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Agrément Certificate

17/5454

Product Sheet 1

POLYFOAM XPS

POLYFOAM FLOORBOARD STANDARD AND EXTRA

This Agrément Certificate Product Sheet⁽¹⁾ relates to Polyfoam Floorboard Standard and Extra, extruded polystyrene (XPS) boards for use as thermal insulation on ground-supported or suspended concrete ground floors in new and existing buildings. The Standard board is for domestic use only and the Extra board is for both domestic and non-domestic use.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

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

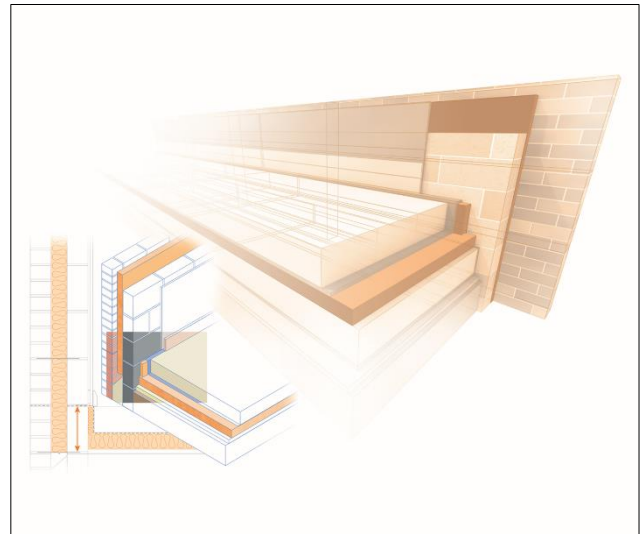
KEY FACTORS ASSESSED

Thermal performance — the products have a declared thermal conductivity (λ_D) of $0.033 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (see section 6).

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

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

Durability — the products are durable, rot-proof and sufficiently stable to remain effective as an insulation for the life of the building (see section 11).



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 First issue: 20 September 2017

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Certificate amended on 18 October 2018 to update company details

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

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.
Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

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Regulations

In the opinion of the BBA, Polyfoam Floorboard Standard and Extra, 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 products can contribute to satisfying this Requirement. See sections 9.2 and 9.3 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The products can contribute to satisfying this Requirement. See sections 7.1 and 7.4 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	Materials and workmanship
Comment:		The products are acceptable. See section 11 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 products can contribute to satisfying these Regulations. See section 6 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(b)	Structure
Comment:		The products can contribute to satisfying this Standard, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . See sections 9.2 and 9.3 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 sections 7.1 and 7.5 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The products can contribute to satisfying these Standards, with reference to clauses, or parts of, 6.1.1 ⁽¹⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾⁽²⁾ , 6.2.4 ⁽¹⁾⁽²⁾ , 6.2.5 ⁽¹⁾⁽²⁾ , 6.2.6 ⁽¹⁾⁽²⁾ , 6.2.7 ⁽¹⁾ , 6.2.8 ⁽²⁾ , 6.2.9 ⁽¹⁾⁽²⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾⁽²⁾ , 6.2.12 ⁽²⁾ and 6.2.13 ⁽¹⁾⁽²⁾ . 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 a bronze level of sustainability as defined in this Standard. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in this Standard with reference to clauses 7.1.4⁽¹⁾⁽²⁾ [Aspects 1⁽¹⁾⁽²⁾ and 2⁽¹⁾], 7.1.6⁽¹⁾⁽²⁾ [Aspects 1⁽¹⁾⁽²⁾ and 2⁽¹⁾] and 7.1.7⁽¹⁾⁽²⁾ [Aspect 1⁽¹⁾⁽²⁾]. See section 6 of this Certificate.

Regulation: 12 **Building standards applicable to conversions**
Comment: Comments 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 **Fitness of materials and workmanship**
Comment: The products are acceptable. See section 11 and the *Installation* part of this Certificate.

Regulation: 29 **Condensation**
Comment: The products can contribute to satisfying this Regulation. See section 7.1 of this Certificate.

Regulation: 30 **Stability**
Comment: The products can contribute to satisfying this Regulation. See sections 9.2 and 9.3 of this Certificate.

Regulation: 39(a)(i) **Conservation measures**
Regulation: 40(2) **Target carbon dioxide emission rate**
Comment: The products can contribute to a building satisfying these Regulations. See section 6 of this Certificate.

Construction (Design and Management) Regulations 2015

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

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

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

Additional Information

NHBC Standards 2017

In the opinion of the BBA, Floorboard Standard and Extra, 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 13164 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Polyfoam Floorboard Standard and Extra consist of extruded polystyrene (XPS) boards.

1.2 The products have the nominal characteristics shown in Table 1.

Table 1 Nominal characteristics

Property	Grade	
	Standard	Extra
Length (mm)	2500 1250 ⁽¹⁾	2500 1250 ⁽¹⁾
Width (mm)	600	600
Standard thicknesses* (mm)	25, 35, 50, 65, 75, 100	25, 35, 50, 65, 75, 100
Minimum compressive strength* at 10% compression (kPa)	200	300
Flatness (mm/m)	≤ 6	≤ 6
Edge profile	Plain or 15 mm rebated ⁽¹⁾	Plain or 15 mm rebated ⁽¹⁾

(1) Only the 100 mm thick boards are offered in 1250 mm lengths and with a 15 mm rebated edges.

2 Manufacture

2.1 Raw materials are heated to form a molten plastic mix, which is injected with blowing agent. The foam is extruded and shaped in a die. An automated process cures and cuts the product to the required 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 Polyfoam XPS Limited has been assessed and registered as meeting the requirements of BS EN 9001 : 2015 and BS EN 14001 : 2015 by Bureau Veritas Certification (Certificates UK008727 and UK009333 respectively).

3 Delivery and site handling

3.1 The boards are shrink wrapped in polythene and delivered to site on pallets or bearers. Each pack shows the manufacturer's name, grade, type marking and BBA logo, incorporating the number of this Certificate.

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

3.3 Care must be taken to avoid contact with solvents and materials containing organic components.

3.4 Boards must be stored flat, off the ground on a clean, level surface and under cover to protect them from high winds. They must not be exposed to open flame or other ignition sources.

3.5 Damaged boards must not be used.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Polyfoam Floorboard Standard and Extra.

Design Considerations

4 General

4.1 Polyfoam Floorboard Standard and Extra are satisfactory for use as floor insulation and are effective in reducing the thermal transmittance (U-value) of suitably designed ground-bearing and suspended concrete ground floors in new and existing buildings. The Standard grade board is for use in domestic buildings only; the Extra grade board is for use in both domestic and non-domestic 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 having a Plasticity Index of 10% or greater (shrinkable fills are susceptible to clay heave).

4.3 Ground-bearing concrete and suspended concrete ground floors incorporating the products must include a suitable damp-proof membrane (dpm) laid in accordance with the relevant clauses of CP 102 : 1973 and BS 8215 : 1991 (see sections 12.5 and 12.6 of this Certificate). Suspended concrete floors incorporating the product must include suitable ventilation of the sub-floor or a dpm.

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 product should be:

- a vapour control layer (VCL) (see section 7.3), and
- 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
- a wood-based floor (eg tongue-and-groove plywood to BS EN 636 : 2012; flooring grade particle board [Types P5 to P7] to BS EN 312 : 2010; or oriented strand board (OSB) of type OSB/3 or OSB/4 to BS EN 300: 2006), of a suitable thickness to be determined by a suitably qualified and experienced individual, installed in accordance with DD CEN/TS 12872 : 2007 and BS EN 12871 : 2010, or
- a concrete slab to BS EN 1992-1-1 : 2004.

(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 product and the concrete to prevent chemical attack and seepage between the boards (see section 12.7). Any gaps between products or around service openings, visible prior to installing the concrete, must be filled with expanding foam or strips of insulation.

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

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

5 Practicability of installation

The product are 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 construction should be carried out in accordance with BS EN ISO 6946 : 2007, BS EN ISO 13370 : 2007 and BRE Report BR 443 : 2006, using the insulation's declared thermal conductivity (λ_D)* of $0.033 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.

6.2 The U value of a completed floor will depend on the thickness of the product, the perimeter/area (P/A) ratio and the floor type. When considering insulation requirements, designers should refer to the detailed guidance contained in the documents supporting the national Building Regulations. Calculated U values for example constructions in accordance with the national Building Regulations are given in Table 2.

Table 2 Example U values – ground-floor construction

Floor type	Target U value ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$)	Insulation thickness (mm)				
		P/A ratio				
		0.2	0.4	0.6	0.8	1.0
Ground-bearing concrete floor ⁽¹⁾	0.13	135 ⁽³⁾	185 ⁽³⁾	200 ⁽³⁾	—	—
	0.15	110 ⁽³⁾	150 ⁽³⁾	165 ⁽³⁾	175 ⁽³⁾	185 ⁽³⁾
	0.20	65	95 ⁽³⁾	115 ⁽³⁾	120 ⁽³⁾	125 ⁽³⁾
	0.22	50	85 ⁽³⁾	100	110 ⁽³⁾	115 ⁽³⁾
	0.25	35	75	85 ⁽³⁾	95 ⁽³⁾	95 ⁽³⁾
Suspended concrete ground floor ⁽²⁾	0.13	165 ⁽³⁾	200 ⁽³⁾	200 ⁽³⁾	—	—
	0.15	135 ⁽³⁾	165 ⁽³⁾	175 ⁽³⁾	175 ⁽³⁾	185 ⁽³⁾
	0.20	85 ⁽³⁾	110 ⁽³⁾	120 ⁽³⁾	125 ⁽³⁾	125 ⁽³⁾
	0.22	65	95 ⁽³⁾	110 ⁽³⁾	110 ⁽³⁾	115 ⁽³⁾
	0.25	50	75	85 ⁽³⁾	95 ⁽³⁾	95 ⁽³⁾

- (1) Ground-bearing concrete floor construction (Polyfoam Floorboard Standard and Extra 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, Polyfoam Floorboard Standard and Extra insulation, dpm, 100 mm concrete oversite, 150 mm sand blinded hardcore. 25 mm thick Polyfoam Floorboard Standard and Extra insulation, 65 mm deep, used as edge insulation.
- (2) Suspended concrete ground-floor construction (Polyfoam Floorboard Standard and Extra 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, Polyfoam Floorboard Standard and Extra 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. 25mm thick Polyfoam Floorboard Standard and Extra insulation, 65 mm deep, used as edge insulation.
- (3) Thickness can be achieved by double/triple layering the available thicknesses from Table 1.

Junctions



6.3 The products can contribute to maintaining continuity of thermal insulation at junctions with other elements and minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

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 BS EN ISO 10456 : 2007.

7.2 For the purposes of assessing the risk of interstitial condensation, the insulation vapour resistivity may be taken as approximately:

- Standard board $918 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$
- Extra board $625 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$.

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

Surface condensation



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



7.5 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 products have a reaction to fire classification* of Class F to BS EN 13501-1 : 2007.

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

9 Floor loading

9.1 The Certificate holder has declared the following designation codes in accordance with BS EN 13164 : 2012 (compressive stress at 10% deformation* to BS EN 826 : 2013):

- Polyfoam Floorboard Standard — CS(10\Y) 200
- Polyfoam Floorboard Extra — CS(10\Y) 300.



9.2 The products are suitable for the domestic occupancies defined in this Certificate when covered with a suitable floor overlay (see section 4.5), and are capable of resisting a uniformly distributed load of $1.5 \text{ kN}\cdot\text{m}^{-2}$ and a concentrated load of 2 kN for category A1 and A2 (domestic) situations, as defined in BS EN 1991-1-1 : 2002, National Annex NA.2, or BS 6399-1 : 1996, Table 1. Further assessment is necessary in the case of duty walkways and floors subject to physical activities.

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

9.4 The performance of the floor construction will depend on the insulation properties and type of floor covering used (including thickness and strength). Further guidance on the suitability of floor coverings can be found in BS EN 13810-1 : 2002, DD CEN/TS 13810-2 : 2003, BS 8204-1 : 2003 and BS EN 312 : 2010, and from the flooring manufacturer.

10 Maintenance

As the products are confined within the floor and have suitable durability (see section 11), maintenance is not required.

11 Durability



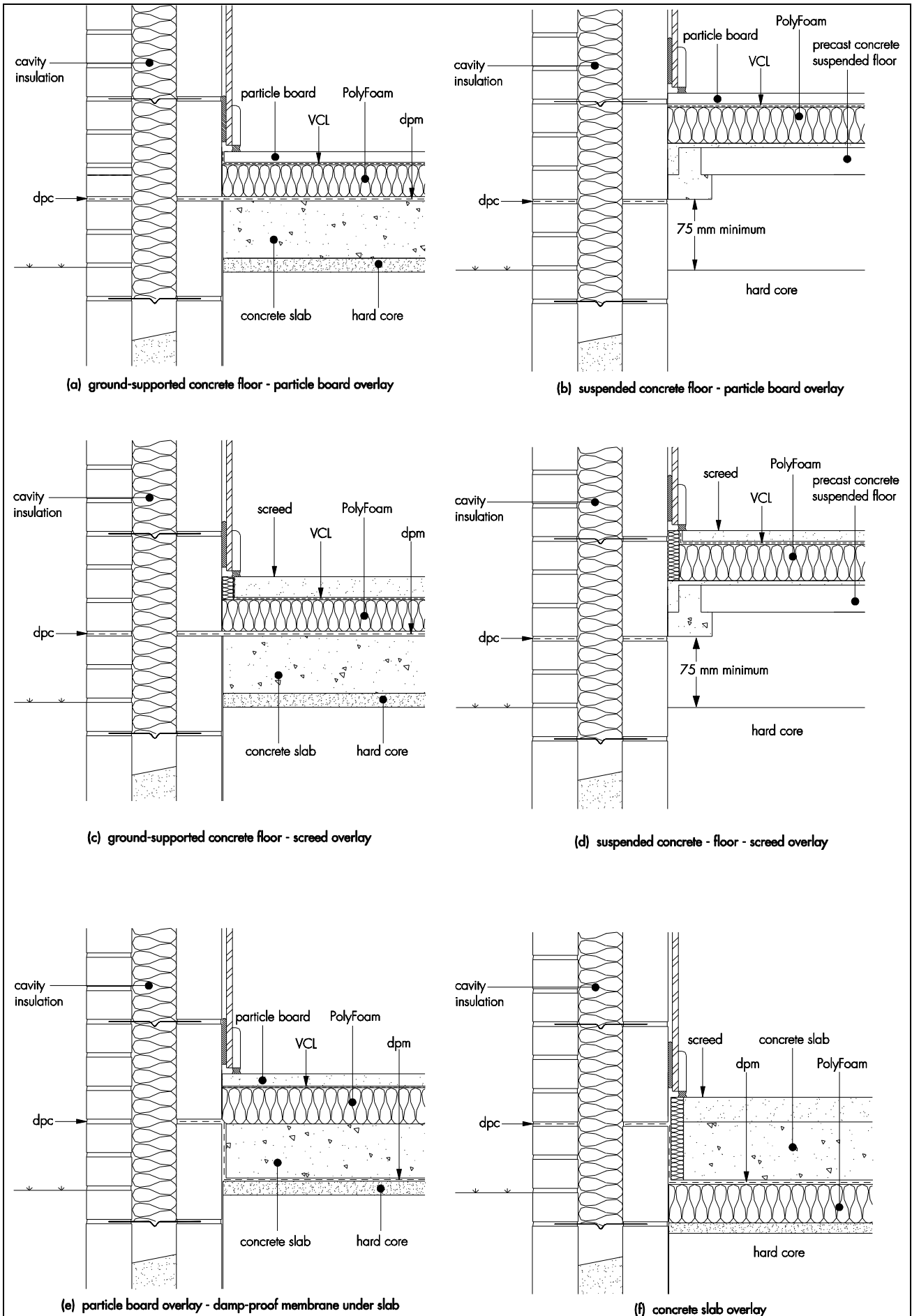
The products are rot proof, dimensionally stable and, when installed with the overlays specified in this Certificate, will remain effective as an insulating material for the life of the building in which they are incorporated.

12 General

12.1 Installation of Polyfoam Floorboard Standard and Extra must be in accordance with the Certificate holder's installation instructions and the requirements of this Certificate.

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

Figure 1 Typical installations



12.3 In ground-bearing concrete floors, the concrete floor slab over which the products are laid should be left for as long as possible to maximise drying out and the dissipation of construction moisture, in accordance with BS 8203 : 2017.

12.4 The concrete floor surface 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.

12.5 Where the products are 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 damp-proof membrane is applied to the slabs, it should be of a type compatible with the products and be allowed to dry out fully prior to installing the insulation.

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

12.7 A VCL is installed on the warm side of the insulation to inhibit the risk of interstitial condensation.

12.8 Where a screed or concrete slab is laid over the products, 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 damp-proof course (dpc) level to provide edge insulation to the floor.

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

12.10 The products can be cut using a sharp knife or fine-toothed saw to fit around service penetrations.

13 Procedure

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

13.2 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 product.

Timber-based board overlay

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

13.4 Where the products are laid above a dpm, a polyethylene VCL of at least 0.125 mm (500 gauge) thickness is laid between the products and the timber board overlay. The VCL should have 150 mm overlaps, taped at the joints, and be turned up 100 mm at the walls.

13.5 Timber-based overlay boards (see section 4.5) are laid with staggered cross-joints, in accordance with DD CEN/TS 12872 : 2007 and BS EN 12871 : 2013.

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

13.7 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.

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

13.9 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.

13.10 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.

13.11 Where there is a likelihood of regular water spillage (eg in kitchens, bathrooms, shower and utility rooms), additional particle 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

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

Concrete slab overlay (ground-bearing only)

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

14 Incorporation of services

14.1 De-rating of electrical cables should be considered where the products restrict air cooling of cables; the products must not be used in direct contact with electrical heating cables or hot water pipes.

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

14.3 Where water pipes are installed, either within the slab or the products, they must be pre-lagged with close-fitting pipe insulation, eg extruded polyethylene foam. Pipes installed above the products do not require lagging, although some provision may be needed for expansion and contraction.

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

Technical Investigations

15 Tests

Results of tests were assessed to determine:

- compressive stress at 10% deformation
- long-term water absorption by total immersion
- thermal conductivity
- water vapour transmission
- dimensional stability at specified temperature and humidity.

16 Investigations

16.1 A calculation was undertaken to confirm the declared thermal conductivity.

16.2 An assessment of the risk of interstitial condensation was made.

16.3 A series of U value calculations was carried out.

16.4 The manufacturing process and quality control procedures were evaluated and details obtained of the quality and composition of materials used.

Bibliography

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

BS 6399-1 : 1996 *Loading for buildings — Code of practice for dead and imposed loads*

BS 8000-9 : 2003 *Workmanship on building sites — Cementitious levelling screeds and wearing screeds — Code of practice*

BS 8203 : 2017 *Code of practice for installation of resilient floor coverings*

BS 8204-1 : 2003 *Screeds, bases and in-situ floorings — Concrete bases and cement sand levelling screeds to receive floorings — Code of practice*

BS 8204-2 : 2003 *Screeds, bases and in-situ floorings — Concrete wearing surfaces — Code of practice*

BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*

BS 8417 : 2011 *Preservation of wood. Code of practice*

BS EN 300 : 2006 *Oriented Strand Boards (OSB) — Definitions, classification and specifications*

BS EN 312 : 2010 *Particleboards — Specifications*

BS EN 636 : 2012 + A1 : 2015 *Plywood — Specifications*

BS EN 826 : 2013 *Thermal Insulating Products for Building Applications - Determination of Compression Behaviour*

BS EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*

NA to BS EN 1991-1-1 : 2002 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*

BS EN 1992-1-1 : 2004 *Eurocode 2 : Design of concrete structures — General rules and rules for buildings*

NA to BS EN 1992-1-1 : 2004

BS EN 9001 : 2015 *Quality management systems — Requirements*

BS EN 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

BS EN 12871 : 2013 *Determination of performance characteristics for load bearing panels for use in floors, roofs and walls*

BS EN 13164 : 2012 *Thermal insulation products for buildings — Factory made extruded polystyrene foam (XPS) products — Specification*

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

BS EN 13810-1 : 2002 *Wood-based panels — Floating floors — Performance specifications and requirements*

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

BS EN ISO 10456 : 2007 *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*

BS EN ISO 13370 : 2007 *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*

DD CEN/TS 12872 : 2007 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*

DD CEN/TS 13810-2 : 2003 *Wood-based panels — Floating floors — Test methods*

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

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

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
- 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.

17.2 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.

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

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

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

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

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

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