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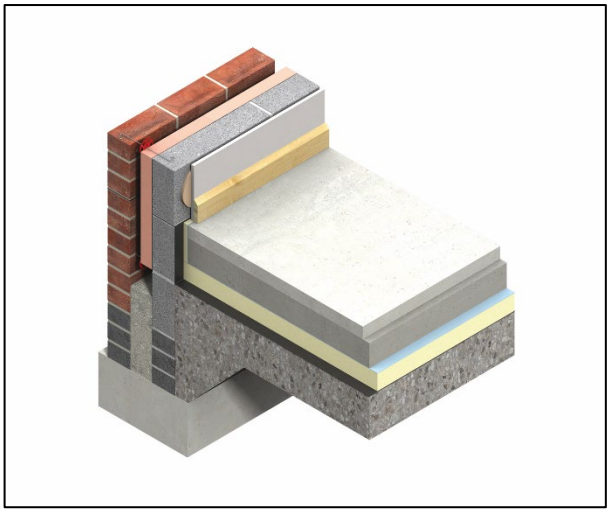
Agrément Certificate
14/5133
Product Sheet 1 Issue 2

KINGSPAN THERMA STRUCTURAL APPLICATIONS

KINGSPAN THERMAFLOOR TF70

This Agrément Certificate Product Sheet(1) relates to Kingspan Thermafloor TF70, comprising a rigid polyisocyanurate (PIR) foam board with a composite foil facing on both sides, for use as insulation in ground-bearing or suspended concrete ground floors or between the joists of suspended timber ground floors, in new and 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 product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue:15 May 2024
Originally certified on 27 January 2017

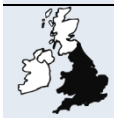
Hardy Giesler
Chief Executive Officer

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 Kingspan Thermafloor TF70, 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 product can contribute to satisfying this Requirement. See section 1 of this Certificate.
Requirement:	**C2(c)**	**Resistance to moisture**
Comment:		The product can contribute to satisfying this Requirement. See section 3 of this Certificate.
Requirement:	**L1(a)(i)**	**Conservation of fuel and power**
Comment:		The product can contribute to satisfying this Requirement; however, compensating fabric measures will be required. See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The product is 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 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 product can contribute to satisfying these Regulations; however, compensating fabric/services measures will 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 product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**9**	**Building standards – construction**
Standard:	1.1(b)	Structure
Comment:		The product 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 product can contribute to satisfying this Standard, with reference to clauses 3.15.1(1), 3.15.4(1) and 3.15.5(1). See section 3 of this Certificate.
Standard:	6.1(b)(c)	Energy demand
Comment:		The product can contribute to satisfying this Standard with reference to clause 6.1.1(1); however, compensating fabric/services measures will be required. See section 6 of this Certificate.

Standard: Comment:	6.2	Building insulation envelope The product can contribute to satisfying this Standard, with reference to clauses, or parts of clauses, 6.2.1(1), 6.2.3(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 will be required. See section 6 of this Certificate.
Standard: Comment:	7.1(a)(b)	Statement of sustainability The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. 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), 7.1.6(1) and 7.1.7(1). See section 6 of this Certificate.
Regulation: Comment:	**12**	**Building standards – conversion** Comments made in relation to this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1(1) and Schedule 6(1). (1) Technical Handbook (Domestic).

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

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

Additional Information

NHBC Standards 2024

In the opinion of the BBA, Kingspan Thermafloor TF70, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 5.1 *Substructure and ground-bearing floors* and 5.2 *Suspended ground floors.*

Fulfilment of Requirements

The BBA has judged Kingspan Thermafloor TF70 to be satisfactory for use as described in this Certificate. The product has been assessed for use as insulation in ground-bearing or suspended concrete ground floors or between the joists of suspended timber ground floors, in new and existing domestic buildings.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment. Kingspan Thermafloor TF70 consists of a rigid polyisocyanurate (PIR) foam board, faced on both sides with a low-emissivity aluminium Kraft trilaminate foil.

The product has the nominal characteristics given in Table 1.

Table 1 Nominal characteristics of Kingspan Thermafloor TF70

Characteristic (unit)	Value
Length (mm)	2400
Width (mm)	1200
Thickness (mm)	20 to 150
Edge profile	Plain

Ancillary Items

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

The overlay to the products should be:

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

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

Applications

The product is intended for use as floor insulation in new and existing domestic buildings in the following applications:

- ground-supported concrete floors
- suspended concrete ground floors
- between the joists of suspended timber ground floors.

Product assessment – key factors

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

1 Mechanical resistance and stability

Data were assessed for the following characteristic.

1.1 Floor loading

1.1.1 The product was tested for compressive strength and the result is given in Table 2.

Table 2 Compressive strength

Product assessed	Assessment method	Requirement	Result
Kingspan Thermafloor TF70	BS EN 826 : 2013	Declared minimum value at 10% deformation	> 140 kPa

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

1.1.3 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 product is used under a concrete slab, resistance to concentrated and distributed loads is a function of the slab specification. Further guidance on the suitability of floor overlays can be found in BS EN 13810-1 : 2002, DD CEN/TS 13810-2 : 2003, BS 8204-1 : 2003 and BS EN 312 : 2010, and from the flooring manufacturer, 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 product was tested for reaction to fire and the classification is given in Table 3.

Table 3 Reaction to fire classification

Product assessed	Assessment method	Requirement	Result
Kingspan Thermafloor TF70	BS EN 13501-1 : 2018	Value achieved	F

2.2 Resistance to fire

Where an intermediate floor incorporating the product 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

3.1.1 The product was tested for water vapour permeability and the results are given in Table 4.

Table 4 Water vapour resistivity/resistance

Product assessed	Assessment method	Requirement	Result
PIR insulation core	BS EN 12086 : 1997 Method B	Value achieved	52 $MN \cdot s \cdot g^{-1} \cdot m^{-1}$
Composite foil facing			111 $MN \cdot s \cdot g^{-1}$

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

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

The product was tested for thermal conductivity and the result is given in Table 5.

Table 5 Thermal conductivity

Product assessed	Assessment method	Requirement	Result
Kingspan Thermafloor TF70 (all thicknesses)	BS EN 13165 : 2012	Declared value (λ_D)	0.022 $W \cdot m^{-1} \cdot K^{-1}$

6.2 Thermal performance

The foil facing was tested for emissivity and the result is given in Table 6.

Table 6 Emissivity of the foil facing

Product assessed	Assessment method	Requirement	Result
Composite foil facing	BS EN 15976 : 2011	Declared value	0.05

6.3 Conservation of fuel and power

6.3.1 Example U values are given in Table 7.

Table 7 Example U Values — ground floor construction

Floor Type	Target U Value ($W \cdot m^{-2} \cdot K^{-1}$)	Insulation Thickness (mm) P/A Ratio				
		0.2	0.4	0.6	0.8	1.0
Ground-bearing concrete floor[1][4]	0.11	120	150	–[5]	–[5]	–[5]
	0.12	110	140	150	150	–[5]
	0.13	100	120	140	140	140
	0.15	75	100	110	120	120
	0.18	50	75	90	100	100
	0.22	30	60	65	75	75
	0.25	20	50	60	60	70
Suspended concrete ground floor[2][4]	0.11	140	–[5]	–[5]	–[5]	–[5]
	0.12	120	140	150	150	–[5]
	0.13	110	130	140	140	140
	0.15	90	110	120	120	120
	0.18	70	90	90	100	100
	0.22	50	60	70	75	75
	0.25	30	50	60	60	70
Suspended timber ground floor[3]	0.11	–[5]	–[5]	–[5]	–[5]	–[5]
	0.12	–[5]	–[5]	–[5]	–[5]	–[5]
	0.13	–[5]	–[5]	–[5]	–[5]	–[5]
	0.15	130	–[5]	–[5]	–[5]	–[5]
	0.18	90	120	130	140	140
	0.22	60	90	100	110	110
	0.25	50	70	80	90	90

(1) Ground-bearing concrete floor construction (Kingspan TF70 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, TF70 insulation, DPM, 100 mm concrete oversite, 150 mm sand blinded hardcore.

(2) Suspended concrete ground-floor construction (Kingspan TF70 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, TF70 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.

(3) Suspended timber ground-floor construction (Kingspan TF70 insulation between floor joists) — Floor deck thermal resistance 0.169 $m^2 \cdot K \cdot W^{-1}$ based on 22 mm chipboard (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), TF70 insulation (89%) between joists at 400 mm centres. BRE Report BR 443 : 2019 – default fraction for floor joists = 11% at λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$.

(4) 25 mm edge insulation of Kingspan TF70, 65 mm deep.

(5) See section 6.3.4.

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

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

6.3.4 For improved energy or carbon savings, designers must consider appropriate fabric and/or services 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 product were assessed.

8.2 The product was tested for durability and the results are given in Table 8.

Table 8 Durability tests

Product assessed	Assessment method	Requirement	Result
Kingspan Thermafloor TF70	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
	Compressive creep to BS EN 1606 : 1997 (31 kPa at 23°C and 50% RH)	Extrapolated long term deformation after 25 years value achieved	CC(2/2/25)31 < 2% deformation
	Thermal conductivity to BS EN 13165 : 2012 (70°C for 21 days)	$\lambda_D \leq 0.022$ W·m^{-1}·K^{-1}	Pass

8.3 Service life

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

PROCESS ASSESSMENT

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

9 Design, installation, workmanship and maintenance

9.1 Design

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

9.1.2 The product can be used on suitably designed beam-and-block floors incorporating Type R2 semi-resisting or resisting blocks to BS EN 15037-2 : 2009 and self-bearing beams to BS EN 15037-1 : 2008.

9.1.3 Ground-bearing floors must only be used where the depth of compacted fill is less than 600 mm and is defined as non-shrinkable. Shrinkable fills are defined as material containing more than 35% fine particles (silt and clay) with a plasticity index of 10% or greater (shrinkable fills are susceptible to clay heave).

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

9.1.5 Suspended concrete or timber ground floors incorporating product must include suitable ventilation of the sub-floor void (minimum 150 mm void between the underside of the floor and the ground surface) or a DPM. For suspended floors in locations where clay heave is anticipated, an additional void of up to 150 mm may be required to accommodate the possible expansion of the ground below the floor. In such cases where the risk of clay heave has been confirmed by geotechnical investigations by a suitably competent and experienced individual, a total void of up to 300 mm may be required.

9.1.6 Where a concrete screed or slab finish is to be laid directly over the product, a polyethylene separating layer/AVCL must be installed between the insulation and the concrete to prevent chemical attack and seepage between the boards (see section A.6). Any gaps between insulation board or around service openings, visible prior to installing the concrete, must be filled with expanding foam or strips of insulation.

9.1.7 Internal walls must not be built on the insulation.

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

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

Interstitial condensation

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

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

9.1.12 For suspended timber ground floors, it is not necessary to introduce an AVCL as long as adequate sub-floor cross ventilation is provided.

Surface condensation

9.1.13 In England and Wales, floors 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 walls are designed in accordance with section 9.1.9 of this Certificate.

9.1.14 In Scotland, floors 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 floor is designed and constructed in accordance with the relevant parts of BS 5250 : 2021.

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

9.2 Installation

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

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance are 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 product must not be used in direct contact with electrical heating cables or hot water pipes. Where underfloor heating systems are to be used, the advice of the Certificate holder should be sought, 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 supported floors. Where this is not possible, the services may be accommodated within the insulation, provided they are securely fixed to the concrete slab. Electrical cables 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 product is installed on a floor of a suspended beam-and-block design, all services must be installed in accordance with a BBA Certificate for that floor and/or with the relevant codes of practice.

9.2.7 To provide support for a particle board cover on overlay board floors where access to the services is desirable, a duct may be formed by mechanically fixing to the floor, timber bearers of the same thickness as the insulation. The duct should be as narrow as possible and not exceed 400 mm in width or the maximum particle board spans given in PD CEN/TR 12872 : 2014 without intermediate support. Services must be suitably fixed to the floor base and not to the insulation boards (see section 9.1.9 of this Certificate regarding limiting heat loss).

9.2.8 On suspended timber ground floors, all the services must be incorporated beneath the existing floor, above the insulation 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 product must be carried out by a competent general builder, or a contractor, experienced with this type of product.

9.4 Maintenance and repair

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

10 Manufacture

10.1 The production processes for the product 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 product is delivered to site in packaging bearing the Certificate holder's trade name, product description and characteristics, batch number, production date, 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 product 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 product must be stacked flat and raised above ground level and not in contact with ground moisture.

11.2.2 The product is light and easy to handle, and care must be exercised to avoid crushing the edges or corners. If damaged, the product should be discarded.

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

ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the product 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 product, 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 CIBSE Certification Limited (Certificates 0001QMS-0 and 0001EMS-0 respectively for the Pembridge site, and Certificates 0001QMS-1 and 0001EMS-1 respectively for the Selby site).

Additional information on installation

General

A.1 Typical methods of installation are shown in Figures 1 to 5. Reference should also be made to BRE Report BR 262 : 2002.

Figure 1 Ground-bearing concrete floor — screed overlay

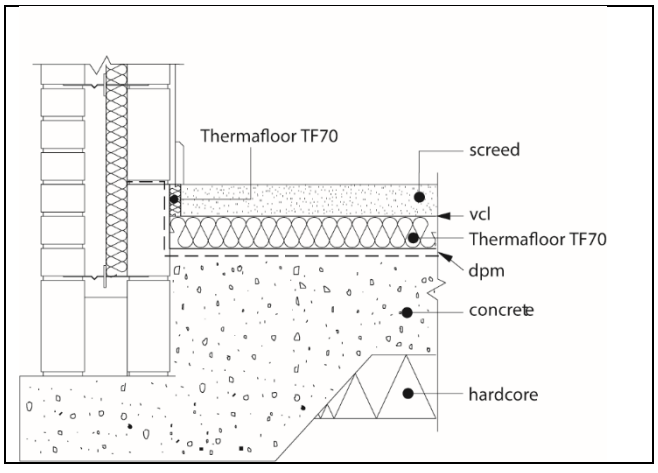


Figure 2 Suspended concrete ground floor — screed overlay

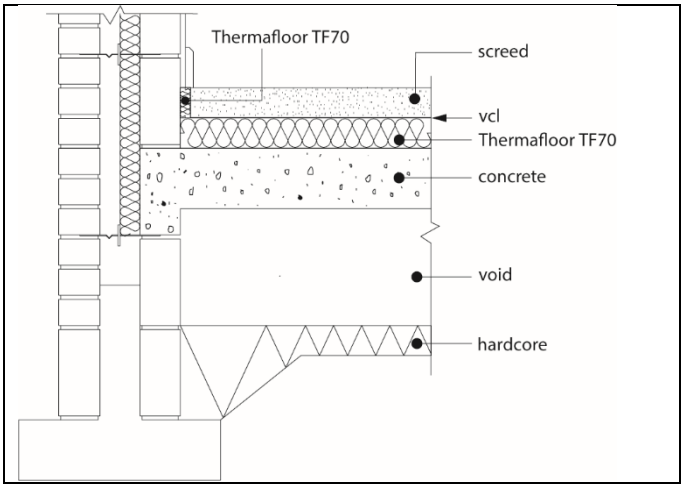


Figure 3 Ground-bearing concrete — slab overlay

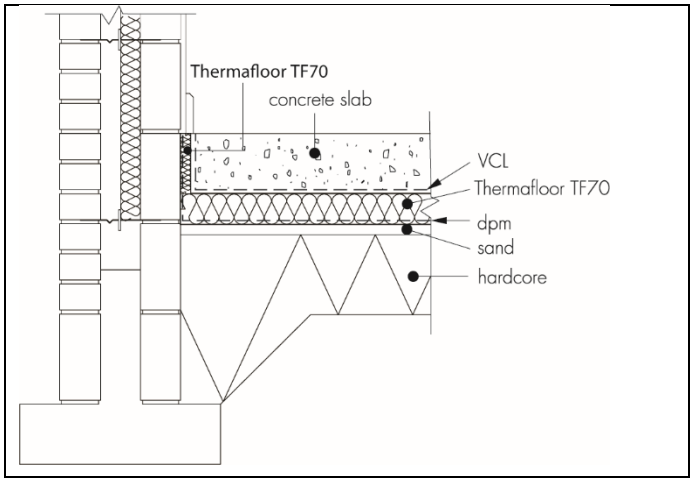


Figure 4 Suspended concrete ground floor — timber overlay

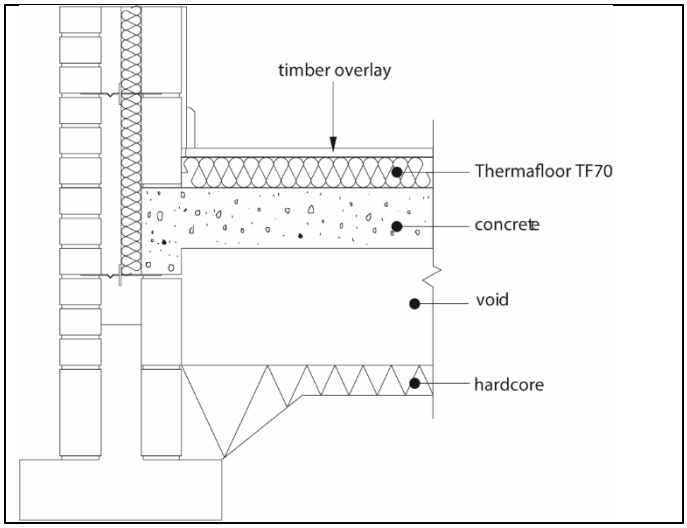
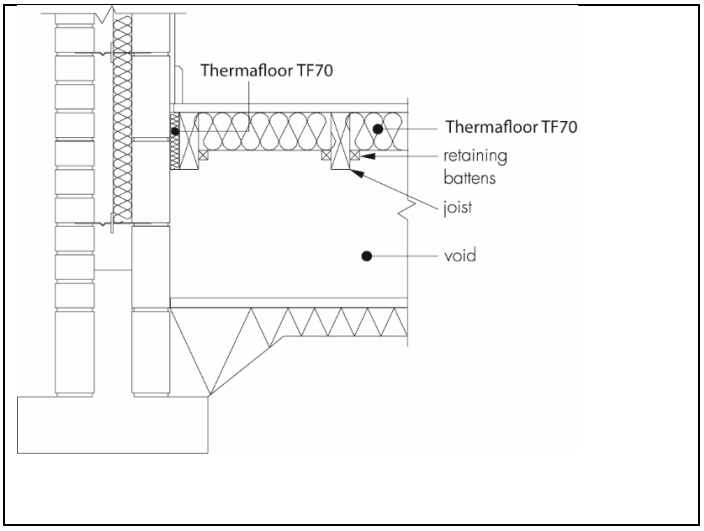


Figure 5 Suspended timber ground floor



A.2 In ground-bearing concrete floors, the concrete floor slab over which the boards are to be laid should be left for as long as possible to maximise drying out and dissipation of constructional moisture, in accordance with BS 8203 : 2017, Section 3.1.2.

A.3 The concrete floor surface should be smooth, level and flat to within 5 mm when measured with a two metre straight-edge. Irregularities greater than this must be removed. Minor irregularities (up to 10 mm deep) may be levelled with mortar or thin screed.

A.4 Where the insulation is used over ground-bearing concrete floor slabs, a suitable DPM in accordance with CP 102 : 1973 should be laid to resist moisture from the ground. If a liquid-type DPM is applied to the slab, it should be of a type compatible with the product and be allowed to dry out fully before the insulation is laid.

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 and boards.

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

A.7 Where a screed or concrete slab is laid over the insulation, vertical upstands of insulation should be provided and be of sufficient depth to fully separate the screed or slab from the wall. If used, a suitable cavity wall insulation material should be extended below the 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.

Procedure

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

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

Timber-based board overlay

A.11 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.

A.12 Where the insulation is laid above a DPM, a polyethylene AVCL of at least 0.25 mm (1000 gauge) thickness is laid between the insulation and the timber board overlay. The AVCL should have 150 mm overlaps, taped at the joints and turned up 100 mm at the walls.

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

A.14 An expansion gap between the overlay board and the perimeter walls should be provided at the rate of 2 mm per metre run or a minimum of 10 mm, whichever is the greater.

A.15 Where there are long, uninterrupted lengths of floor, eg corridors, proprietary expansion joints should be installed at intervals on the basis of a 2 mm gap per metre run of overlay board.

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

A.17 Once the overlay board is laid, temporary wedges are inserted between the walls and the floor to maintain tight joints until the adhesive has set.

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

A.19 Where there is a likelihood of regular water spillage, eg in rooms such as 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

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

Concrete slab overlay (ground-bearing only)

A.21 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polyethylene AVCL, minimum 0.125 mm thick (500 gauge), is laid over the insulation. The AVCL should have 150 mm overlaps, taped at the joints and turned up 100 mm at the walls. The concrete slab is laid to the required thickness in accordance with BS 8000-9 : 2003 and BS 8204-1 : 2003.

Suspended timber floor

A.22 Insulation boards can be supported between timber joists using either saddle clips or timber beads. Where timber beads are used, a void may be incorporated above the insulation to accommodate services, if required.

A.23 Saddle clips are placed at intervals not exceeding one metre along the timber floor joists. Where the product is to be installed on only one side of the joist, twin clips can be cut into single clips and nailed into place with galvanized nails.

A.24 If saddle clips are not used, the product may be retained using preservative-treated timber battens. The battens should be wide enough to retain the product in place and secured with corrosion-protected nails at a depth that will accommodate the thickness of the product.

A.25 The product should be cut to fit tightly between joists and pushed down onto the spikes of the saddle clips, or onto the beads. Small gaps should be insulated with cut strips of the product.

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