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Agrément Certificate

02/3943

Product Sheet 1

S AND B EXPANDED POLYSTYRENE INSULATIONS

S AND B EPS FLOORING INSULATION

This Agrément Certificate Product Sheet⁽¹⁾ relates to S and B EPS Flooring Insulation, comprising a range of expanded polystyrene (EPS) boards for use as insulation in ground-bearing or suspended concrete floors, and also with exposed, or semi-exposed, intermediate concrete floors in new or existing domestic and similar 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 declared thermal conductivity (λ_D) value of the product is between 0.038 and 0.030 $W \cdot m^{-1} \cdot K^{-1}$ depending on the grade (see section 6).

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

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

Durability — the product will have a life equivalent to that of the floor structure in which it is incorporated (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 Third issue: 16 December 2020

Originally certificated on 16 August 2002

Hardy Giesler
Chief Executive Officer

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 **MUST** check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

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

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Regulations

In the opinion of the BBA, S and B EPS Flooring Insulation, 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:	A1	Loading
Comment:		The product can contribute to satisfying this Requirement. See section 9.2 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The product can contribute to satisfying this Requirement. See sections 7.1 and 7.3 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The product can contribute to satisfying this Requirement; however, compensating fabric/services measures may be required. See sections 6.1 and 6.2 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	26	CO₂ 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; however, compensating fabric/services measures may be required. See sections 6.1 and 6.2 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(b)	Structure
Comment:		The product can contribute to satisfying this Standard, with reference to clause 1.1.1 ⁽¹⁾ . See section 9.2 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See sections 7.1 and 7.4 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Comment:		The product can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.1.1 ⁽¹⁾ , 6.1.3 ⁽¹⁾ , 6.1.4 ⁽¹⁾ and 6.1.7 ⁽¹⁾ ; however, compensating fabric/services measures may be required. See sections 6.1 and 6.2 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.2.1 ⁽¹⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽¹⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾ , 6.2.9 ⁽¹⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾ and 6.2.13 ⁽¹⁾ ; however, compensating fabric/services measures may be required. See sections 6.1 and 6.2 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. See sections 6.1 and 6.2 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		Comments made in relation to this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ .
		(1) Technical Handbook (Domestic).



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

Regulation:	23	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	29	Condensation
Comment:		The product can contribute to satisfying this Regulation. See section 7.1 of this Certificate.
Regulation:	30	Stability
Comment:		The product can contribute to satisfying this Regulation. See section 9.2 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; however, compensating fabric/services measures may be required. See sections 6.1 and 6.2 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 2020

In the opinion of the BBA, S and B EPS Flooring Insulation, 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 product in accordance with harmonised European Standard BS EN 13163 : 2012.

Technical Specification

1 Description

1.1 S and B EPS Flooring Insulation consists of rigid, expanded polystyrene (EPS) boards in six grades, manufactured to comply with BS EN 13163 : 2012.

1.2 The boards have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

	EPS 70 E	EPS 100 E	EPS 120 E	EPS 150 E	Lambdatherm ⁽¹⁾	
					EPS 70 E	Elite
Length (mm)	2400	2400	2400	2400	2400	2400
Width (mm)	1200	1200	1200	1200	1200	1200
Thickness (mm) ⁽²⁾	75 to 100 (in 5 mm increments)	75 to 100 (in 5 mm increments)	75 to 100 (in 5 mm increments)	75 to 100 (in 5 mm increments)	50 to 100 (in 5 mm increments)	50 to 100 (in 5 mm increments)
Edge detail	Square or rebated	Square or rebated	Square or rebated	Square or rebated	Square or rebated	Square or rebated
Minimum compressive stress at 10% deformation (kPa)	70	100	120	150	70	100
Declared flatness	P(10)	P(10)	P(10)	P(10)	P(10)	P(10)

(1) Lambdatherm is a registered trademark.

(2) Other sizes within the ranges above are available

2 Manufacture

2.1 The boards are manufactured from expanded polystyrene (EPS) bead placed in a pre-expander. The product is manufactured in blocks and cut to size.

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 S and B EPS Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 by BBA (Certificates 03/Q001 and 12/E013 respectively).

3 Delivery and site handling

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

3.2 The product must be protected from prolonged exposure to sunlight and should be stored either under cover or protected with opaque light-coloured polythene.

3.3 The product must be stored fully supported and flat on a firm, level, dry base, protected from the weather and raised above damp surfaces. The product must be discarded if damaged or wet.

3.4 The product 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 S and B EPS Flooring Insulation.

Design Considerations

4 General

4.1 S and B EPS Flooring Insulation is satisfactory for use as floor insulation and is effective in reducing the U value (thermal transmittance) of ground-bearing or suspended concrete ground-floors, in new or existing domestic and similar buildings.

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 with a plasticity Index of 10% or greater (shrinkable fills are susceptible to clay heave).

4.3 Ground-supported concrete and suspended ground floors incorporating the product must include a suitable damp-proof membrane (dpm) laid beneath the insulation, in accordance with the relevant clauses of CP 102 : 1973, BS 8102 : 2009 and BS 8215 : 1991 (see section 13.5 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 should be a vapour control layer (VCL) (see section 7.2), and one of the following:

- a cement-based floor screed of minimum 65 mm thickness⁽¹⁾, 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 P4 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 competent and experienced individual, installed in accordance with DD CEN/TR 12872 : 2014 and BS EN 12871 : 2013
- a concrete slab to BS EN 1992-1-1 : 2004.

(1) NHBC only accept ground-bearing floor slabs with at least 100 mm thick concrete including monolithic screed.

4.6 Where a concrete screed or slab finish is to be laid directly over the product, a polyethylene separating layer/VCL must be installed between the insulation and the concrete to prevent chemical attack and seepage between the boards. 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 insulation.

4.8 If present, mould or fungal growth should be treated prior to the application of this product.

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 a floor should be carried out in accordance with BS EN ISO 6946 : 2017, BS EN ISO 13370 : 2017 and BRE Report BR 443 : 2006 using the declared thermal conductivity (λ_D) values given in Table 2.

Table 2 Declared thermal conductivity values

<i>Grade</i>	<i>Thermal conductivity ($W \cdot m^{-1} \cdot K^{-1}$)</i>
EPS 70 E	0.038
EPS 100 E	0.036
EPS 120 E	0.036
EPS 150 E	0.035
Lambdatherm 70 E	0.031
Lambdatherm Elite	0.030

6.2 The U value of a completed floor will depend on the thickness of the product, the perimeter/area ratio and the floor type. Calculated U values for example constructions are given in Table 3.

Table 3 Example U values⁽¹⁾ — ground floor construction

Floor type	EPS Grade	Target U value (W·m ⁻² ·K ⁻¹)	P/A ratio (m/m ²)				
			Insulation thickness (mm)				
			0.2	0.4	0.6	0.8	1.0
Ground-bearing concrete floor ⁽¹⁾⁽³⁾	EPS 70 E	0.13	-	-	-	-	-
		0.15	-	-	-	-	-
		0.20	75	-	-	-	-
		0.22	75	95	-	-	-
		0.25	75	80	95	-	-
	EPS 100 E & EPS 120 E	0.13	-	-	-	-	-
		0.15	-	-	-	-	-
		0.20	75	-	-	-	-
		0.22	75	90	-	-	-
		0.25	75	75	90	100	-
	EPS 150 E	0.13	-	-	-	-	-
		0.15	-	-	-	-	-
		0.20	75	-	-	-	-
		0.22	75	90	-	-	-
		0.25	75	75	85	95	100
	Lambdatherm 70 E	0.13	-	-	-	-	-
		0.15	100	-	-	-	-
		0.20	55	90	-	-	-
		0.22	50	80	95	100	-
		0.25	50	65	75	85	90
Lambdatherm Elite	0.13	-	-	-	-	-	
	0.15	100	-	-	-	-	
	0.20	55	90	-	-	-	
	0.22	50	75	90	100	-	
	0.25	50	60	75	80	85	
Suspended concrete ground- floor ⁽²⁾⁽³⁾	EPS 70 E	0.13	-	-	-	-	-
		0.15	-	-	-	-	-
		0.20	90	-	-	-	-
		0.22	75	-	-	-	-
		0.25	75	85	100	-	-
	EPS 100 E & EPS 120 E	0.13	-	-	-	-	-
		0.15	-	-	-	-	-
		0.20	85	-	-	-	-
		0.22	75	100	-	-	-
		0.25	75	80	95	100	-
	EPS 150 E	0.13	-	-	-	-	-
		0.15	-	-	-	-	-
		0.20	80	-	-	-	-
		0.22	75	95	-	-	-
		0.25	75	80	90	95	100
	Lambdatherm 70 E	0.13	-	-	-	-	-
		0.15	-	-	-	-	-
		0.20	75	100	-	-	-
		0.22	60	85	95	-	-
		0.25	50	70	80	85	90
Lambdatherm Elite	0.13	-	-	-	-	-	
	0.15	-	-	-	-	-	
	0.20	70	95	-	-	-	
	0.22	60	85	95	100	100	
	0.25	50	70	80	85	85	

(1) Ground-bearing concrete floor construction (S and B EPS insulation on top of slab, under screed finish) — 65 mm concrete screed $\lambda = 1.15 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, polyethylene separating layer, insulation, dpm, 100 mm concrete oversite, 150 mm sand-blinded hardcore.

(2) Suspended concrete ground-floor construction (S and B EPS insulation on top of beam-and-block, below screed finish) — 65 mm concrete screed $\lambda = 1.15 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, polyethylene separating layer, insulation, beam-and-block floor (12%) beam $\lambda = 2.00 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, dense block infill $\lambda = 1.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, ventilated void.

(3) 25 mm edge insulation of EPS insulation ($\lambda = 0.035 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) at 65 mm deep.

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.

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

Surface condensation



7.3 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.



7.4 In Scotland, 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 reaction to fire classifications of the product in accordance with BS EN 13501-1 : 2002 are shown in Table 4.

Table 4 Reaction to fire classification of the product

<i>Grade</i>	<i>Classification</i>
EPS 70 E	E ⁽¹⁾
EPS 100 E	E ⁽²⁾
EPS 120 E	E ⁽³⁾
EPS 150 E	E ⁽⁴⁾
Lambdatherm 70 E	E ⁽⁵⁾
Lambdatherm Elite	E ⁽⁶⁾

(1) BTTG Fire Technology Services. Report no. 27/00301C/08/05, 7 Sep 2005.

(2) BTTG Fire Technology Services. Report no. 27/00301B/08/05, 7 Sep 2005.

(3) BTTG Fire Technology Services. Report no. 27/00301A/08/05, 7 Sep 2005.

(4) BTTG Fire Technology Services. Report no. 27/00301D/08/05, 7 Sep 2005.

(5) BTTG Fire Technology Services. Report no. 27/00419A/11/05, 20 Dec 2005.

(6) BTTG Fire Technology Services. Report no. 27/00419B/11/05, 20 Dec 2005.

8.2 Electrical cables running within the polystyrene should be separated from it, by enclosing them within a suitable conduit (eg rigid PVC).

9 Floor loading

9.1 The compressive strengths of the product (compressive stress at 10% deformation to BS EN 826 : 2013) are shown in Table 1 of this Certificate.



9.2 The product is suitable for domestic occupancies when covered with a suitable floor overlay (see section 4.5), and is capable of resisting a uniformly distributed load of $1.5 \text{ kN}\cdot\text{m}^{-2}$ or a concentrated load of 2 kN for category A1 and A2 (domestic) situations as defined in BS EN 1991-1-1 : 2002, National Annex Table NA.2. Further assessment by a suitably competent and experienced individual 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 product is 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 overlays 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 product must not be used in direct contact with electrical heating cables or hot water pipes. Where underfloor heating systems are to be used, the advice of the Certificate holder should be sought.

10.2 Where possible, electrical conduits, gas and water pipes or other services should be contained in ducts or channels within the concrete slab of ground-supported 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 or PVC-U trunking. With hot pipes, the insulation must be cut back to maintain an air space.

10.3 Where water pipes are installed below the insulation, they must be pre-lagged with close-fitting pipe insulation. Pipes installed above the insulation will not require lagging, although some provision needs to be made for expansion and contraction.

10.4 Where the boards are installed on a floor of a suspended beam-and-block design, all services must be installed in accordance with a BBA Certificate for that floor and/or with the relevant codes of practice.

10.5 To provide support for a particle board cover on overlay board floors 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. 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/TR 12872 : 2014 without intermediate support. Services should be suitably fixed to the floor base and not to the insulation boards (see section 6.3 regarding limiting heat loss).

11 Maintenance

As the product is confined within the floor by the overlay and has suitable durability (see section 12), maintenance is not required.

12 Durability



The product is durable, 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 it is incorporated.

Installation

13 General

13.1 Installation of S and B EPS Flooring Insulation must be in accordance with the Certificate holder's installation instructions and the requirements of this Certificate.

13.2 Typical methods of installation are shown in Figures 1 to 6. Reference should also be made to BRE Report BR 262 : 2002.

13.3 All floor surfaces 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.

13.4 In ground-supported concrete floors (see Figures 1, 3 and 5), the concrete floor slab over which the insulation is laid should be left for as long as possible to maximise drying out and dissipation of constructional moisture, in accordance with BS 8203 : 2017, Section 3.1.2.

Figure 1 Ground-supported concrete floor – particle board overlay

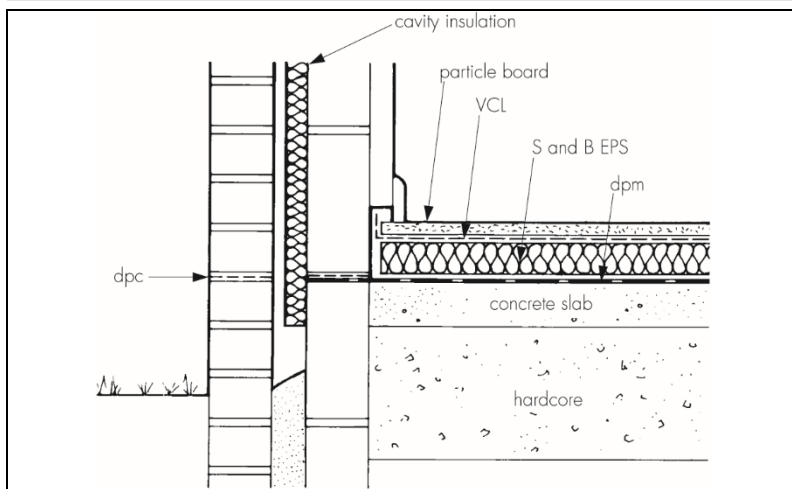


Figure 2 Suspended concrete floor – particle board overlay

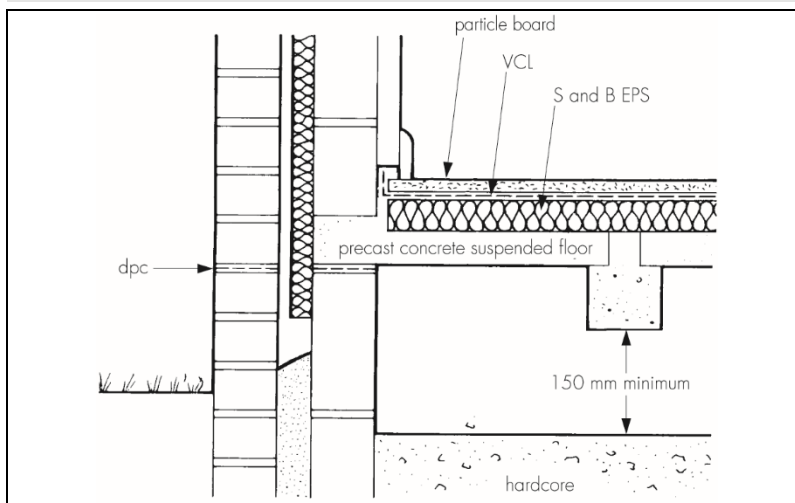


Figure 3 Ground-supported concrete floor – screed overlay

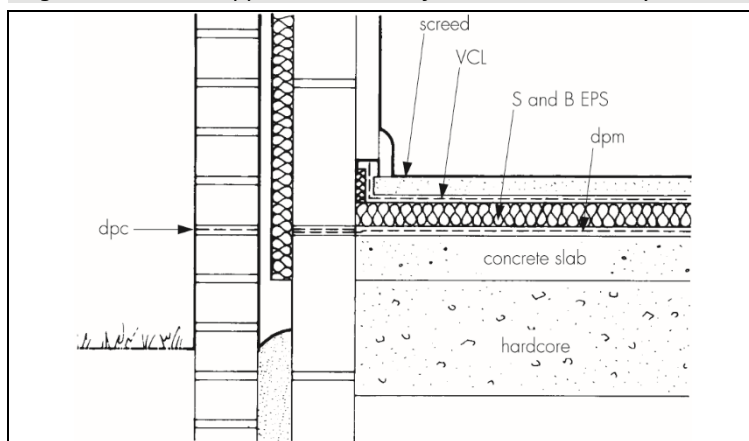


Figure 4 Suspended concrete floor – screed overlay

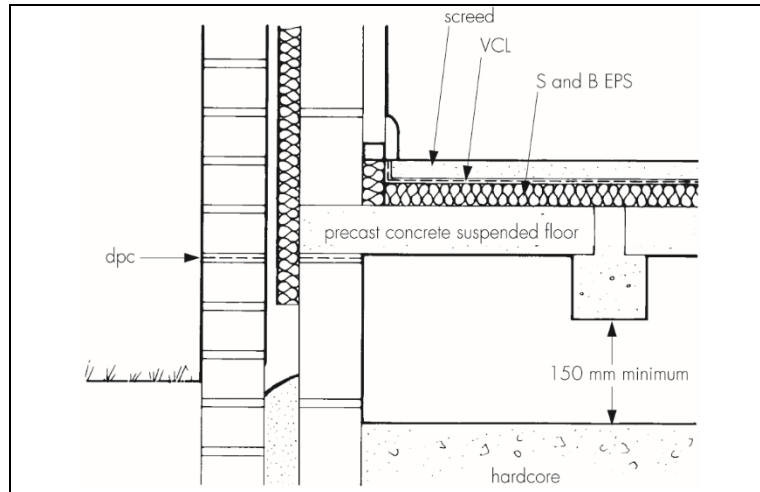


Figure 5 Ground-supported concrete floor – particle board overlay (dpm under concrete slab)

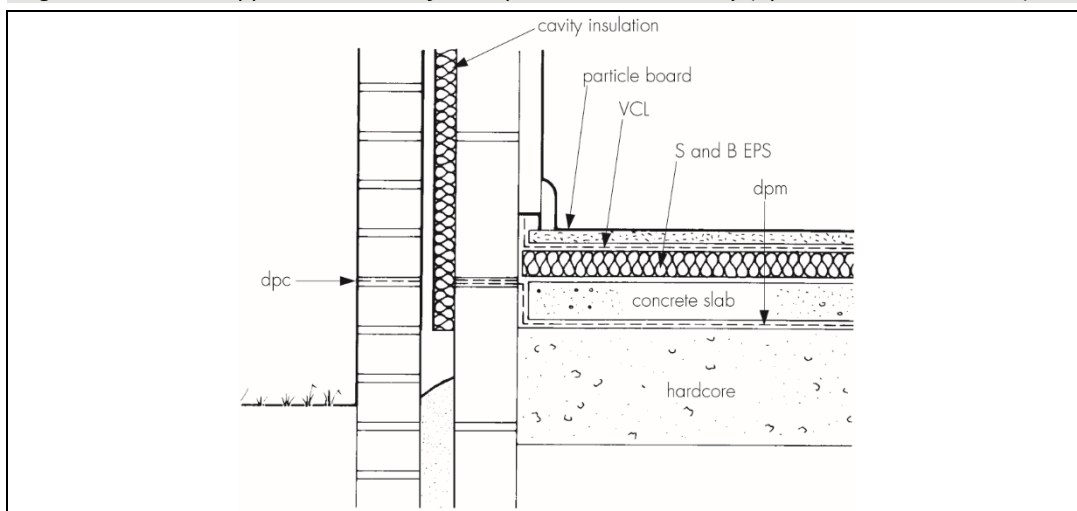
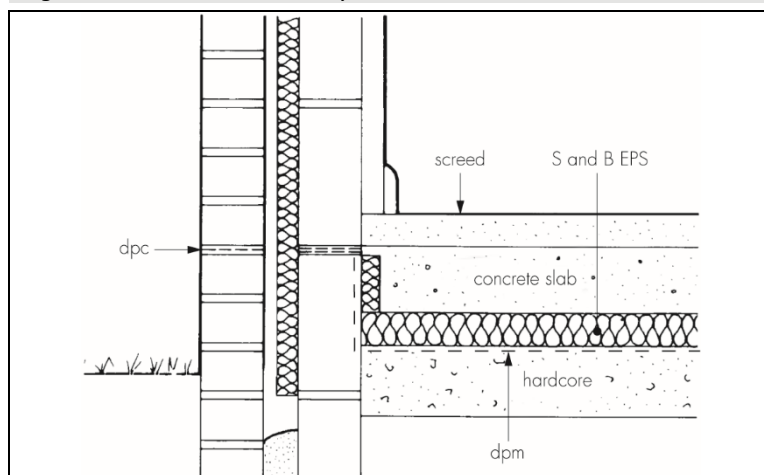


Figure 6 Concrete slab overlay



13.5 Where the insulation is used over ground-supported 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 slab, it should be of a type compatible with expanded polystyrene and be allowed to dry out fully before the insulation is laid.

13.6 Where the insulation is used on hardcore bases beneath ground-supported 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.

13.7 The insulation can be used on beam-and-block suspended concrete floors (see Figures 2 and 4) that are the subject of a current Agrément Certificate. It should be installed in accordance with, and within the limitations imposed by, that Certificate, or on floors designed and installed to the precast concrete and general loading codes that have been assessed as suitable.

13.8 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 partial fill cavity wall insulation material can be extended below the dpc level to provide edge insulation to the floor.

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

14 Procedure

14.1 The insulation is cut to size, (using a sharp knife or fine-toothed saw) as necessary and laid with closely butted, staggered cross-joints, ensuring that all spaces are completely filled. For rebate-edged boards, one edge should be cut straight and laid next to the wall.

14.2 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 overlays (Figures 1, 2 and 5)

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

14.4 A polyethylene VCL, at least 0.25 mm thick (1000 gauge), is laid between the insulation and the particle board. The VCL should have 150 mm overlaps, taped at the joints and turned up 100 mm at the walls.

14.5 Timber-based overlay boards as specified in section 4.5 of this Certificate, are laid with staggered cross-joints, in accordance with DD CEN/TR 12872 : 2014 and BS EN 12871 : 2013.

14.6 An expansion gap between the overlay board and the perimeter walls should be provided at the rate of 2 mm per metre run or a minimum of 10 mm, whichever is the greater.

14.7 Where there are long, uninterrupted lengths of floor (eg corridors), proprietary expansion joints should be installed at intervals on the basis of a 2 mm gap per metre run of overlay board.

14.8 Before the overlay boards are interlocked, a waterproof PVA adhesive is applied to the joints.

14.9 Once the overlay board is laid, temporary wedges are inserted between the walls and the floor to maintain tight joints until the adhesive has set.

14.10 When the wedges are removed and before the skirting boards are fixed, suitable compressible filler (eg foamed polyethylene) should be fitted around the perimeter of the floor between the overlay board and the walls.

14.11 Where there is a likelihood of regular water spillage (eg in kitchens, bathrooms, shower and utility rooms), additional overlay board protection should be considered, eg by a continuous flexible vinyl sheet flooring with welded joints, which is turned up at abutments and cove skirting.

Cement-based screed overlay (Figures 3, 4 and 6)

14.12 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polyethylene VCL, at least 0.25 mm thick (1000 gauge), is laid over the insulation. The VCL should have 150 mm overlaps, taped at the joints and turned up 100 mm at the walls. A properly compacted screed of a minimum 65 mm thickness, is laid over. The relevant clauses of BS 8204-1 : 2003 should be followed.

Concrete slab overlay (ground bearing only) (Figure 6)

14.13 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polyethylene VCL, at least 0.25 mm thick (1000 gauge), is laid over the insulation. The VCL should have 150 mm overlaps, taped at the joints and 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

15 Tests

Tests were carried out and the results assessed to determine:

- thickness
- compressive stress at 10% deformation
- long-term water absorption by immersion (total and partial)
- long-term water absorption by diffusion
- thermal conductivity (λ_D value)
- dimensional stability under constant normal laboratory conditions
- dimensional stability at specified temperature and humidity
- compressive creep
- freeze-thaw resistance.

16 Investigations

16.1 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.

16.2 An examination was made of test data to BS EN 13163 : 2001 relating to:

- dimensions
- squareness
- flatness
- density
- thermal conductivity (λ_D value)
- compressive strength at 10% compression
- bending strength.

16.3 A series of U value calculations was carried out

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17 Conditions

17.1 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
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