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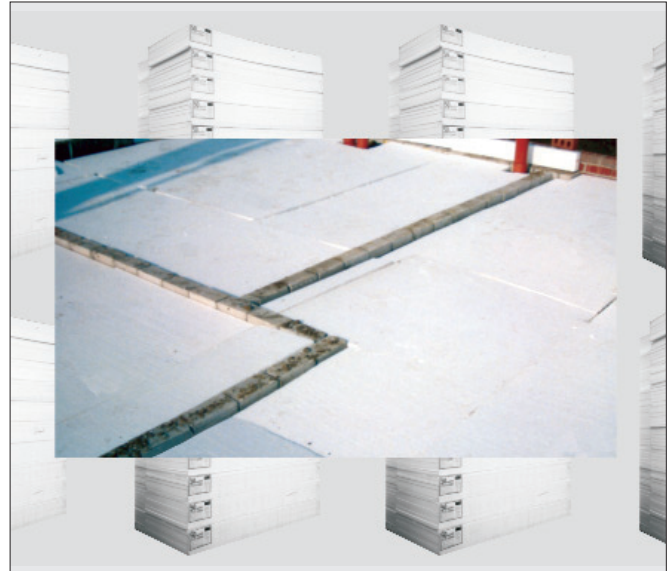
Agrément Certificate
No 04/4102

PRODUCT SHEET 1 — STYLITE FLOORING INSULATION**PRODUCT SCOPE AND SUMMARY OF CERTIFICATE**

This Certificate relates to Stylite Flooring Insulation, an Expanded Polystyrene Board for insulating concrete floors.

THIS CERTIFICATE INCLUDES:

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

**KEY FACTORS ASSESSED**

Thermal performance — the product can be used to improve the thermal performance of a floor (see section 4).

Floor loading — the product can be designed to support loading without undue deflection (see section 5) and can be designed to resist the impacts associated with installation in the areas outlined in section 12.

Condensation — the performance of the product with regard to interstitial and surface condensations has been considered (see section 6).

Behaviour in relation to fire — the product can be designed to meet the UK requirements concerning fire performance (see section 7).

Durability — the design life of the product under typical UK conditions has been considered as part of this assessment (see section 11).

The BBA has awarded this Agrément Certificate for Stylite Flooring Insulation to Styrene Packaging & Insulation Ltd as fit for its intended use provided it is installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Date of First issue: 30 April 2004

Date of Second issue: 29 August 2007

Greg Cooper: 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, Stylite Flooring Insulation if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	A1	Loading
Comment:		Floors incorporating this product can meet this Requirement. See section 5.2 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		A concrete ground floor incorporating the insulation can meet this Requirement provided the floor complies with the conditions set out in sections 6.1 and 6.3 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The insulation can enable, or contribute to enabling, a floor to meet its Target Emission Rate. See sections 4.3 to 4.6 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The insulation is acceptable. See section 9 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The insulation can contribute to a construction satisfying this Regulation. See section 9 and <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	1.1(a)(b)	Structure
Comment:		Floors incorporating this product can satisfy this Standard, with reference to clause 1.1.1 ⁽¹⁾ . See section 5.2 of this Certificate.
Standard:	3.15	Condensation
Comment:		Floors incorporating the insulation can satisfy this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See sections 6.1 and 6.4 of this Certificate.
Standard:	6.1(a)(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The insulation will enable or contribute to enabling a floor to satisfy these Standards, with reference to clauses 6.1.2 ⁽¹⁾⁽²⁾ , 6.1.3 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽¹⁾⁽²⁾ , 6.2.5 ⁽¹⁾ , 6.2.9 ⁽¹⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾ and 6.2.12 ⁽¹⁾ . See sections 4.3 to 4.6 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for the insulation under Regulation 9, 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) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The insulation is acceptable. See section 9 of this Certificate.
Regulation:	C5	Condensation
Comment:		Floors incorporating the insulation can satisfy this Regulation. See section 6.1 of this Certificate.
Regulation:	D1	Stability
Comment:		Floors incorporating this product can meet this Regulation. See section 5.2 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Comment:		The product will contribute to a building satisfying its Target Emission Rate. See sections 4.3 to 4.6 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 2 *Delivery and site handling* (2.4).

Non-regulatory Information

NHBC Standards 2007

NHBC accepts the use of Stylite Flooring Insulation, when installed and used in accordance with this Certificate, in relation to NHBC Standards, Chapter 5 *Substructure and ground floors*.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, Stylite Flooring Insulation, when installed and used in accordance with this Certificate, satisfies the requirements of the *Zurich Building Guarantee Technical Manual, Section 3 Substructure, Sub-section Floors* (pages 108 to 126).

General

This Certificate relates to Stylite Flooring Insulation, an expanded polystyrene board for insulating concrete floors for use on ground-supported or suspended concrete ground floors and exposed or semi-exposed intermediate concrete floors.

The product is used to reduce the thermal transmittance of new or existing floors of dwellings or buildings of similar occupancy, type and condition.

Technical Specification

1 Description

1.1 Stylite Flooring Insulation consists of rigid, expanded polystyrene boards, in EPS 70, EPS 100 and EPS 150 (Class F) grade, manufactured in accordance with Section 4.2 and the relevant parts of Section 4.3 of BS EN 13163 : 2001.

1.2 The board is supplied with nominal characteristics of:

	EPS 70	EPS 100	EPS 150
length ⁽¹⁾ (mm)	2400	2400	2400
width ⁽¹⁾ (mm)	1200	1200	1200
thickness ⁽²⁾ (mm)	12 to 300	12 to 300	12 to 300
bending strength (kPa)	min 115	min 150	min 200
minimum compressive strength at 10% compression (kNm ⁻²)	70	100	150
edge profile	square	square	square

(1) Other sizes supplied to order, with thickness to suit requirement.

(2) In 5 mm increments.

2 Delivery and site handling

2.1 The boards are delivered to site in packs, wrapped in polyethylene. Each pack contains an instruction leaflet and a label bearing the manufacturer's trade name, product description, board dimensions, number of boards and the BBA identification mark incorporating the number of this Certificate.

2.2 The boards must be protected from prolonged exposure to sunlight and should be stored either under cover or protected with opaque polyethylene.

2.3 The boards must be stored fully supported and flat on a firm, level, dry base, protected from the weather and raised above damp surfaces.

2.4 The boards must not be exposed to open flame or other ignition sources. Care must be taken to avoid contact with solvents and bitumen products.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Stylite Flooring Insulation.

Design Considerations

3 Use

3.1 Stylite Flooring Insulation is effective in reducing the U value (thermal transmittance) of new or existing concrete ground floors.

3.2 Ground-supported concrete floors incorporating the boards must include a suitable damp-proof membrane laid in accordance with the relevant clauses of CP 102 : 1973, BS 8102 : 1990 and/or BS 8215 : 1991 (see section 8 of this Certificate).

3.3 Suspended concrete ground floors incorporating the boards must include a damp-proof membrane or suitable ventilation of the sub-floor (see section 8 of this Certificate).

3.4 The overlay to the boards should be:

- a cement-based floor screed laid in accordance with the relevant clauses of BS 8204-1 : 2003 and/or BS 8204-2 : 2003, or

- wood-based floor, eg tongue-and-groove plywood 16 mm thick (minimum) to BS EN 636 : 2003, flooring grade particle board (Type P5 or P7) to BS EN 312 : 2003 or oriented strand board of type OSB/3 or OSB/4 to BS EN 300 : 2006, 18 mm thick (minimum), installed in accordance with ENV 12872 : 2000, or
- a concrete slab.

4 Thermal performance

4.1 Calculations of the thermal transmittance (U value) of a floor should be carried out in accordance with BS EN ISO 6946 : 1997, BS EN ISO 13370 : 1998 and BRE report (BR 443 : 2006) *Conventions for U-value calculations* using the declared thermal conductivity ($\lambda_{90/90}$ value) of the insulation are shown in Table 1.

4.2 The U value of a floor will depend on the thickness of the board, the perimeter/area ratio and the floor type. Examples of U values are given in Table 1. This table is for use as guidance only, a detailed calculation should be carried out for each proposed application.

Floor type	Perimeter/area ratio	EPS/ λ value ($Wm^{-1}K^{-1}$)	Insulation thickness (mm)			
			25	50	75	100
Slab on ground supported	0.2	EPS 70 $\lambda=0.038$	0.27	0.23	0.20	0.17
			0.4	0.32	0.26	0.22
			0.6	0.37	0.29	0.25
			0.8	0.40	0.32	0.26
			1.0	0.43	0.33	0.27
	0.4	EPS 100 $\lambda=0.036$	0.27	0.22	0.19	0.17
			0.4	0.31	0.25	0.21
			0.6	0.36	0.28	0.24
			0.8	0.39	0.31	0.25
			1.0	0.42	0.32	0.26
	0.6	EPS 150 $\lambda=0.034$	0.27	0.22	0.19	0.16
			0.4	0.30	0.25	0.21
			0.6	0.35	0.28	0.23
			0.8	0.38	0.30	0.24
			1.0	0.40	0.31	0.25
Suspended beam and block	0.2	EPS 70 $\lambda=0.038$	0.28	0.24	0.20	0.18
			0.4	0.30	0.25	0.22
			0.6	0.34	0.28	0.24
			0.8	0.36	0.29	0.25
			1.0	0.38	0.30	0.25
	0.4	EPS 100 $\lambda=0.036$	0.28	0.23	0.20	0.18
			0.4	0.30	0.25	0.21
			0.6	0.33	0.27	0.23
			0.8	0.35	0.28	0.24
			1.0	0.37	0.29	0.24
	0.6	EPS 150 $\lambda=0.034$	0.27	0.23	0.20	0.17
			0.4	0.29	0.24	0.20
			0.6	0.32	0.26	0.22
			0.8	0.34	0.27	0.23
			1.0	0.36	0.28	0.23

(1) Excluding edge insulation for the ground-supported floor system.



4.3 Subject to the selection of an appropriate construction, P/A ratio and insulation thickness, a floor construction can contribute to achieving the following design U values:

England and Wales and Northern Ireland

- 0.25 $Wm^{-2}K^{-1}$ required for 'notional' dwellings in SAP 2005
- 0.25 $Wm^{-2}K^{-1}$ limit average specified in Approved Documents L1A (Table 2), and Technical Booklet F1 (Table 2.2)
- 0.70 $Wm^{-2}K^{-1}$ limit for an individual element specified in Approved Documents L1A (Table 2), and Technical Booklets F1 (Table 2.2).

Scotland

- 0.20 $Wm^{-2}K^{-1}$ required for the 'simplified approach – solid fuel packages 3 and 6' 'notional' dwelling in Mandatory Standard 6.1, clause 6.1.6⁽¹⁾
- 0.22 $Wm^{-2}K^{-1}$ required for 'notional' dwellings in SAP 2005 (for Scotland) and the 'simplified approach – packages 1, 2, 4 and 5' in Mandatory Standard 6.1, clause 6.1.2⁽¹⁾⁽²⁾
- 0.25 $Wm^{-2}K^{-1}$ required for notional dwellings as described in Mandatory Standard 6.2, clause 6.1.6⁽¹⁾
- 0.22 $Wm^{-2}K^{-1}$ for extensions the value described by the Table to Mandatory Standard 6.2, clauses 6.2.9⁽¹⁾ and 6.2.10⁽²⁾
- 0.70 $Wm^{-2}K^{-1}$ limit for an individual element specified in Mandatory Standard 6.2, clauses 6.2.1⁽¹⁾, 6.2.9⁽¹⁾ and 6.2.10⁽²⁾.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

4.4 Floors with U values lower than (or the same as in Scotland) the relevant 'notional' value (see section 4.3) will contribute to a dwelling meeting its target of an overall reduction in carbon dioxide emissions of about 20% (or 18% to 25% in Scotland). Floors with higher U values will require additional energy saving measures in the building envelope and/or services.

4.5 Compliance with the guidance referred to in section 4.6 will allow the use of the default psi values from Table 3 of BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings* and Table K1 of *The Government's Standard Assessment Procedure for Energy rating of Dwellings* (SAP 2005), in Target Emission Rate calculations to SAP 2005 or the simplified approach in Scotland.

4.6 The product can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between the external wall and other building elements. Guidance in this respect, and on limiting heat loss by air infiltration, can be found in:

England and Wales — *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* TSO 2002.

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

5 Floor loading

5.1 The design loadings for self-contained dwelling units, as defined in BS 6399-1 : 1996, are:

intensity of distributed load (kPa)	<1.5
concentrated load (kN)	<1.4



5.2 The boards, covered with particle board, plywood or screed, can support these design loadings without undue deflection.

5.3 A BRE survey of imposed floor loading in domestic buildings (see BRE current paper No 2/77 *Floor loadings in domestic buildings — the results of a survey*), indicates that loadings in flats are commonly in the region of 0.6 kPa and loadings of 1.5 kPa are normally associated with fixed items.

5.4 Where the boards are used under a concrete slab, resistance to concentrated and distributed loads is a function of the slab specification.

6 Condensation

Interstitial condensation



6.1 Floors will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2002, Section 8.5 and Appendix D. The product has a water vapour resistivity exceeding $250 \text{ MNsg}^{-1}\text{m}^{-1}$.

6.2 When the product is used above the damp-proof course on a ground-supported floor, or on a beam-and block floor, a vapour control layer is installed on the warm side of the insulation to inhibit the risk of interstitial condensation.

Surface condensation



6.3 Floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.7 \text{ Wm}^{-2}\text{K}^{-1}$ at any point, and the junctions with walls are designed in accordance with the relevant requirements of TSO publication *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings*, 2002 or BRE Information Paper IP 01/06.



6.4 Floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ Wm}^{-2}\text{K}^{-1}$ at any point. Guidance may be obtained from Section 8 of BS 5250 : 2002 and BRE report (BR 262 : 2002) *Thermal insulation : avoiding risks*.

7 Behaviour in relation to fire

7.1 The boards do not prejudice the fire resistance properties of the floor.

7.2 When properly installed, the boards will not add significantly to any existing fire hazard. The boards will be contained within the floor by the overlay until the overlay itself is destroyed. Therefore, the boards will not contribute to the development stages of a fire or present a smoke or toxic hazard. Electrical cables running within the polystyrene should be separated from it by enclosing them within a suitable conduit.

8 Moisture penetration

9.1 The boards are not a water vapour control layer. However, they will not allow moisture to cross the completed floor construction.

9.2 For floors subject to national Building Regulations, construction should be as detailed or designed in accordance with:

England and Wales — Approved Document C, Section 4

Scotland — Mandatory Standard 3.4, clauses 3.4.2⁽¹⁾ to 3.4.4⁽¹⁾ and 3.4.6⁽¹⁾

(1) Technical Handbook (Domestic)

Northern Ireland — Technical Booklet C, Section 1.

9 Durability



The boards 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.

Installation

10 General

10.1 Installation of Stylite Flooring Insulation must be in accordance with the Certificate holder's installation instructions and the requirements of this Certificate.

10.2 Typical methods are shown in Figures 1 to 4. Reference should also be made to BRE report (BR 262 : 2002).

10.3 All concrete floor surfaces should be smooth, level and flat to within 5 mm when measured with a 2-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.

Figure 1 Ground-supported concrete floor — particle board

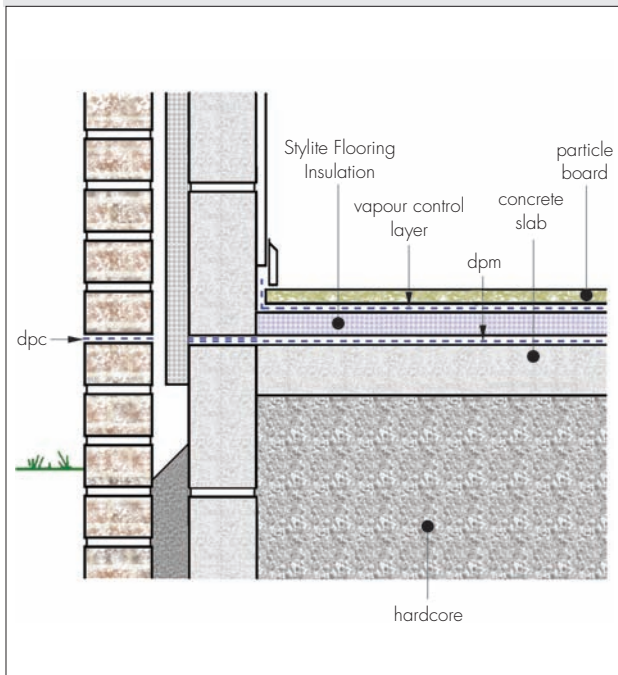


Figure 2 Suspended concrete floor — particle board

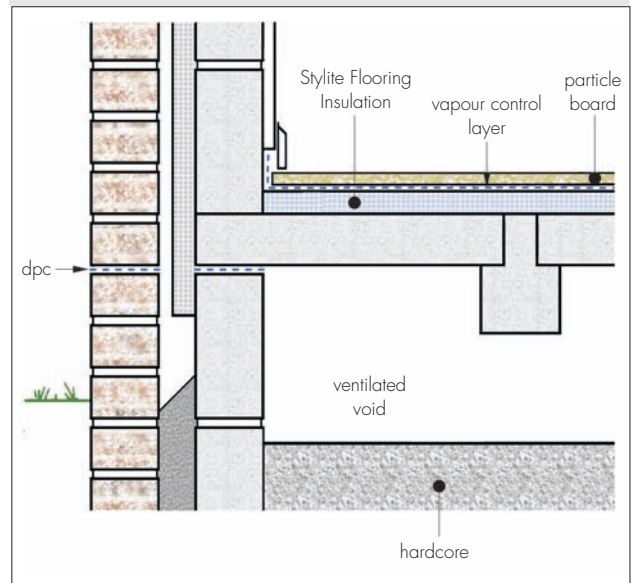


Figure 3 Ground-supported concrete floor — screed overlay

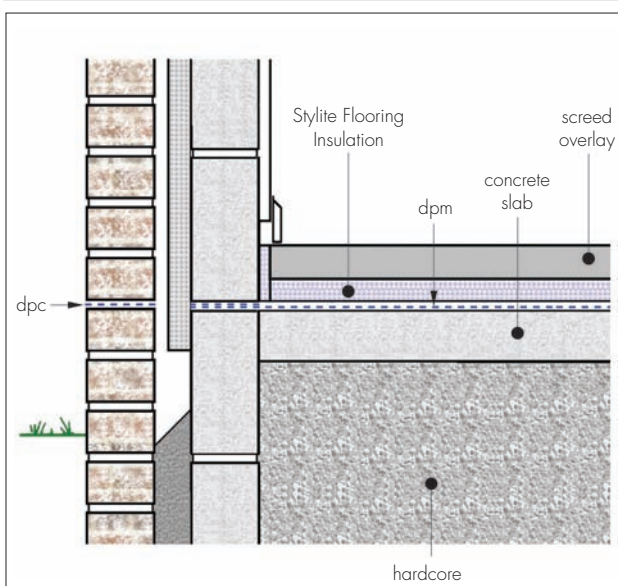
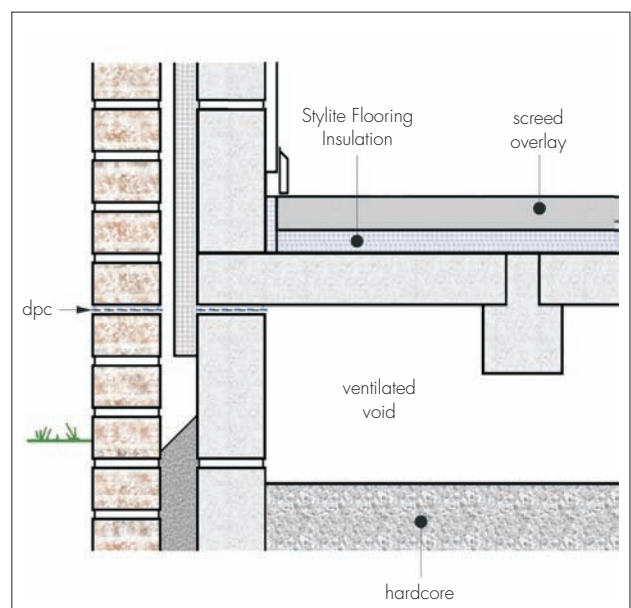


Figure 4 Suspended concrete floor — screed



10.4 In ground-supported concrete floors, the concrete floor slab over which the boards 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.

10.5 Where the boards are used over ground-supported concrete floor slabs a suitable damp-proof membrane in accordance with BS 8102 : 1990 and CP 102 : 1973, should be laid to resist moisture from the ground. If a liquid-type damp-proof membrane 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 boards.

10.6 Where the boards are used on hardcore bases under ground-supported concrete slabs, the hardcore must be compacted and blinded before application of the boards.

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

10.8 Where a screed or concrete slab is laid over the product, vertical upstands of insulation should be provided and be of sufficient depth to fully separate the screed or slab from the wall and provide a minimum thermal resistance of $0.75 \text{ m}^2\text{KW}^{-1}$. A suitable cavity or external wall insulation material can be extended below the damp-proof course and a minimum of 150 mm below the top of the floor insulation to provide edge insulation to the floor.

10.9 During construction, the boards and particle board overlays must be protected from damage by traffic and moisture sources such as water spillage, and plaster droppings.

11 Procedure

11.1 The boards are cut to size, as necessary and laid with closely-butted, staggered cross-joints, ensuring that all spaces are completely filled.

11.2 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 boards.

Timber-based overlays (Figures 1 and 2)

11.3 Before laying the particle board, plywood or OSB overlays, preservative-treated timber battens, in accordance with BS 1282 : 1999, are positioned at doorways, access panels and to support partitions. Adequate time should be allowed for CCA-based preservatives to be fixed and the solvents from solvent-based preservatives to evaporate.

11.4 Where insulation boards are laid on a dpm, a continuous vapour control layer with sealed joints of polyethylene sheet with a minimum thickness of 0.25 mm (1000 gauge), is laid between the boards and the overlay board. The polyethylene sheet has 150 mm overlaps taped at the joints and is turned up 100 mm at the walls.

11.5 Tongue-and-groove plywood, particle board (type P5 or P7), or OSB/3 or OSB/4 is laid with staggered cross-joints in accordance with ENV 12872 : 2000 .

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

11.7 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.

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

11.9 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.

11.10 When the wedges are removed and before the skirting boards are fixed, suitable compressible filler, eg pieces of polystyrene, should be fitted around the perimeter of the floor between the overlay board and the walls.

11.11 Where there is a likelihood of regular water spillage, eg in rooms such as kitchens, bathrooms, shower and utility rooms, additional overlay board protection should be considered, eg by a continuous flexible vinyl sheet flooring, with welded joints, and cove skirting.

Cement-based screed overlay (Figures 3 and 4)

11.12 Perimeter edge pieces are cut and placed around the edges and all floor joints taped before a properly-compacted screed of a minimum 65 mm thickness is laid. The relevant clauses of BS 8204-1 : 2003 should be followed and BRE Digest 224 : 1981 *Cellular plastics for buildings. Floors* and BRE Digest 104 : 1979 *Floor screeds* should be consulted.

Concrete slab overlay (ground bearing only)

11.13 Perimeter edge pieces are cut and placed around the edges and taped at joints. The concrete slab is laid to the required thickness in accordance with BS 8000-9 : 2003 and BS 8204-1 : 2003.

12 Incorporation of services

12.1 The boards must not be used in direct contact with electrical heating cables or hot water pipes.

12.2 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 (see section 7.2). Electrical cables should be enclosed in a suitable conduit. With hot pipes, the insulation must be cut back to maintain an air space.

12.3 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.

12.4 Where the boards 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 in accordance with the Agrément Certificate (where appropriate) for that floor.

12.5 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 ENV 12872 : 2000 without intermediate support. Services should be suitably fixed to the floor base and not to the insulation boards (see section 4.4 with regard to limiting heat loss).

Technical Investigations

13 Tests

Tests were carried out on Stylite Flooring Insulation by the BBA in accordance with BS EN 13163 : 2001 to determine:

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

14 Investigations

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

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

- dimensional tolerances
- squareness
- flatness
- density
- λ value
- compressive strength at 10% compression
- bending strength.

Additional Information

The Certificate holder has declared the designation codes (see Table 2) in accordance with Section 6 of BS EN 13163 : 2001.

*Table 2 Certificate holder's declared designation codes/level or class —
BS EN 13163 : 2001*

Characteristic	Level/classes		
	EPS 70	EPS 1000	EPS 150
Length	L1	L1	L1
Width	W1	W1	W1
Thickness	T1	T1	T1
Squareness	S1	S1	S1
Flatness	P2	P2	P2
Compressive stress (min) at 10% deformation ⁽¹⁾⁽²⁾	CS(10)70	CS(10)100	CS(10)150
Dimensional stability at 23°C/50% RH ⁽¹⁾	DS(N)2	DS(N)2	DS(N)2
Dimensional stability at 23°C/90% RH ⁽¹⁾⁽²⁾	DS(23,90)1	DS(23,90)1	DS(23,90)1
Water absorption by immersion ⁽¹⁾			
— total (%)	WL(T)3	WL(T)3	WL(T)3
— partial (kgm ⁻²)	0.05	0.15	0.07
Water absorption by diffusion ⁽¹⁾	WD(V)10	WD(V)5	WD(V)10
Bending strength	BS115	BS150	BS200
Thermal conductivity ($\lambda_{90,90}$ value) (Wm ⁻¹ K ⁻¹) ⁽¹⁾	0.038	0.036	0.034

(1) Tests carried out by the BBA on one production date.

(2) For 50 mm thicknesses only.

Bibliography

- BS 1282 : 1999 *Wood preservatives — Guidance on choice, use and application*
- BS 5250 : 2002 *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 8102 : 1990 *Code of practice for protection of structures against water from the ground*
- 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 EN 300 : 2006 *Oriented Strand Boards (OSB) — Definitions, classification and specifications*
- BS EN 312 : 2003 *Particleboards — Specifications*
- BS EN 636 : 2003 *Plywood — Specifications*
- BS EN 13163 : 2001 *Thermal insulation products for buildings — Factory made products of expanded polystyrene (EPS) — Specification*
- BS EN ISO 6946 : 1997 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*
- BS EN ISO 13370 : 1998 *Thermal performance of buildings — Heat transfer via the ground — Calculation methods*
- CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*
- ENV 12872 : 2000 *Wood-based panels — Guidance on the use of load-bearing boards in floors, roofs and walls*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

15.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.

15.4 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

15.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.

