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Agrément Certificate

04/4102

Product Sheet 1 Issue 5

SPI EXPANDED POLYSTYRENE INSULATION

STYLITE FLOORING INSULATION

This Agrément Certificate Product Sheet⁽¹⁾ relates to Stylite Flooring Insulation, comprising a range of expanded polystyrene (EPS) boards for use as thermal insulation in ground-bearing or suspended concrete ground floors, in new and existing domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.

The assessment includes

Product factors:

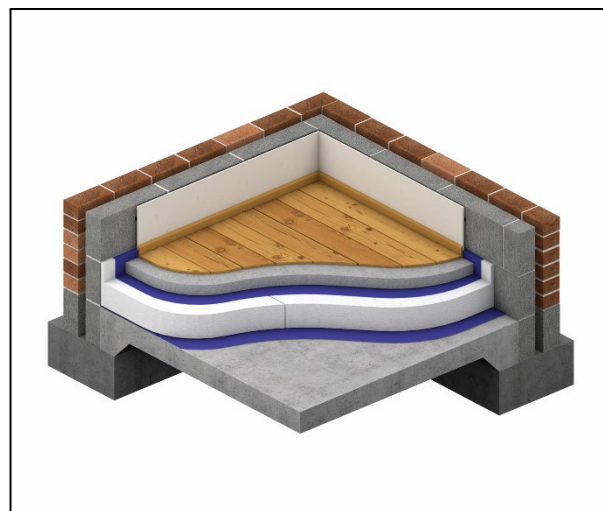
- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



KEY FACTORS ASSESSED

- Section 1. Mechanical resistance and stability
- Section 2. Safety in case of fire
- Section 3. Hygiene, health and the environment
- Section 4. Safety and accessibility in use
- Section 5. Protection against noise
- Section 6. Energy economy and heat retention
- Section 7. Sustainable use of natural resources
- Section 8. Durability

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

Date of Fifth issue: 27 March 2024

Originally certified on 30 April 2004

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

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

British Board of Agrément

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SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Stylite 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 Building Regulations 2010 (England and Wales) (as amended)

Requirement:	A1	Loading
Comment:		The products can contribute to satisfying this Requirement. See section 1 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The products can contribute to satisfying this Requirement. See section 3 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The products can contribute to satisfying this Requirement. See section 6 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The products are acceptable. See sections 8 and 9 of this Certificate.
Regulation:	25B	Nearly zero-energy requirements for new buildings
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 rates for new buildings (applicable to Wales only)
Regulation:	26B	Fabric performance values for new dwellings (applicable to Wales only)
Regulation:	26C	Target primary energy rates for new buildings (applicable to England only)
Regulation:	26C	Energy efficiency rating (applicable to Wales only)
Comment:		The products can contribute to satisfying these Regulations. See section 6 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The products are acceptable. See sections 8 and 9 of this Certificate.
Regulation:	9	Building standards – construction
Standard:	1.1(b)	Structure
Comment:		The products can contribute to satisfying this Standard, with reference to clause 1.1.2 ⁽¹⁾⁽²⁾ . See section 1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The products 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 section 3 of this Certificate.
Standard:	6.1(b)(c)	Energy demand
Comment:		The products can contribute to satisfying this Standard, with reference to clauses 6.1.1 ⁽¹⁾ and 6.1.2 ⁽²⁾ . See section 6 of this Certificate.

Standard:	6.2	Building insulation envelope
Comment:		The products can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾⁽²⁾ , 6.2.8 ⁽¹⁾⁽²⁾ , 6.2.9 ⁽¹⁾⁽²⁾ , 6.2.10 ⁽¹⁾⁽²⁾ , 6.2.11 ⁽¹⁾⁽²⁾ and 6.2.12 ⁽¹⁾ . See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
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 at least 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 ⁽¹⁾ , 7.1.6 ⁽¹⁾⁽²⁾ , 7.1.7 ⁽¹⁾ , 7.1.9 ⁽²⁾ and 7.1.10 ⁽²⁾ . See section 6 of this Certificate.
Regulation:	12	Building standards – conversion
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 ⁽¹⁾ and Schedule 6 ⁽¹⁾ .
		(1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



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

Regulation:	23(1)(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)(ii)	The products are acceptable. See sections 8 and 9 of this Certificate.
Regulation:	29	Condensation
Comment:		The products can contribute to satisfying this Regulation. See section 3 of this Certificate.
Regulation:	30	Stability
Comment:		The products can contribute to satisfying this Regulation. See section 1 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	Target carbon dioxide emission rate
Regulation:	43(1)(2)	Renovation of thermal elements
Regulation:	43B	Nearly zero-energy requirements for new buildings
Comment:		The products can contribute to satisfying these Regulations. See section 6 of this Certificate.

Additional Information

NHBC Standards 2024

In the opinion of the BBA, Stylite 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*.

Fulfilment of Requirements

The BBA has judged Stylite Flooring Insulation to be satisfactory for use as described in this Certificate. The products have been assessed for use as thermal insulation in ground-bearing or suspended concrete ground floors, in new and existing domestic buildings, and in new and existing non-domestic buildings (EPS 100, EPS 150, PlusTherm EPS 100 only).

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the products under assessment. Stylite Flooring Insulation consists of rigid white or grey expanded polystyrene (EPS) boards, in different grades.

The products have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics of Stylite Flooring Insulation

Characteristic (unit)	White EPS			Grey EPS	
	EPS 70	EPS 100	EPS 150	PlusTherm EPS 70	PlusTherm EPS 100
Length (mm) ⁽¹⁾	2400	2400	2400	2400	2400
Width (mm) ⁽¹⁾	1200	1200	1200	1200	1200
Thickness (mm) ⁽¹⁾⁽²⁾	12 to 300	12 to 300	12 to 300	12 to 300	12 to 300
Flatness (tolerance)	P5	P5	P3	P10	P5
Edge profile	Square	Square	Square	Square	Square

(1) Other sizes are available on request.

(2) In 5 mm increments.

Ancillary Items

The Certificate holder recommends the following ancillary items for use with the products, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

The overlay to the products should be:

- an air and vapour control layer (AVCL) where necessary (see section 9) and;
- a cement-based floor screed of minimum 65 mm⁽¹⁾ thickness, laid in accordance with the relevant clauses of BS 8204-1 : 2003 and/or BS 8204-2 : 2003, and BS 8000-9 : 2003, or
- a wood-based floor [eg tongue-and-groove plywood to BS EN 636 : 2012, flooring grade particle board (Type P4 or P7) to BS EN 312 : 2010 or oriented strand board (type OSB/3 to OSB/4) to BS EN 300 : 2006], of a thickness to be determined by a suitably experienced and competent individual, and installed in accordance with PD CEN/TR 12872 : 2014 and BS EN 12871 : 2013, or
- a concrete slab to BS EN 1992-1-1 : 2004.

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

Product assessment – key factors

The products were assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristic.

1.1 Floor loading

1.1.1 The products were tested for compressive strength and bending strength and the results are given in Table 2.

Table 2 Compressive strength and bending strength

Product assessed	Assessment method	Requirement	Result
EPS 70	Compressive strength to BS EN 826 : 1996	Declared minimum value at 10% deformation	> 70 kPa
EPS 100			> 100 kPa
EPS 150			> 150 kPa
PlusTherm EPS 70			> 70 kPa
PlusTherm EPS 100			> 100 kPa
EPS 70	Bending strength to BS EN 12089 : 2013 Method B	Declared minimum value	> 115 kPa
EPS 100			> 150 kPa
EPS 150			> 200 kPa
PlusTherm EPS 70			> 115 kPa
PlusTherm EPS 100			> 150 kPa

1.1.2 On the basis of data assessed, the products are suitable for the domestic occupancies defined in this Certificate when covered with a suitable floor overlay, and are 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 Tables NA.2 and NA.3, in UK National Annex to BS EN 1991-1-1 : 2002. Further assessment by a suitably competent and experienced individual is necessary in the case of duty walkways and floors subject to physical activities.

1.1.3 On the basis of data assessed, EPS 100, EPS 150 and PlusTherm EPS 100 are also suitable for the non-domestic occupancies defined in this Certificate when covered with a suitable floor overlay, and are capable of resisting a uniformly distributed load of $3 \text{ kN}\cdot\text{m}^{-2}$ for category B2 (offices) and $4 \text{ kN}\cdot\text{m}^{-2}$ for category C33 (non-domestic), or a concentrated load of 2.7 kN for category B2 (offices) and 4.5 kN for category C33 (non-domestic), as defined in Tables NA.2 and NA.3, in UK National Annex to BS EN 1991-1-1 : 2002. Further assessment by a suitably competent and experienced individual is necessary in the case of duty walkways and floors subject to physical activities.

1.1.4 The performance of a specific floor construction will depend on the insulation properties and type of floor overlay used (including thickness and strength). When 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 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, although the latter is outside the scope of this Certificate.

2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 Reaction to fire

2.1.1 The grey EPS products were tested for reaction to fire and the classifications are given in Table 3.

Table 3 Reaction to fire classification

Product assessed	Assessment method	Requirement	Result
PlusTherm EPS 70 ⁽¹⁾	BS EN 13501-1 : 2018	Value achieved	E
PlusTherm EPS 100 ⁽²⁾			E

(1) Classification report reference P124435-1001, issued by BRE Global, 3 October 2023, Issue no. 1. Copies of the report can be obtained from the Certificate holder on request.

(2) Classification report reference WF 513602, issued by Warringtonfire, 20 May 2022, Issue no. 1. Copies of the report can be obtained from the Certificate holder on request.

2.1.2 The Certificate holder has not declared a reaction to fire classification to BS EN 13501-1 : 2018 for the white EPS products.

2.2 Resistance to fire

Where an intermediate floor incorporating the products is required to achieve a period of fire resistance, its performance must be confirmed by a suitably experienced and competent individual or by a test from a suitably accredited laboratory.

3 Hygiene, health and the environment

Data were assessed for the following characteristic.

3.1 Water vapour permeability

3.1.1 The products were assessed for water vapour permeability and the results are given in Table 4.

Table 4 Water vapour resistivity

Product assessed	Assessment method	Requirement	Result
EPS 70	Table F.2 of BS EN 13163 : 2012	Declared value	100 – 200 MN·s·g ⁻¹ ·m ⁻¹
EPS 100			150 – 350 MN·s·g ⁻¹ ·m ⁻¹
EPS 150			150 – 350 MN·s·g ⁻¹ ·m ⁻¹
PlusTherm EPS 70	BS EN 12086 : 1997	Value achieved	100 – 200 MN·s·g ⁻¹ ·m ⁻¹
PlusTherm EPS 100			275 MN·s·g ⁻¹ ·m ⁻¹

3.1.2 For the purposes of assessing the risk of interstitial condensation, the water vapour resistivity values may be taken as stated in Table 4.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

The products were tested for thermal conductivity and the results are given in Table 5.

Table 5 Thermal conductivity

Product assessed	Assessment method	Requirement	Result
EPS 70	BS EN 13163 : 2012	Declared value (λ_D)	0.038 W·m ⁻¹ ·K ⁻¹
EPS 100			0.036 W·m ⁻¹ ·K ⁻¹
EPS 150			0.034 W·m ⁻¹ ·K ⁻¹
PlusTherm EPS 70			0.030 W·m ⁻¹ ·K ⁻¹
PlusTherm EPS 100			0.030 W·m ⁻¹ ·K ⁻¹

6.2 Conservation of fuel and power

6.2.1 Example U values are given in Table 6 and 7.

Table 6 Example U Values — Ground-bearing concrete floor⁽¹⁾⁽²⁾

Target U Value (W·m ⁻² ·K ⁻¹)	EPS Type	Insulation thickness (mm)				
		P/A Ratio				
		0.2	0.4	0.6	0.8	1.0
0.11	EPS 70	200	255	275	285	290
0.12		180	230	250	260	265
0.13		155	205	225	235	240
0.15		120	170	190	200	205
0.18		85	130	150	160	165
0.21		55	100	120	130	135
0.22		50	95	115	120	130
0.25		30	75	95	100	110
0.11	EPS 100	190	245	260	270	275
0.12		170	220	235	245	250
0.13		150	195	215	225	230
0.15		115	160	180	190	195
0.18		80	125	140	150	155
0.21		55	95	115	125	130
0.22		45	90	105	115	120
0.25		30	75	90	95	100
0.11	EPS 150	180	230	245	255	260
0.12		160	205	225	230	235
0.13		140	185	205	210	215
0.15		110	155	170	180	185
0.18		75	115	135	140	145
0.21		50	90	110	115	120
0.22		45	85	100	110	115
0.25		30	70	85	90	95
0.11	PlusTherm EPS 70 & PlusTherm EPS 100	160	205	220	225	230
0.12		140	180	195	205	210
0.13		125	165	180	185	190
0.15		95	135	150	155	160
0.18		65	105	120	125	130
0.21		45	80	95	105	105
0.22		40	75	90	95	100
0.25		25	60	75	80	85

(1) Ground-bearing concrete floor construction (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 slab ($\lambda = 2.06 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$), 150 mm sand-blinded hardcore, ground ($\lambda = 1.5 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$).

(2) 25 mm edge insulation, 65 mm deep.

Table 7 Example U Values — Suspended concrete ground floor⁽¹⁾⁽²⁾

Target U Value (W·m ⁻² ·K ⁻¹)	EPS Type	Insulation thickness (mm)				
		P/A Ratio				
		0.2	0.4	0.6	0.8	1.0
0.11	EPS 70	235	270	280	285	290
0.12		210	240	255	260	265
0.13		185	220	230	240	240
0.15		150	185	195	200	205
0.18		110	145	155	160	165
0.21		80	115	125	130	135
0.22		75	105	120	125	130
0.25		55	85	100	105	110
0.11	EPS 100	225	255	265	270	275
0.12		200	230	240	245	250
0.13		175	210	220	225	230
0.15		140	175	185	190	195
0.18		105	135	145	155	155
0.21		75	110	120	125	130
0.22		70	100	110	120	120
0.25		50	80	95	100	105
0.11	EPS 150	210	240	250	255	260
0.12		185	215	230	235	235
0.13		165	195	205	215	215
0.15		135	165	175	180	185
0.18		100	130	140	145	150
0.21		75	100	115	120	120
0.22		65	95	105	110	115
0.25		45	75	90	95	95
0.11	PlusTherm EPS 70 & PlusTherm EPS 100	185	215	220	225	230
0.12		165	190	200	205	210
0.13		150	175	185	190	190
0.15		120	145	155	160	160
0.18		85	115	125	130	130
0.21		65	90	100	105	110
0.22		60	85	95	100	100
0.25		40	70	80	85	85

(1) Suspended concrete ground floor construction (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 ($\lambda = 1.13 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$), 150 mm ventilated void, ground ($\lambda = 1.5 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$).

(2) 25 mm edge insulation, 65 mm deep.

6.2.2 The U value of a completed floor will depend on the insulation thickness, the perimeter/area ratio, and the floor type.

6.2.3 The products can contribute towards a floor construction satisfying the national Building Regulations in respect of energy economy and heat retention.

7 Sustainable use of natural resources

The products are made from expanded polystyrene (EPS), which is recyclable.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in these products were assessed.

8.2 Specific test data were assessed for the following.

Table 8 Durability tests

Product assessed	Assessment method	Requirement	Result
EPS 70	Dimensional stability to BS EN 1603 : 1997 (23°C and 50% RH)	Length and width ≤ 0.5% change	Pass
EPS 100			Pass
EPS 150			Pass
PlusTherm EPS 100			Pass
EPS 70	Dimensional stability to BS EN 1604 : 1997 (23°C and 90% RH for 48 hours)	Length, width and thickness ≤ 1% change	Pass
EPS 100			Pass
EPS 150			Pass
PlusTherm EPS 100			Pass
PlusTherm EPS 70	Dimensional stability to BS EN 1604 : 2013 (70°C and 90% RH for 48 hours)	Length, width and thickness ≤ 1% change	Pass
EPS 70			Pass
PlusTherm EPS 70	Compressive creep to BS EN 1606 : 2013 and Annex F of BS EN 13163 : 2012 (21 kPa at 23°C and 50% RH)	Extrapolated long term deformation after 50 years achieved	< 2% deformation
EPS 100			< 2% deformation
PlusTherm EPS 100	Compressive creep to BS EN 1606 : 2013 and Annex F of BS EN 13163 : 2012 (30 kPa at 23°C and 50% RH)	Extrapolated long term deformation after 50 years achieved	< 2% deformation
EPS 150			< 2% deformation

8.3 Service life

Under normal service conditions, the products will have a life equivalent to the building in which they are incorporated, provided they are designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed by the BBA, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 The products can 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.

9.1.3 Ground-bearing floors must 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) with a plasticity index of 10% or greater (shrinkable fills are susceptible to clay heave).

9.1.4 Ground-bearing concrete and suspended concrete ground floors incorporating the products must include a suitable DPM, laid beneath the insulation, in accordance with the relevant sections of CP 102 : 1973, BS 8102 : 2009 and BS 8215 : 1991 (see section A.4 of this Certificate).

9.1.5 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 suitably competent and experienced individual, a total void of up to 300 mm may be required.

9.1.6 Where a concrete screed or slab finish is to be laid directly over the products, a polyethylene separating layer/AVCL must be installed between the insulation and the concrete to prevent chemical attack and seepage between the boards (see section A.6). 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.

9.1.7 Internal walls must not be built on the insulation.

9.1.8 Calculations of the thermal transmittance (U value) of a floor must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019.

9.1.9 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration; the detailed guidance that can be found in the documents supporting the national Building Regulations must be followed.

Interstitial condensation

9.1.10 Floors will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021.

9.1.11 When the products are used above the DPM on a ground-bearing or suspended floor, an AVCL 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

9.1.12 In England and Wales, 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 9.1.9 of this Certificate.

9.1.13 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 and the floor is designed and constructed in accordance with the relevant parts of BS 5250 : 2021.

9.1.14 Further guidance may be obtained from BRE Report BR 262 : 2002 and section 6 of this Certificate.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A of this Certificate.

Incorporation of services

9.2.3 De-rating of electrical cables must be considered where the insulation restricts air cooling of cables; the products 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, but such advice is outside the scope of this Certificate.

9.2.4 Where possible, electrical conduits, gas and water pipes or other services must 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 that are likely to come into contact with the insulation must be protected by a suitable conduit or PVC-U trunking. With hot pipes, the insulation must be cut back to maintain an air space.

9.2.5 Where water pipes are installed below the insulation, they must be pre-lagged with close-fitting pipe insulation.

9.2.6 Where the products 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.

9.2.7 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 must be as narrow as possible and not exceed 400 mm in width or the maximum particle board spans given in PD CEN/TR 12872 : 2014 without intermediate support. Services must be suitably fixed to the floor base and not to the insulation boards (see section 9.1.10 of this Certificate regarding limiting heat loss).

9.3 Workmanship

Practicability of installation was assessed by the BBA on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the products must be carried out by a competent general builder, or a contractor, experienced with these type of products.

9.4 Maintenance and repair

As the product is confined within the floor by the overlay and has suitable durability, maintenance is not required.

10 Manufacture

10.1 The production processes for the products have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review 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.

11 Delivery and site handling

11.1 The Certificate holder stated that the products are delivered to site in packaging bearing the product description and characteristics, traceability, QR code, the Certificate holder's name and the BBA logo incorporating the number of this Certificate.

11.2 Delivery and site handling must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 The products must be stored such that they are raised off the ground, inside or under cover on a flat, dry, level surface in a well-ventilated area. The products must be protected from rain, snow and prolonged exposure to sunlight. Boards that have been allowed to get wet or damaged must not be used. Nothing must be stored on top of the boards.

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

Supporting information in this Annex is relevant to the products but has not formed part of the material assessed for the 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.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard EN 13163 : 2012.

Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 by the British Assessment Bureau (Certificates 197638 and 194546 respectively).

Additional information on installation

A.1 Typical methods of installation are shown in Figures 1 to 4. Reference should also be made to BRE Report BR 262 : 2002.

Figure 1 Ground-bearing concrete floor — timber board overlay

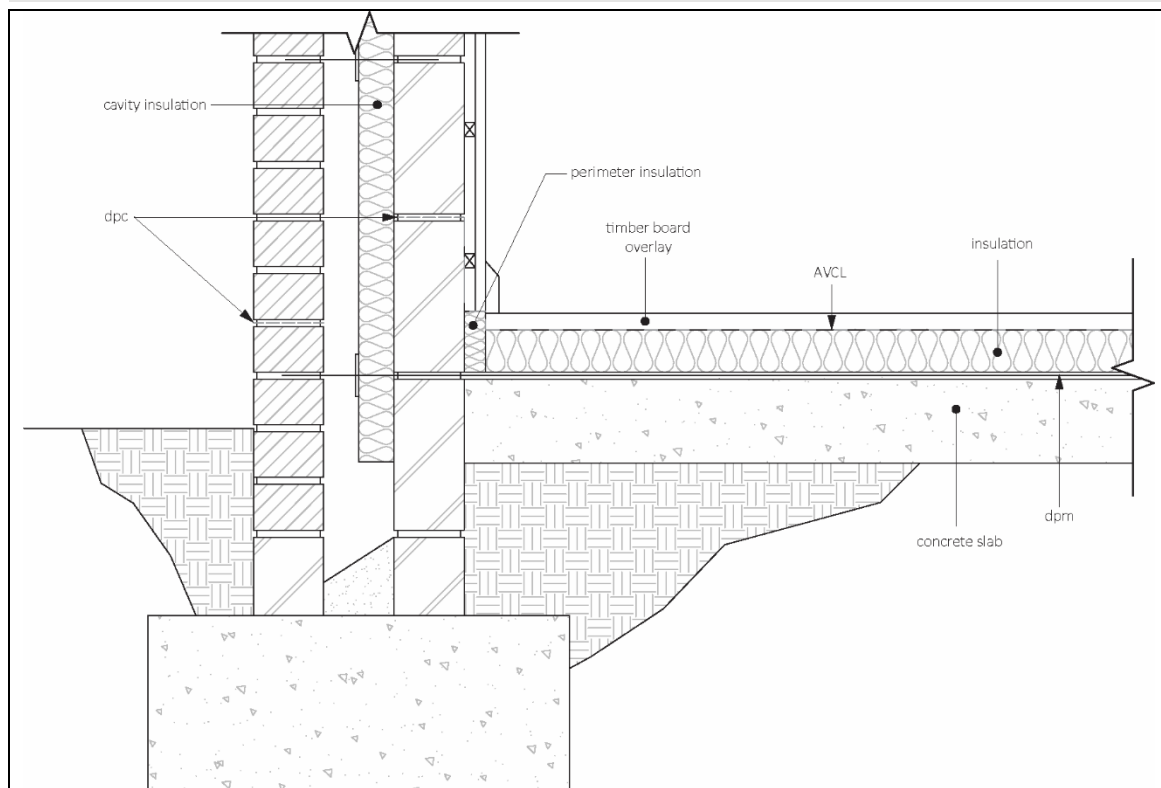


Figure 2 *Suspended concrete ground floor — timber board overlay*

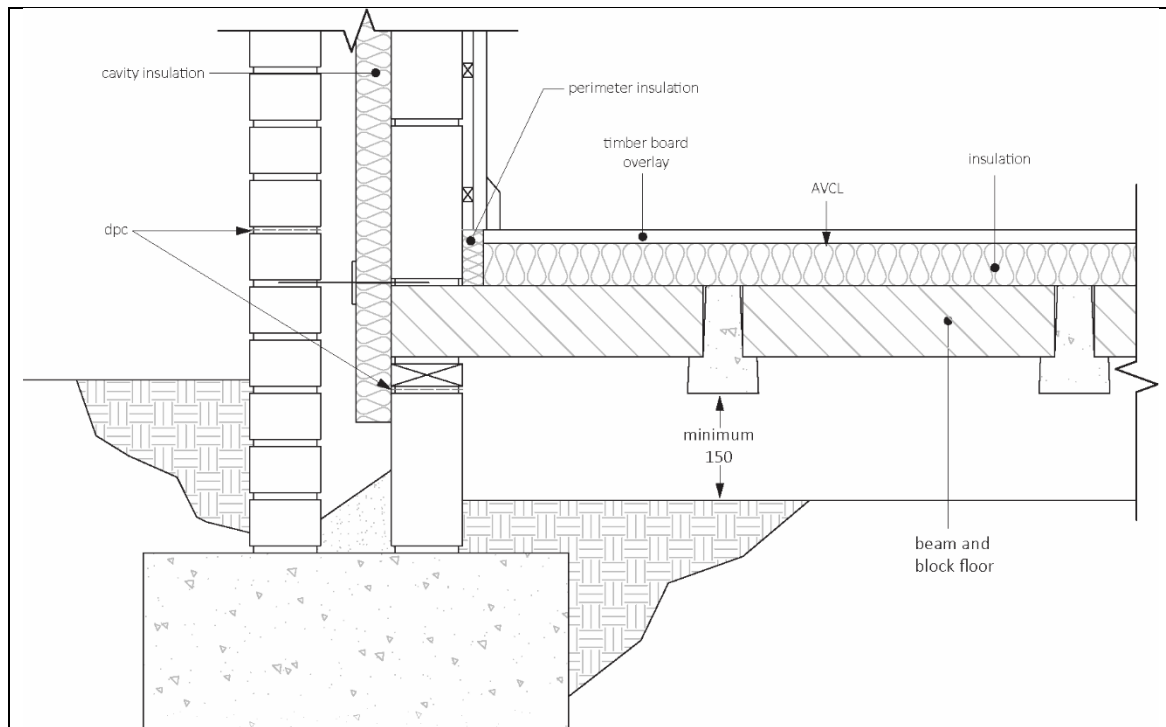


Figure 3 *Ground-bearing concrete floor — screed overlay*

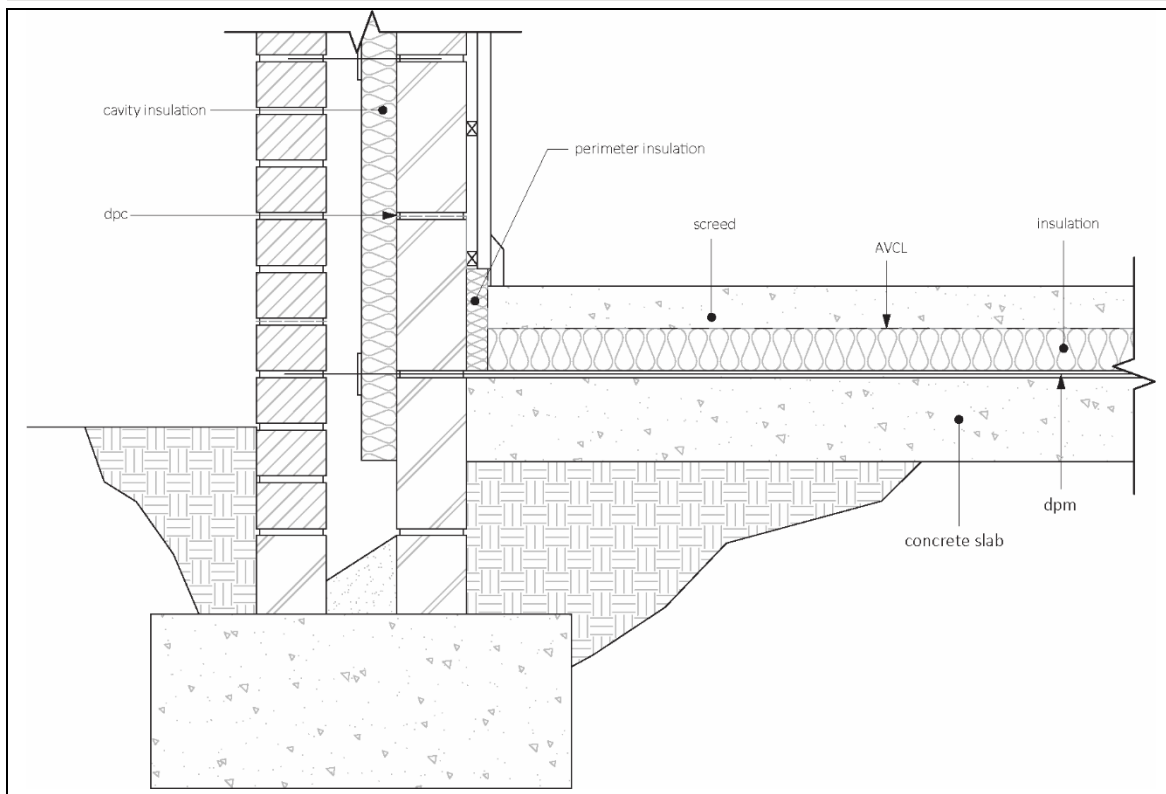
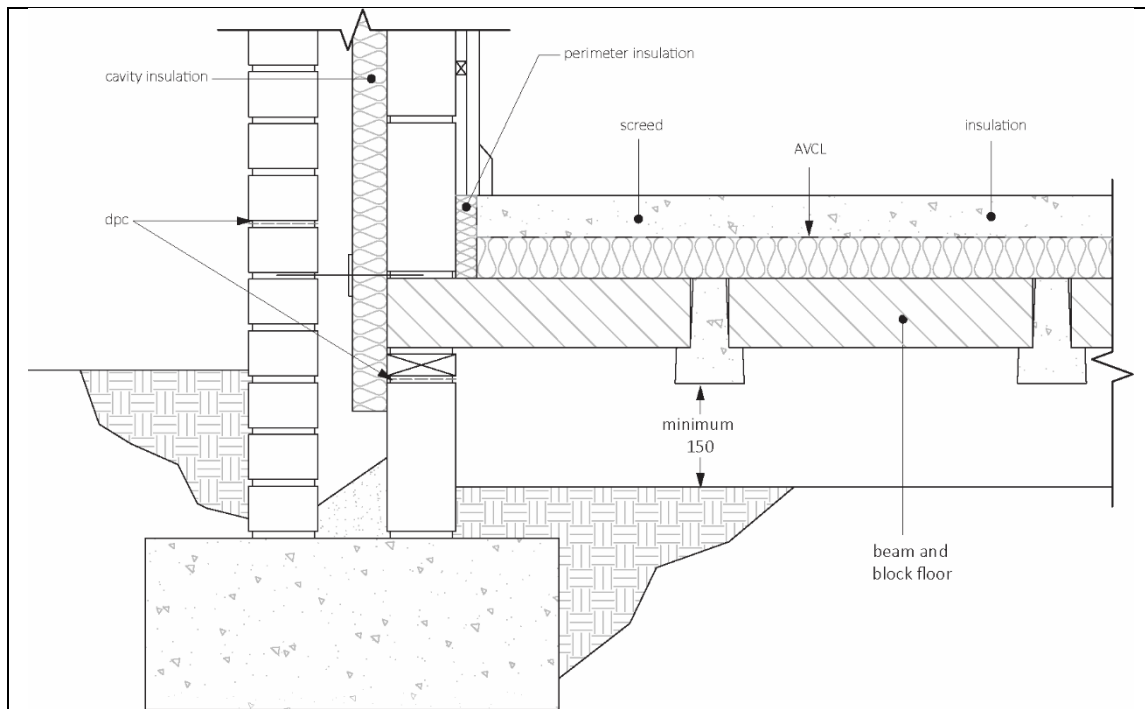


Figure 4 Suspended concrete ground floor — screed overlay



A.2 In ground-bearing concrete floors, the concrete floor slab over which the boards are to be 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.

A.3 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.

A.4 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 the product and be allowed to dry out fully before laying the insulation.

A.5 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.

A.6 An AVCL is installed on the warm side of the insulation to inhibit the risk of interstitial condensation if necessary (see section 9). Where a concrete screed or slab finish is to be laid directly over the product, a polyethylene separating layer/AVCL must be installed between the insulation and the concrete to prevent chemical attack and seepage between the boards.

A.7 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.

A.8 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 be protected from damage by traffic and moisture sources such as water spillage and plaster droppings.

Procedure

A.9 The products are cut to size (using a sharp knife or fine-toothed saw), as necessary, and laid with closely butted, staggered cross-joints, ensuring all spaces are completely filled.

A.10 The laying pattern should ensure that all cut edges are at the perimeter of the floor or some other feature, eg mat wells, thresholds or access ducts. Spreader boards should be used to protect the insulation.

Timber-based board overlay

A.11 Before laying the plywood, particle board or OSB overlay, 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.

A.12 Where the insulation is laid above a DPM, a polyethylene AVCL of at least 0.125 mm (500 gauge) thickness is laid between the insulation and the timber board overlay. The AVCL should have 150 mm overlaps, taped at the joints and turned up 100 mm at the walls.

A.13 Timber-based overlay boards, as specified in section 9, are laid with staggered cross-joints, in accordance with PD CEN/TR 12872 : 2014 and BS EN 12871 : 2013.

A.14 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.

A.15 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.

A.16 Before the overlay boards are interlocked, a water-resistant PVA adhesive is applied to the joints.

A.17 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.

A.18 When the wedges are removed and before the skirting boards are fixed, a suitable compressible filler, eg foamed polyethylene, should be fitted around the perimeter of the floor between the overlay board and the walls.

A.19 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, turned up at abutments and cove skirting.

Cement-based screed overlay

A.20 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polyethylene AVCL, at least 0.125 mm thick (500 gauge), is laid over the insulation. The AVCL should have 150 mm overlaps, taped at the joints and turned up 100 mm at the walls. A properly compacted screed of minimum thickness 65 mm is then laid over. The relevant clauses of BS 8204-1 : 2003 should be followed.

Concrete slab overlay (ground-bearing only)

A.21 Perimeter edge pieces are cut and placed around the edges and taped at the joints. A polyethylene AVCL, minimum 0.125 mm thick (500 gauge), is laid over the insulation. The AVCL 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.

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BS EN 15037-2 : 2009 + A1 : 2011 *Precast concrete products — Beam-and-block floor systems — Concrete blocks*

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Conditions of Certificate

Conditions

1 This Certificate:

- relates only to the products that are 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.

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.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the products and their 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.

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

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 products or any other product
- the right of the Certificate holder to manufacture, supply, install, maintain or market the products
- actual installations of the products, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the products are installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the products, including their manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of these products which is contained or referred to in this Certificate is the minimum required to be met when the products are 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.

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