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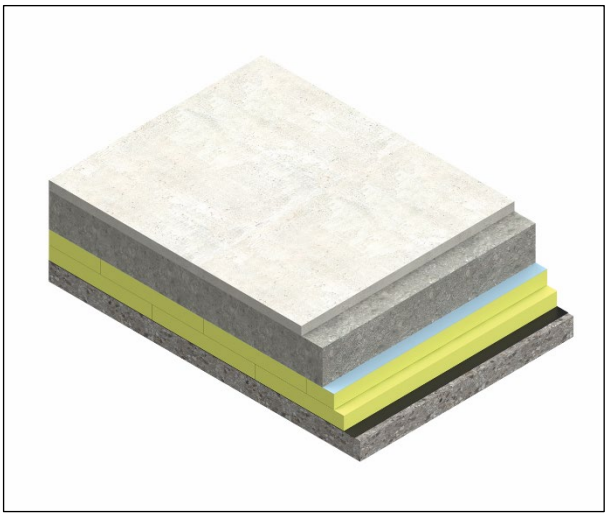
Agrément Certificate
22/6048
Product Sheet 2 Issue 2

KINGSPAN GREENGUARD GG300 XPS INSULATION

KINGSPAN GREENGUARD GG300 XPS FLOOR INSULATION

This Agrément Certificate Product Sheet(1) relates to Kingspan GreenGuard GG300 XPS Floor Insulation, an extruded polystyrene board for use as insulation on suspended concrete ground floors, or above or below the DPM in ground-bearing concrete floors, in new and existing domestic or similar 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: 29 April 2025
Originally certified on 29 March 2022

Hardy Giesler
Chief Executive Officer

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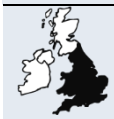
SUMMARY OF ASSESSMENT AND COMPLIANCE

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 Kingspan GreenGuard GG300 XPS 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 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. 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. 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). See section 6 of this Certificate.

Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying this Standard, with reference to clauses, or parts of, 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) and 6.2.12(1). See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product 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 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:	**12**	**Building standards – conversion**
Comment:		All comments given for the 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:	**23(1)(a)(i) (iii)(b)(i)(ii)**	**Fitness of materials and workmanship**
Comment:		The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		The product can contribute to satisfying this Regulation. See section 3 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The product can contribute to satisfying this Regulation. See section 1 of this Certificate.
Regulation:	**39(a)(i)**	**Conservation measures**
Comment:		The product can contribute to satisfying this Regulation. See section 6 of this Certificate.
Regulation:	**40(2)**	**Target carbon dioxide emission rate**
Regulation:	**43(1)(2)**	**Renovation of thermal elements**
Regulation:	**43B**	**Nearly zero-energy requirements for new buildings**
Comment:		The product can contribute to satisfying these Regulations. See section 6 of this Certificate.

Additional Information

NHBC Standards 2025

In the opinion of the BBA, Kingspan GreenGuard GG300 XPS 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*.

Fulfilment of Requirements

The BBA has judged Kingspan GreenGuard GG300 XPS Floor Insulation to be satisfactory for use as described in this Certificate. The product has been assessed for use as insulation on suspended concrete ground floors, or above or below the DPM in ground-bearing concrete floors, in new and existing domestic or similar buildings.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment. Kingspan GreenGuard GG300 XPS Floor Insulation consists of rigid, extruded polystyrene (XPS) boards. The boards have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Value
Work size – length x width (mm)	2500 x 600 or 1250 x 600
Overall size (rebated) – length and width (mm)	2515 x 615 or 1265 x 615
Thickness	30, 40, 50, 60, 70, 80, 100, 120, 140, 150, 180
Edge Detail	Straight, or rebated on all 4 sides (15 mm x half board thickness)
Colour	Light green

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:

- damp-proof membrane (DPM)
- air and vapour control layer (AVCL).

The overlay to the product should 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 to 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.

Product assessment – key factors

The product was assessed for the following key factors, and the outcome of the assessment 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 product was tested for compressive strength and the results are given in Table 2.

Table 2 Compressive stress at 10% deformation

Product assessed	Assessment method	Requirement	Result
Kingspan GreenGuard GG300 XPS Floor Insulation	BS EN 13164 : 2012	Declared value	CS(10/Y)300

1.1.2 On the basis of data assessed, the product is suitable for the 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 the UK National Annex to BS EN 1991-1-1 : 2002, Table NA2. 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 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 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, although the latter is outside the scope of this Certificate.

2 Safety in case of fire

Data were assessed for the following characteristic.

2.1 Reaction to fire

2.1.1 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[(1)]
Kingspan GreenGuard GG300 XPS Floor Insulation	BS EN 13501-1 : 2018	Declared value	F

(1) Test report no H.E-027e/20 (24 Feb 2020), issued by FIW Munchen, available from the Certificate holder on request.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

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

Table 4 Water vapour resistivity

Product assessed	Assessment method	Requirement	Result
Kingspan GreenGuard GG300 XPS Floor Insulation	BS EN 12086 : 1997	Value achieved	400 $MN \cdot s \cdot g^{-1} \cdot m^{-1}$

3.2 Resistance to moisture

3.2.1 The product was tested for long term water absorption by diffusion, and additional water absorption after freeze thaw testing, and the results are given in Table 5.

Table 5 Long term water absorption by diffusion and freeze thaw

Product assessed	Assessment method	Requirement	Result
Kingspan GreenGuard GG300 XPS Floor Insulation	BS EN 12088 : 2013	Long term water absorption by diffusion (% by volume)	1.83
	BS EN 12091 : 2013	Additional water absorption after freeze thaw (% by volume)	0.74

3.2.2 The water absorption results in Table 5 are used to determine the design thermal conductivity value (λ_U) for the XPS insulation as given in Table 6.

3.3 Condensation

3.3.1 The BBA has assessed the product for the risk of condensation, and the following factors must be implemented.

3.3.1.1 When the product is used on a ground-bearing floor or a suspended concrete floor, an AVCL 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.

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

6.1.1 The product was tested for thermal conductivity and the results are given in Table 6.

Table 6 Thermal conductivity

Product assessed	Assessment method	Requirement	Result
Kingspan GreenGuard GG300 XPS Floor Insulation	BS EN 13164 : 2012	Declared value (λ_D)	0.033 $W \cdot m^{-1} \cdot K^{-1}$
		Design value (moisture corrected) (λ_U)	0.035 $W \cdot m^{-1} \cdot K^{-1}$

6.1.2 On the basis of the data assessed, floor U values must be calculated using the Declared thermal conductivity (λ_D) in Table 6 when the insulation is installed above the DPM, and the Design thermal conductivity (λ_U) in Table 6 when it is installed below the DPM.

6.2 Thermal Performance

6.2.1 The U value of a ground floor will depend on the insulation thickness, its location (above or below the DPM), the perimeter/area ratio, the ground conductivity and, additionally for suspended ground floors, the amount of underfloor ventilation and the floor void wall U value. Example U-values are given in Table 7.

Table 7 Example U values — ground floor construction (insulation above the DPM)

Floor type	Target U value ($W \cdot m^{-2} \cdot K^{-1}$)	P/A ratio ($m \cdot m^{-2}$)				
		0.2	0.4	0.6	0.8	1.0
		Insulation thickness (mm)(1)				
Ground-bearing concrete floor(2)(3)	0.11	180	180 + 50	180 + 60	180 + 70	180 + 80
	0.12	180	180 + 30	180 + 40	180 + 50	180 + 50
	0.13	140	180	180 + 30	180 + 30	180 + 30
	0.15	120	150	180	180	180
	0.18	80	120	140	140	150
	0.22	50	100	100	120	120
	0.25	30	70	80	100	100
Suspended concrete ground-floor(3)(4)	0.11	180 + 30	180 + 50	180 + 70	180 + 70	180 + 70
	0.12	180	180 + 30	180 + 40	180 + 50	180 + 50
	0.13	180	180 + 30	180 + 30	180 + 30	180 + 30
	0.15	140	180	180	180	180
	0.18	100	140	140	140	150
	0.22	70	100	100	120	120
	0.25	50	80	100	100	100

(1) Thinnest available insulation thickness, or thickness combination, to achieve the required U value. Thickest board as bottom layer when double/triple layer used.

(2) Ground-bearing concrete floor construction (Kingspan GreenGuard 300 XPS Floor Insulation on top of slab, below screed finish) — 65 mm concrete screed (λ = 1.15 $W \cdot m^{-1} \cdot K^{-1}$); polyethylene separating layer; Kingspan GreenGuard 300 XPS Floor Insulation; DPM; 100 mm concrete oversite; 150 mm sand blinded hardcore; ground (λ = 1.5 $W \cdot m^{-1} \cdot K^{-1}$).

(3) 30 mm edge insulation (λ_D = 0.033 $W \cdot m^{-1} \cdot K^{-1}$) of Kingspan GreenGuard 300 XPS at 65 mm deep.

(4) Suspended concrete ground-floor construction (Kingspan GreenGuard 300 XPS Floor 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; Kingspan GreenGuard 300 XPS Floor Insulation; beam and block floor (12% beam, λ = 2.00 $W \cdot m^{-1} \cdot K^{-1}$); dense block infill ($\lambda$ = 1.13 $W \cdot m^{-1} \cdot K^{-1}$); ventilation area ($\varepsilon$) to floor void 0.0015 $m^2 \cdot m^{-1}$.

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

7 Sustainable use of natural resources

Not applicable.

8 Durability

8.1 Specific test data were assessed as given in Table 8.

Table 8 Durability

Product assessed	Assessment method	Requirement	Result
Kingspan GreenGuard GG300 XPS Floor Insulation	Dimensional stability to BS EN 1604 : 2013 (70°C and 90% RH for 48 hours)	Length, width and reduction in thickness ≤ 5% change	Pass

8.2 Service life

Under normal service conditions, the product will have a life equivalent to that of 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 specified in this Certificate.

9.1.2 The product may 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 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 ground-floors incorporating the product must include a suitable damp-proof membrane (DPM), laid beneath, or above, the insulation, in accordance with the relevant clauses of CP 102 : 1973, BS 8102 : 2022 and BS 8215 : 1991 (see section A.6 of this Certificate).

9.1.5 The DPM (minimum 300 micron / 1200 gauge polythene) must be laid with joints well lapped and folded, to prevent the passage of ground water, either directly over the well-compacted hardcore prior to laying the insulation boards, or over the insulation boards. The DPM must be brought up the surrounding foundation walls until it is sufficiently above the height of the wall damp-proof course (DPC), so that it will connect with or form the DPC.

9.1.6 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.

9.1.7 Where a concrete screed or slab finish is 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.8). The polyethylene separating layer/AVCL must be installed with 150 mm overlaps, taped at the joints, and must be turned up 100 mm at the walls. Any gaps between insulation boards or around service openings visible prior to installing the concrete, must be filled with expanding foam or strips of insulation.

9.1.8 Walls must not be built on the insulation.

9.1.9 Calculations of thermal transmittance (U value) must be carried out in accordance with BS EN ISO 13370 : 2017 and BRE Report BR 443 : 2019.

9.1.10 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 that can be found in the documents supporting the national Building Regulations must be followed.

Interstitial condensation

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

9.1.12 When the product is used above the DPM on a ground-bearing 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.

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 9.1.10 of this Certificate.

9.1.14 For buildings in Scotland, constructions will be acceptable where the thermal transmittance (U value) of the floor 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 is provided in Annex A.

9.2.3 Kingspan GreenGuard GG300 XPS Floor Insulation may be installed as a single layer, or multi-layer (double or triple layers) to suit the requirements. When using multiple layers, the insulation board joints must be staggered / offset. The advice of the Certificate holder must be sought for multi-layering, but such advice is outside the scope of this Certificate.

Incorporation of services

9.2.4 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 must be sought, but such advice is outside the scope of this Certificate.

9.2.5 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.

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

9.2.7 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.

9.2.8 To provide support for a particle board cover on overlay board floors where access to the services is desirable, a duct may be formed by mechanically fixing to the floor, timber bearers of the same thickness as the insulation. The duct must be as narrow as possible and not exceed 400 mm in width or the maximum particle board spans given in PD CEN/TR 12872 : 2014 without intermediate support. Services must be suitably fixed to the floor base and not to the insulation boards (see section 9.1.10 of this Certificate regarding limiting heat loss).

9.3 Workmanship

Practicability of installation was assessed by the BBA on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the 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 have 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 polythene shrink-wrapped packs incorporating a label with the Certificate holder's trade name, product description and characteristics, 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 stored flat, off the ground on a clean, level surface, and under cover or protected with opaque polythene, to protect it from high winds and prolonged exposure to sunlight. Where possible, packs should be stored inside. If outside, the boards must be raised above ground level.

11.2.2 Care must be exercised to avoid crushing the edges or corners. If damaged, the product must be discarded.

11.2.3 The product must not be exposed to open 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 13164 : 2012.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13164 : 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 Ltd (Certificates 0001QMS-1 and 0001EMS-1 respectively).

Additional information on installation

A.1 Kingspan GreenGuard GG300 XPS Floor Insulation is laid in a brick bond pattern; it is essential that all joints between the boards are tight and that no gaps exist. The boards can be cut using a fine-toothed saw, sharp knife or a hot wire cutter. Where multi-layers are used the board joints must be staggered/offset. See section 9.2.3.

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

Figure 1 Kingspan GreenGuard GG300 XPS Floor Insulation above ground-bearing concrete slab

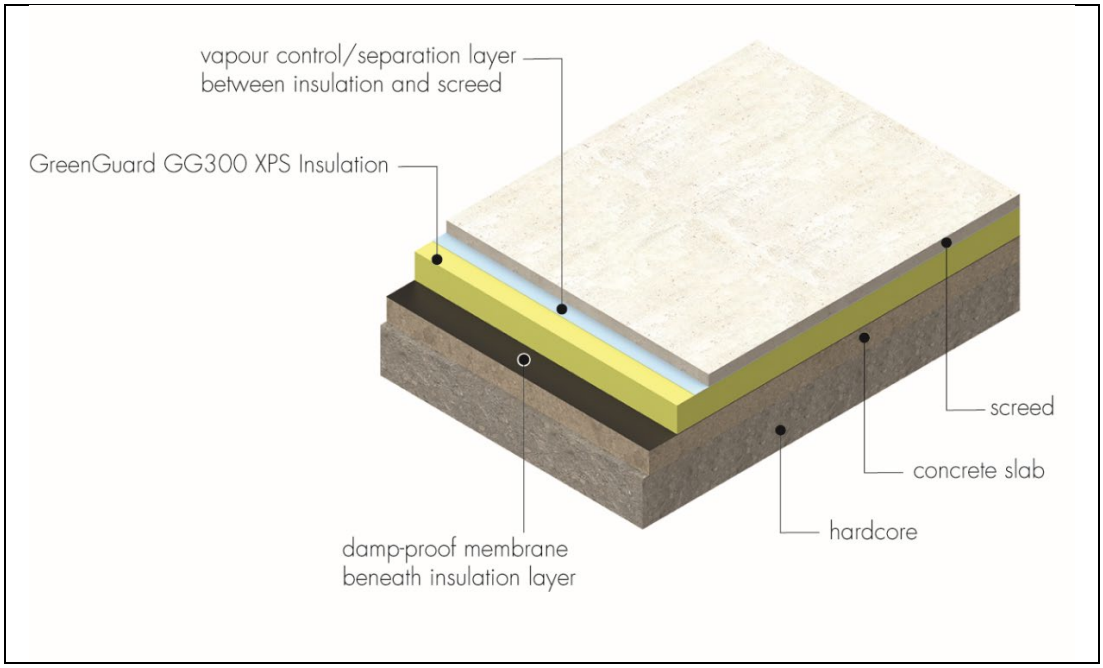
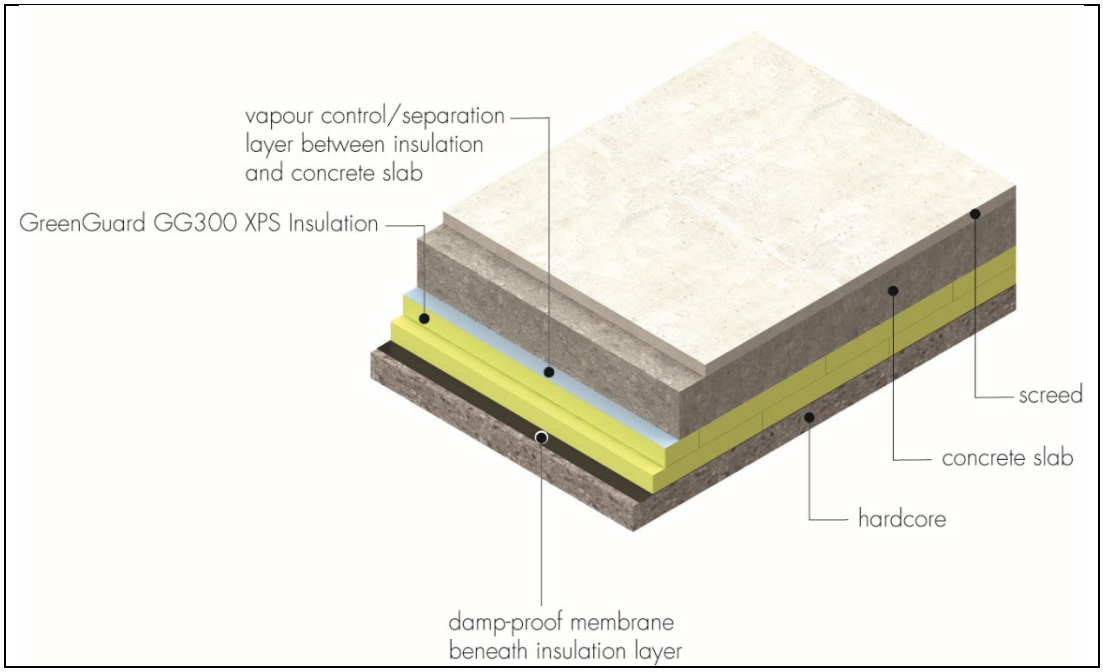


Figure 2 Kingspan GreenGuard GG300 XPS Floor Insulation beneath ground-bearing concrete slab



A.3 In ground-bearing concrete floors, the concrete floor slab over which the product is 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, section 3.1.2.

A.4 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.5 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 insulation product and must be allowed to dry out fully before laying the insulation.

A.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 or insulation boards.

A.7 An AVCL is installed on the warm side of the insulation to inhibit the risk of interstitial condensation if necessary (see section 3). Where a concrete screed or slab finish is to be laid 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.8 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. External or cavity wall insulation material should be extended below the DPC level, where applicable, and be at least the equivalent of one full block height (215 mm) below the underside of the floor structure/slab and beyond the depth of the floor insulation.

A.9 To limit the risk of condensation and other sources of dampness, the product and overlays should only be laid after the construction is made substantially weathertight (eg after glazing). During construction, the product and overlays must also be protected from damage by traffic and moisture sources such as water spillage and plaster droppings.

Procedure

A.10 The boards are 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.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 laying the plywood, particle board or OSB overlay, preservative-treated timber battens, in accordance with BS 8417 : 2011, are positioned at doorways and access panels. Adequate time should be allowed for preservatives to be fixed and the solvents from solvent-based preservatives to evaporate.

A.13 When the insulation is laid above a DPM, a polyethylene AVCL of at least 0.125 mm (500 gauge) thickness is laid between the insulation and the timber board overlay. The AVCL must 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 section 9 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 the 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 water-resistant PVA adhesive is applied to the joints.

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, eg foamed polyethylene, should be fitted around the perimeter of the floor between the overlay board and the walls.

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

Cement-based screed overlay

A.21 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polythene 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 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)

A.22 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polythene 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. The concrete slab is laid to the required thickness in accordance with BS 8000-9 : 2003 and BS 8204-1 : 2003.

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