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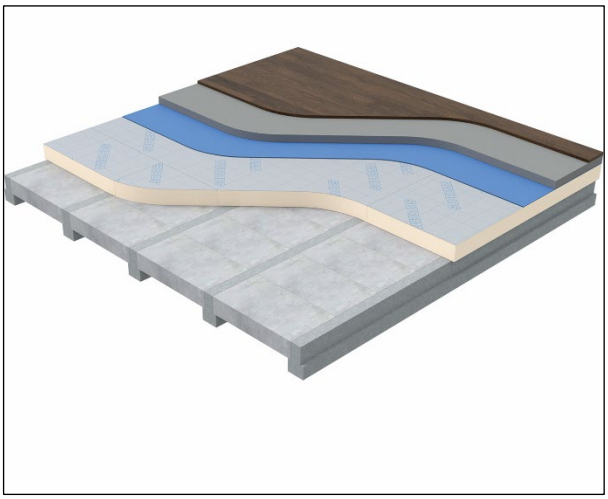
Agrément Certificate
25/7318
Product Sheet 2 Issue 1

SOPRATHERM INSULATION

SOPRATHERM TB4000, GA4000 AND XR4000 PIR INSULATION BOARDS FOR FLOOR INSULATION

This Agrément Certificate Product Sheet(1) relates to SOPRATHERM TB4000, GA4000 and XR4000 PIR Insulation Boards for Floor Insulation, comprising rigid polyisocyanurate (PIR) foam boards with composite foil-facings. The products are for use as insulation in ground-bearing or suspended concrete ground floors or between the joists of suspended timber ground-floors and with exposed, or semi-exposed, intermediate concrete or timber floors, in new or existing 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 issue: 10 January 2024

Hardy Giesler
Chief Executive Officer

Certificate amended on 1 December 2025 to change product names and update graphics and NHBC statement.

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.

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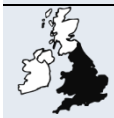
SUMMARY OF ASSESSMENT AND COMPLIANCE

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 SOPRATHERM TB4000, GA4000 and XR4000 PIR Insulation Boards for Floor 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; however, compensating fabric measures may be required. 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**	**CO_2 emission rates for new buildings**
Regulation:	**26A**	**Fabric energy efficiency rates for new dwellings (applicable to England only)**
Regulation:	**26A**	**Primary energy efficiency 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; however, compensating fabric/service measures may be required. 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 The products can contribute to satisfying this Standard, with reference to clause 1.1.2[(1)]. 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)], 3.15.4[(1)] and 3.15.5[(1)]. 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 clause 6.1.1[(1)]; however, compensating fabric/service measures may be required. 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 clauses, 6.2.1(1), 6.2.3(1), 6.2.4(1), 6.2.6(1), 6.2.7(1), 6.2.8(1), 6.2.9(1), 6.2.10(1), 6.2.11(1) and 6.2.12(1); however, compensating fabric measures may be required. 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 7.1.2(1), 7.1.4(1), 7.1.6(1) and 7.1.7(1). See section 6 of this Certificate.
Regulation:	**12**	**Building standards – conversion**
Comment:		All comments given for the 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).

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:	**43(B)**	**Nearly zero-energy requirements for new buildings**
Comment:		The products can contribute to satisfying these Regulations; however, compensating fabric/service measures may be required See section 6 of this Certificate.

Additional Information

NHBC Standards 2025

In the opinion of the BBA, SOPRATHERM TB4000, GA4000 and XR4000 PIR Insulation Boards for Floor 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.*

The opinion of the BBA does not amount to any endorsement or approval by NHBC and does not in any way guarantee that NHBC will approve such product / system as compliant with the NHBC Technical Requirements and Standards.

Fulfilment of Requirements

The BBA has judged SOPRATHERM TB4000, GA4000 and XR4000 PIR Insulation Boards for Floor Insulation to be satisfactory for use as described in this Certificate. The products have been assessed as insulation in ground-bearing or suspended concrete ground floors or between the joists of suspended timber ground-floors and also with exposed, or semi-exposed, intermediate concrete or timber floors, in new or existing domestic buildings.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the products under assessment. SOPRATHERM TB4000, GA4000 and XR4000 PIR Insulation Boards for Floor Insulation consist of rigid PIR foam boards with composite foil-facings on both sides.

The products have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	SOPRATHERM PIR Insulation Boards		
	TB4000	GA4000	XR4000
Board size (mm)	1200 x 2400	1200 x 2400	1200 x 2400
Thickness (mm)	20 to 45	50 to 100	110 to 200
Edge profile	Square	Square	Square
Facings	Composite foil-facing on both sides (printed on one side only)	Composite foil-facing on both sides (printed on one side only)	Composite foil-facing on both sides (printed on one side only)
Deviation from flatness (mm/m)	≤ 10 (area > 0.75 m^2)	≤ 10 (area > 0.75 m^2)	≤ 10 (area > 0.75 m^2)

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:

- damp-proof membrane (DPM)
- air and vapour control layer (AVCL)
- treated timber battens (to support insulation in suspended timber floors)
- expanding foam
- poly vinyl acetate (PVA) adhesive
- Compressible filler.

The overlay to the products must be:

- an AVCL where necessary (see section 3 of this Certificate) and:
- a cement-based floor screed of minimum 65 mm 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
- 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 and its UK National Annex.

Applications

The products are intended for use as floor insulation in the following situations above the DPM in new and existing domestic buildings:

- ground-bearing concrete floors
- suspended concrete ground floors
- 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
- between the joists of suspended timber ground-floors
- exposed, or semi-exposed, intermediate concrete or timber floors, in new or existing domestic buildings.

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 characteristics.

1.1 Floor loading

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

Table 2 Compressive strength

Product assessed	Assessment method	Requirement	Result
		Declared minimum compressive strength of the product at 10% deformation	
SOPRATHERM TB4000	BS EN 826 : 2013	≥ 120 kPa	Pass
SOPRATHERM GA4000		≥ 140 kPa	Pass
SOPRATHERM XR4000		≥ 140 kPa	Pass

1.1.2 On the basis of data assessed, the products are suitable for the occupancies defined in this Certificate when covered with a suitable floor overlay, and are capable of resisting a uniformly distributed load of 1.5 $kN \cdot m^{-2}$ or a concentrated load of 2 kN for category A1 and A2 (domestic) situations as defined in the UK National Annex to BS EN 1991-1-1 : 2002, Table NA.2. Further assessment by a suitably experienced and competent individual is necessary in the case of duty walkways and floors subject to physical activities.

1.1.3 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

The Certificate holder has declared a reaction to fire classification for the products of Class F to BS EN 13501-1 : 2018.

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 characteristics.

3.1 Water vapour permeability

For the purposes of assessing the risk of interstitial condensation, the water vapour resistivity/resistance/ values may be taken as given in Table 3.

Table 3 Water vapour resistivity/resistance/

Material	Assessment method	Requirement	Result
PIR insulation	BS EN ISO 10456 : 2007	Declared value	300 $MN \cdot s \cdot g^{-1} \cdot m^{-1}$
Foil facing	BS 5250 : 2021		1000 $MN \cdot s \cdot g^{-1}$

3.2 Condensation

3.2.1 The BBA has assessed the products for the risk of interstitial condensation, and the following factors must be implemented:

3.2.1.1 When the products are used on a ground-bearing floor or a suspended concrete floor, and exposed or semi-exposed floor, an AVCL must be installed on the warm side of the insulation to inhibit the risk of interstitial condensation, unless a risk assessment shows this is not necessary.

3.2.1.2 Voids below suspended concrete ground floors must be ventilated. Ventilation may be achieved by installing vents not less than 1500 $mm^2 \cdot m^{-1}$ run of external wall or 500 $mm^2 \cdot m^{-2}$ of floor area, whichever is the greater. Ventilation openings must be arranged to prevent the ingress of rain, snow, birds and small mammals and the risk of subsequent blockage by other building operations.

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 4.

Table 4 Thermal conductivity

Product assessed	Insulation thickness	Assessment method	Requirement	Result
SOPRATHERM TB4000	20 to 45 mm	BS EN 13165 : 2012	Declared value (λ_D)	0.022 $W \cdot m^{-1} \cdot K^{-1}$
SOPRATHERM GA4000	50 to 100 mm			
SOPRATHERM XR4000	110 to 200 mm			

6.2 Thermal performance

The foil-facing was tested for emissivity and the result is given in Table 5.

Table 5 Emissivity of the foil-facing

Product assessed	Assessment method	Requirement	Result
Foil-facing	BS EN 15976 : 2011	Declared value	0.05

6.3 Conservation of fuel and power

6.3.1 The U value of a completed floor will depend on the grade and thickness of the products, the perimeter/area ratio and the floor type. Example U values are given in Table 6.

Table 6 Example U values — ground-floor construction

Floor Type	Design U value ($W \cdot m^{-2} \cdot K^{-1}$)	SOPRATHERM TB4000, GA4000 and XR4000 — Insulation thickness (mm) P/A ratio				
		0.2	0.4	0.6	0.8	1.0
Ground-bearing concrete floor[4][7]	0.11	120[3]	145[3]	160[3]	165[3]	170[3]
	0.12	110[3]	135[3]	145[3]	150[3]	155[3]
	0.13	90[2]	120[3]	130[3]	140[3]	140[3]
	0.15	70[2]	100[2]	110[3]	120[3]	120[3]
	0.18	50[2]	75[2]	90[2]	95[2]	95[2]
	0.22	30[1]	55[2]	65[2]	70[2]	75[2]
	0.25	20[1]	45[1]	55[2]	60[2]	65[2]
Suspended concrete ground-floor[5][7]	0.11	135[3]	155[3]	165[3]	165[3]	170[3]
	0.12	120[3]	140[3]	145[3]	150[3]	155[3]
	0.13	110[3]	125[3]	135[3]	140[3]	140[3]
	0.15	90[2]	110[3]	120[3]	120[3]	120[3]
	0.18	65[2]	85[2]	90[2]	95[2]	95[2]
	0.22	45[1]	60[2]	70[2]	75[2]	75[2]
	0.25	30[1]	50[2]	60[2]	60[2]	65[2]
Suspended timber ground-floor[6]	0.11	200[3]	—[8]	—[8]	—[8]	—[8]
	0.12	180[3]	—[8]	—[8]	—[8]	—[8]
	0.13	160[3]	190[3]	200[3]	—[8]	—[8]
	0.15	125[3]	155[3]	165[3]	170[3]	175[3]
	0.18	90[2]	120[3]	130[3]	145[3]	140[3]
	0.22	60[2]	90[2]	100[2]	110[3]	110[3]
	0.25	40[1]	70[2]	80[2]	85[2]	95[2]

(1) SOPRATHERM TB4000.
(2) SOPRATHERM GA4000.
(3) SOPRATHERM XR4000.
(4) Ground-bearing concrete floor construction (SOPRATHERM insulation on top of slab, under screed finish): 65 mm concrete screed (λ = 1.15 $W \cdot m^{-1} \cdot K^{-1}$), polyethylene separating layer, SOPRATHERM insulation, damp-proof membrane (DPM), 100 mm concrete oversite, 150 mm sand-blinded hardcore.
(5) Suspended concrete ground-floor construction (SOPRATHERM insulation on top of beam and block, below screed finish): 65 mm concrete screed (λ = 1.15 $W \cdot m^{-1} \cdot K^{-1}$), polyethylene separating layer, SOPRATHERM insulation, beam and block floor (12%), beam (λ = 2.00 $W \cdot m^{-1} \cdot K^{-1}$), dense block infill ($\lambda$ = 1.13 $W \cdot m^{-1} \cdot K^{-1}$), ventilated void.
(6) Suspended timber ground-floor construction (SOPRATHERM insulation between floor joists) – floor deck based on 22 mm chipboard (λ= 0.13 $W \cdot m^{-1} \cdot K^{-1}$), SOPRATHERM insulation (89%) between 47 mm wide joists at 400 mm centres. The depth of the joists = 100 to 200 mm depending on the depth of insulation between timber (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$) floor joists (11%) based on BR 443 : 2019 (38 mm wide nogging every 3 m).
(7) 25 mm edge insulation of SOPRATHERM TB4025, 65 mm deep.
(8) See section 6.3.3.

6.3.2 On the basis of data assessed, the products can contribute towards a floor construction satisfying the national Building Regulations in respect of energy economy and heat retention.

6.3.3 For improved energy or carbon savings, designers must consider appropriate fabric and/or service measures.

7 Sustainable use of natural resources

Not applicable.

8 Durability

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

8.2 Specific test data were assessed as given in Table 7.

Table 7 Durability

Product assessed	Assessment method	Requirement	Result
SOPRATHERM TB4000	Dimensional stability to BS EN 1604 : 2013 (70°C and 90-100% RH for 48 hours)	Length and width ≤ 2% change Thickness ≤ 6% change	Pass
SOPRATHERM GA4000 SOPRATHERM XR4000	Dimensional stability to BS EN 1604 : 2013 (-20°C for 48 hours)	Length and width ≤ 1% change Thickness ≤ 2% change	Pass

8.3 Service life

Under normal service conditions, the products will have a service life equivalent to the structure 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, 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) and having 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 clauses of CP 102 : 1973, BS 8102 : 2009 and BS 8215 : 1991 (see section A.5 of this Certificate).

9.1.5 Suspended concrete or timber ground-floors incorporating the products 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.

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.7). Any gaps between insulation boards or around service openings visible prior to installing the concrete, must be filled with expanding foam or strips of insulation. The Certificate holder can advise on suitable materials for this purpose, but such advice and products are outside the scope of this Certificate

9.1.7 Voids below suspended timber ground floors must be ventilated. Ventilation may be achieved by installing vents not less than 1500 $mm2 \cdot m^{-1}$ run of external wall or 500 $mm^2 \cdot m^{-2}$ of floor area, whichever is the greater. Ventilation openings should be arranged to prevent the ingress of rain, snow, birds and small mammals and the risk of subsequent blockage by other building operations.

9.1.8 Internal walls must not be built on the insulation.

9.1.9 If present, mould or fungal growth must be treated prior to the application of the products.
9.1.10 Calculations of the thermal transmittance (U value) of a floor must be carried out in accordance with BS EN ISO 6946 : 2017, BS EN ISO 13370 : 2017 and BRE Report BR 443 : 2019.

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

Interstitial condensation

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

Surface condensation

9.1.13 In England and Wales, floors incorporating the products will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W \cdot m^{-2} \cdot K^{-1}$ at any point, and the junctions with other elements are designed in accordance with section 9.1.11 of this Certificate.

9.1.14 In Scotland, floors incorporating the products will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point, and the junctions with other elements are designed in accordance with BS 5250: 2021. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 9.1.11 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 must 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 current 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.

9.2.8 On suspended timber ground floors, all the services should be incorporated beneath the existing floor, if possible.

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 types of products.

9.4 Maintenance and repair

As the products are confined within the floor by the overlay and have 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 name, the Certificate holder's name, batch number, and the BBA logo incorporating the number of this Certificate.

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

11.2.1 The products must be protected from prolonged exposure to sunlight and must be stored either under cover or protected with opaque polythene sheeting. Where possible, packs should be stored inside. If outside, the products must be stacked flat and raised above ground level and not be in contact with ground moisture.

11.2.2 Care must be taken when handling the products to avoid crushing the edges or corners.

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

11.2.4 If damaged or wet, the products must be discarded.

† ANNEX A – SUPPLEMENTARY INFORMATION

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.

UKCA marking

The Certificate holder has taken the responsibility of UKCA marking the products in accordance with Designated Standard EN 13165 : 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 BSI Assurance UK Ltd (Certificates FM 781023 and EMS 781017 respectively).

Additional information on installation

A.1 Typical methods of installation are shown in Figures 1 and 2. Reference should also be made to BRE Report BR 262 : 2002.

Figure 1 Over a ground-bearing concrete floor slab

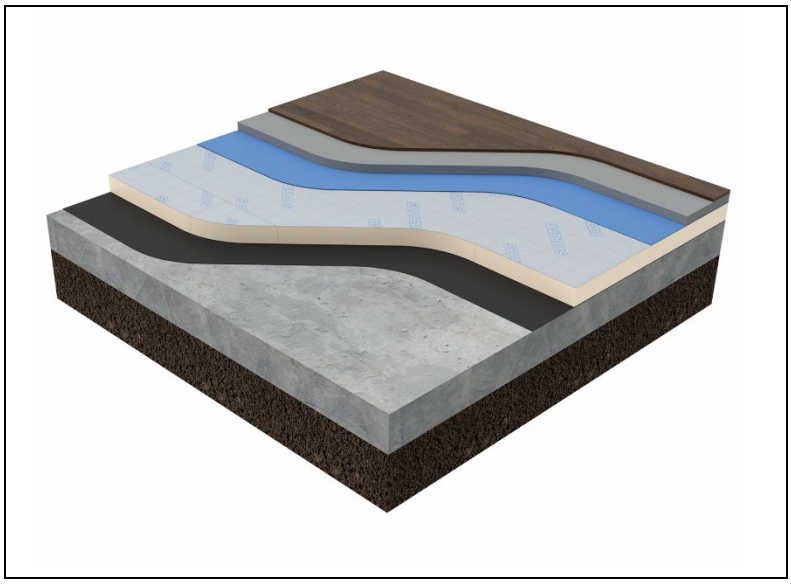
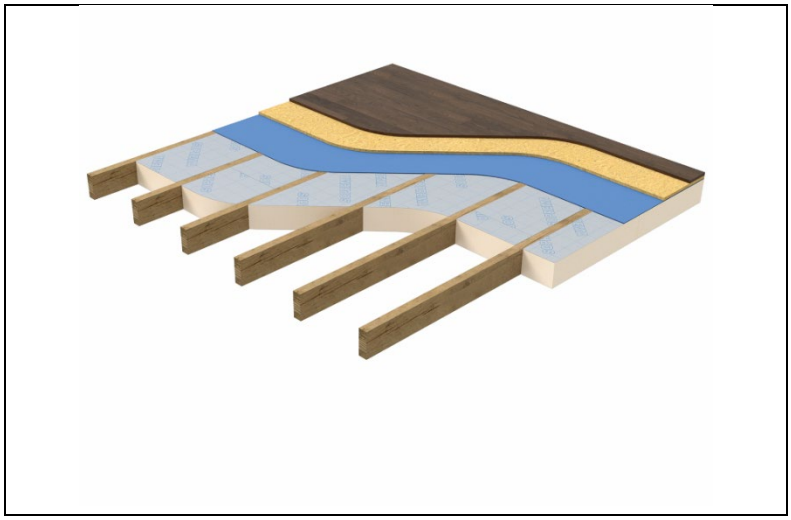


Figure 2 Between the joists in a suspended timber floor



A.2 In ground-bearing concrete floors (see Figure 1), 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 should be laid in accordance with BS 8215 : 1991 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 products and must 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 9.1.12). 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.

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 damp-proof course (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.

A.9 The products may be installed between timber floor joists using treated timber support battens. Tongue-and-groove particle board flooring or softwood floor boarding is then installed in the conventional manner.

Procedure

A.10 The products are cut to size using a sharp knife, insulation saw or fine-toothed saw as necessary, and laid with closely butted, staggered cross-joints, ensuring all spaces are completely filled.

A.11 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.12 Before installing 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.

A.13 Where the insulation is laid above a DPM, a polyethylene AVCL at least 0.125 mm (500 gauge) thick 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.14 Timber based overlay boards as specified in the *Ancillary Items* section of this Certificate and are laid with staggered cross-joints, in accordance with PD CEN/TR 12872 : 2014 and BS EN 12871 : 2013.

A.15 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.

A.16 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.17 Before the overlay boards are interlocked, a waterproof PVA adhesive is applied to the joints. The Certificate holder can advise on suitable materials for this purpose, but such advice and products are outside the scope of this Certificate

A.18 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.19 When the wedges are removed and before the skirting boards are fixed, a suitable compressible filler should be fitted around the perimeter of the floor between the overlay board and the walls. The Certificate holder can advise on suitable materials for this purpose, but such advice and products are outside the scope of this Certificate

A.20 Where there is a likelihood of regular water spillage in rooms (eg in kitchens, bathrooms, and shower and utility rooms), additional overlay board protection should be considered, eg a continuous flexible vinyl sheet flooring with welded joints, which is turned up at abutments and cove skirting.

Cement-based screed overlay (see Figure 1)

A.21 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polyethylene AVCL, at least 0.125 mm (500 gauge) thick, 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.22 Perimeter edge pieces are cut and placed around the edges and taped at the joints. A polyethylene AVCL, minimum 0.125 mm (500 gauge) thick, 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.

Suspended timber floor (see Figure 2)

A.23 Insulation boards can be supported between timber joists using treated timber support battens. Where timber battens are used, a void may be incorporated above the insulation to accommodate services, if required.

A.24 The products are cut to size to fit tightly between the joists

A.25 Where a service void is required above the insulation, preservative-treated timber battens may be used to retain the insulation boards. Battens should be wide enough to retain the insulation boards in place and secured with corrosion-protected fixings at a depth that will accommodate the thickness of the insulation board and leave a suitable depth void (minimum 25 mm) between the top of the insulation and the underside of the flooring deck.

A.26 The products are cut to fit between the joists and pushed down onto the timber battens. Small gaps should be insulated with cut strips of the products.

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BS 8102 : 2009 *Code of practice for protection of below ground structures against water from the ground*

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

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Conditions

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