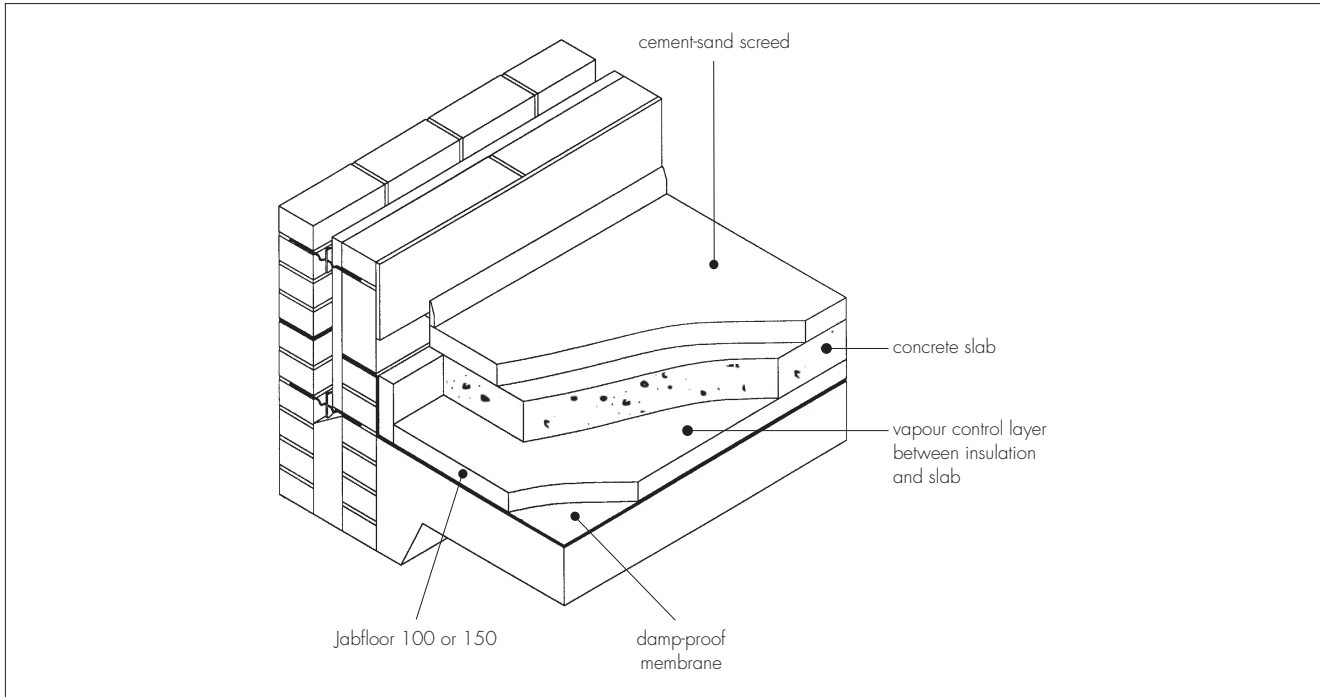


Figure 3 *Ground-bearing concrete floor – screed overlay*

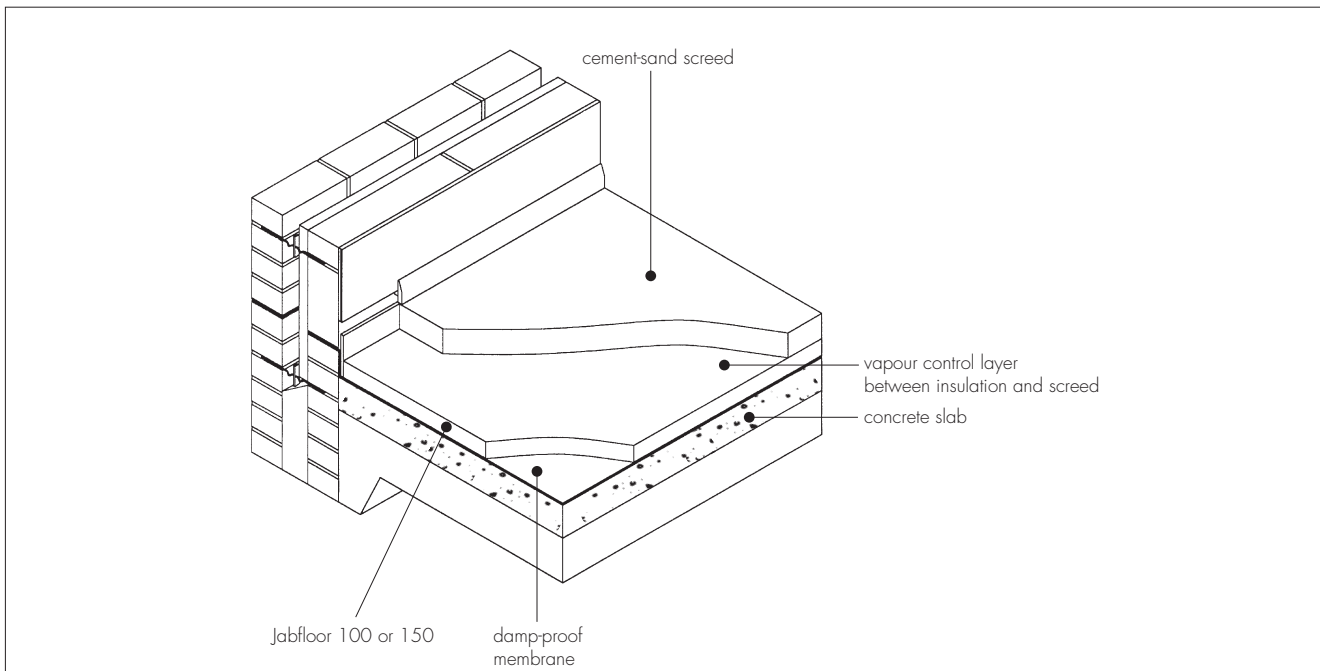
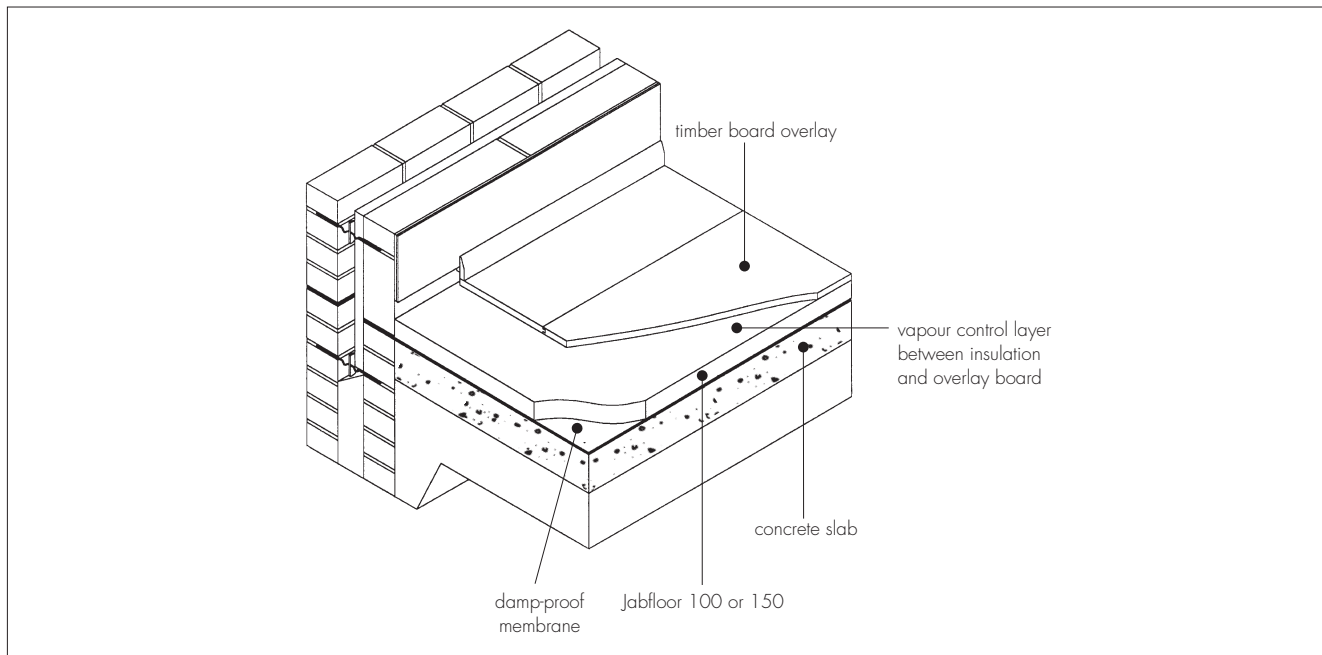


Figure 4 Ground-bearing concrete floor — timber board overlay



14.3 In ground-bearing concrete floors (see Figures 2 to 4), the concrete floor slab over which the products are laid should be left for as long as possible to maximise drying out and dissipation of constructional moisture, in accordance with BS 8203 : 2001, Section 3.1.2.

14.4 The concrete floor surface should be smooth, level and flat to within 5 mm when measured with a two metre straight-edge. Irregularities greater than this must be removed. Minor irregularities (up to 10 mm deep) may be levelled with mortar or thin screed.

14.5 Where the insulation is used over ground-bearing concrete floor slabs, a suitable dpm in accordance with CP 102 : 1973 should be laid to resist moisture from the ground. If a liquid-type dpm is applied to the slabs, it should be of a type compatible with expanded polystyrene and be allowed to dry out fully before laying the insulation.

14.6 Where the insulation is used on hardcore bases beneath ground-bearing concrete slabs, the hardcore must be compacted and blinded with a thin layer of sand before application of the dpm followed by the insulation boards.

14.7 A VCL is installed on the warm side of the insulation to inhibit the risk of interstitial condensation if necessary, (see section 7.3). Where a concrete screed or slab finish is to be laid over the product, a polyethylene separating layer/VCL must be installed between the insulation and the concrete to prevent seepage between the boards.

14.8 The insulation can be used on suitable beam-and-block suspended concrete floors (see section 4.1).

14.9 Where a screed or concrete slab is laid over the insulation, vertical upstands of insulation should be provided and be of sufficient depth to fully separate the screed or slab from the wall. If used, a suitable cavity wall insulation material should be extended below the dpc level to provide edge insulation to the floor.

14.10 To limit the risk of condensation and other sources of dampness, the insulation and overlays should only be laid after the construction is made substantially weathertight, eg after glazing. During construction, the insulation and overlay must also be protected from damage by traffic and moisture sources such as water spillage and plaster droppings.

## 15 Procedure

15.1 The products are cut to size (using a sharp knife or fine toothed saw) and laid with closely-butted, staggered cross-joints, ensuring that all spaces are completely filled.

15.2 The laying pattern should ensure that all cut edges are at the perimeter of the floor or some other feature, eg matwells, thresholds or access ducts. Spreader boards should be used to protect the insulation.

### Timber-based board overlay (Figure 4)

15.3 Before laying the plywood, particle board or OSB overlays, preservative-treated timber battens, in accordance with BS 8417 : 2011, are positioned at doorways and access panels. Adequate time should be allowed for preservatives to be fixed and the solvents from solvent-based preservatives to evaporate.

15.4 When the insulation is laid above a dpm, a polyethylene VCL with a minimum thickness of 0.125 mm (500 gauge) is laid between the insulation and the timber board overlay. The VCL should have 150 mm overlaps, taped at the joints, and be turned up 100 mm at the walls.

15.5 Timber-based overlay boards as specified in section 4.5 of this Certificate are laid with staggered cross-joints in accordance with DD CEN/TS 12872 : 2007 and BS EN 12871 : 2010.



### **Cement-based screed overlay (Figure 3)**

15.6 Perimeter edge pieces are cut and placed around the edges and all taped at joints. A polyethylene VCL, at least 0.125 mm thick (500 gauge), is laid over the insulation. The VCL should have 150 mm overlaps, taped at the joints, and be turned up 100 mm at the walls. A properly-compacted screed of a minimum 65 mm thickness is then laid over. The relevant clauses of BS 8204-1 : 2003 should be followed.

### **Concrete slab overlay (ground-bearing only) (Figure 2)**

15.7 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polyethylene VCL, minimum 0.125 mm thick (500 gauge), is laid over the insulation. The VCL should have 150 mm overlaps, taped at the joints, and be turned up 100 mm at the walls. The concrete slab is laid to the required thickness in accordance with BS 8000-9 : 2003 and BS 8204-1 : 2003.

## Technical Investigations

### **16 Tests**

As part of the assessment resulting in the issue of a previous Certificate, tests were carried out to determine:

- compressive stress at 10% deformation
- thermal conductivity
- density
- dimensional accuracy.

### **17 Investigations**

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

17.2 A re-examination was made of the data and investigations on which previous Certificates were based. The conclusions drawn from the original data remain valid.

17.3 Existing data relating to the thermal insulation properties and equilibrium moisture content of the material were examined.

17.4 An assessment of the risk of interstitial condensation in typical constructions was made.

## Bibliography

- BS 5250 : 2011 *Code of practice for control of condensation in buildings*
- BS 6399-1 : 1996 *Loading for buildings — Code of practice for dead and imposed loads*
- BS 8000-9 : 2003 *Workmanship on building sites — Cementitious levelling screeds and wearing screeds — Code of practice*
- BS 8203 : 2001 *Code of practice for installation of resilient floor coverings*
- BS 8204-1 : 2003 *Screeds, bases and in-situ floorings — Concrete bases and cement sand levelling screeds to receive floorings — Code of practice*
- BS 8204-2 : 2003 *Screeds, bases and in-situ floorings — Concrete wearing surfaces — Code of practice*
- BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*
- BS 8417 : 2011 *Preservation of wood — Code of practice*
- BS EN 300 : 2006 *Oriented Strand Boards (OSB) — Definitions, classification and specifications*
- BS EN 312 : 2010 *Particleboards — Specifications*
- BS EN 636 : 2012 *Plywood — Specifications*
- BS EN 826 : 2013 *Thermal insulating products for building applications — Determination of compression behaviour*
- BS EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*
- NA to BS EN 1991-1-1 : 2002 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- BS EN 1992-1-1 : 2004 *Eurocode 2 : Design of concrete structures — General rules and rules for buildings*
- BS EN 12871 : 2010 *Wood-based panels — Performance specifications and requirements for load bearing boards for use in floors, walls and roofs*
- 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 test data from reaction to fire tests*
- BS EN 13810-1 : 2002 *Wood-based panels — Floating floors — Performance specifications and requirements*
- BS EN 15037-1 : 2008 *Precast concrete products - Beam-and-block floor systems — Beams*
- BS EN 15037-2 : 2009 *Precast concrete products — Beam-and block floor systems — Concrete blocks*
- 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 13370 : 2007 *Thermal performance of buildings — Heat transfer via the ground — Calculation methods*
- BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*
- CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*
- DD CEN/TS 12872 : 2007 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*
- DD CEN/TS 13810-2 : 2003 *Wood-based panels — Floating floors — Test methods*
- BRE Report (BR 262 : 2002) *Thermal insulation: avoiding risks*
- BRE Report (BR 443 : 2006) *Conventions for U-value calculations*

## 18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

18.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

18.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.