



URSA Benelux

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**Agrément
Certificate
No 02/3879**
Second issue*

Designated by Government
to issue
European Technical
Approvals

URSA XPS FLOORBOARD

Isolation en polystyrène extrudée pour planchers des rez-de-chaussées
Fußbodenwärmedämmung

Product




- THIS CERTIFICATE REPLACES CERTIFICATE No 97/3407 AND RELATES TO URSA XPS FLOORBOARD, AN EXTRUDED POLYSTYRENE BOARD FOR FLOORING INSULATION.

- The product is for use on:
 - ground-supported or suspended concrete floors
 - exposed or semi-exposed intermediate concrete or timber floors.
- It is used to reduce the thermal transmittance of new or existing floors of dwellings or buildings of similar occupancy, type and condition.

Regulations

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

 The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of floor insulation with the Building Regulations. In the opinion of the BBA, URSA XPS Floorboard, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: C2(c)	Resistance to moisture
Comment:	Floors incorporating the product can satisfy this Requirement. See section 11 of this Certificate.
Requirement: L1(a)(i)	Dwellings
Requirement: L2(a)	Buildings other than dwellings
Comment:	The product can enable, or contribute to enabling, a floor to meet these Requirements. See sections 10.2, 10.3 and 10.5 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The product is acceptable. See section 13 of this Certificate.

continued

continued

• It is essential that the floor complies with the conditions set out in the Design Data and Installation parts of this Certificate.

• The product is imported and marketed in the UK by

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2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, URSA XPS Floorboard, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standard:	B2.1	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product can contribute to a construction meeting this Standard. See the <i>Installation</i> part of this Certificate.
Standard:	B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product is an acceptable material. See section 13 of this Certificate.
Regulation:	18	Resistance to condensation
Standard:	G4.1	Condensation — Interstitial condensation
Standard:	G4.2	Condensation — Surface condensation
Comment:		Floors incorporating the product can satisfy these Standards. See section 11 of this Certificate.
Regulation:	22	Conservation of fuel and power
Standard:	J3.1	Buildings in purpose group 1 — Building fabric
Standard:	J4.1	Buildings in purpose group 1 — Limiting thermal bridging at junctions and around openings
Comment:		The product can satisfy these Standards. See section 10.2, 10.3 and 10.5 of this Certificate.
Standard:	J8.1	Buildings in purpose groups 2 to 7
Standard:	J9.1	Buildings in purpose groups 2 to 7 — Limiting thermal bridging at junctions and around openings
Comment:		The product can contribute to a construction meeting these Standards. See sections 10.2, 10.3 and 10.5 of this Certificate.

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, URSA XPS Floorboard, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 13 of this Certificate.
Regulation:	C5	Condensation
Comment:		Floors incorporating the product can satisfy this Regulation. See section 11 of this Certificate.
Regulation:	F2	Building fabric
Comment:		The product can satisfy this Regulation. See sections 10.2, 10.3 and 10.5 of this Certificate.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See section: 6 *Delivery and site handling* (6.4) of this Certificate.

Technical Specification

5 Description

5.1 URSA XPS Floorboard consists of extruded polystyrene insulation available in two board types and six grades manufactured in accordance with EN 13164 : 2001, Section 4.2 and the relevant parts of Section 4.3.

5.2 The boards are supplied with the characteristics given in Table 1.

6 Delivery and site handling

6.1 The boards are delivered to site in packs wrapped in polyethylene. Each pack bears the

manufacturer's trade name and the BBA identification mark incorporating the number of this Certificate.

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

6.3 The boards must be stored flat, protected from high winds and raised above damp surfaces.

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

Table 1 Board characteristics

Characteristic (unit)	Board type					
	URSA XPS HR			URSA XPS N		
	HR-250	HR-350	HR-500 (VIB)	N-III	N-V	N-VII
Length (mm)	1250	2500	1250	1250	1250	1250
Width (mm)	600	600	600	600	600	600
Thickness (mm) ⁽¹⁾	25–125	25–125	40–125	30–125	40–125	50–100
Edge profile	All boards available in square, half-flapped and tongue-and-groove.					
Minimum compressive strength (kPa)	300	350	500	300	500	700

(1) Other thicknesses available upon request.

Design Data

7 General

7.1 URSA XPS Floorboard is effective in reducing the U value (thermal transmittance) of new or existing concrete or timber floors.

7.2 Ground-supported concrete floors incorporating the boards must include a suitable damp-proof membrane, laid in accordance with the relevant clauses of CP 102 : 1973, BS 8102 : 1990 and BS 8215 : 1991 (see also section 9 of this Certificate).

7.3 Suspended concrete ground floors incorporating the boards, must include a damp-proof membrane or suitable ventilation of the sub-floor (see section 9).

7.4 The overlay to the boards should be:

- a cement-based floor screed laid in accordance with the relevant clauses of BS 8204-1 : 2003 and/or BS 8204-2 : 2003, or
- wood-based floor, eg tongue-and-groove, flooring grade particle board (Type P5 or P7) to BS EN 312 : 2003 or oriented strand board of type OSB/3 or OSB/4 to BS EN 300 : 1997, 18 mm thick (minimum), installed in accordance with ENV 12872 : 2000, or
- a concrete slab.

8 Behaviour in relation to fire

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

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

9 Moisture penetration

9.1 The boards are not a water vapour control layer. However, they will resist water absorption and can be used either below or above the dpm.

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

England and Wales

Approved Document C2(a), Technical Solutions 4.7 to 4.12 or 4.18 to 4.20

Scotland

Technical Standards, G2.5 and G2.6, Sections A, C or D of the *Provisions deemed to satisfy the standards*

Northern Ireland

Technical Booklet C, Section 1.5.

10 Thermal insulation

10.1 For the purpose of U value calculations to determine if the requirements of the Building (or other statutory) Regulations are met, the thermal conductivity ($\lambda_{90/90}$ value) of the insulation may be taken as declared by the Certificate holder, as shown in Table 2.

Table 2 Thermal conductivity values

Grade	Thickness (mm)	Thermal conductivity ($Wm^{-1}K^{-1}$)
HR-250	25–125	0.029
HR-350	25–125	0.029
HR-500 (VIB)	40–125	0.029
N-III	≤60	0.034
	>60	0.036
N-V	≤60	0.034
	>60	0.036
N-VII	≤60	0.034
	>60	0.036



10.2 The requirement for limiting heat loss through the building fabric can be satisfied if U values of the building elements, including

thermal bridging, do not exceed the maximum values in the relevant Elemental Method given in the national Building Regulations thus:

England and Wales

Approved Documents L1 and L2, Table 1

Scotland

Technical Standards, J3.2, Table 1 and Table to J8.3

Northern Ireland

Technical Booklet F, Tables 1.2 and 1.4.

10.3 Guidance is also given in these documents on selecting the thickness of insulation required to enable a floor to achieve the desired U value. Alternative approaches to the Elemental Method are also described which allow for some flexibility in design of U values for individual construction elements.

10.4 The U values for floors may be calculated in accordance with CIBSE Guide A3 : 1999 or BS EN ISO 13370 : 1998 [see also BR 262 (2002) *Thermal insulation — avoiding risks*].



10.5 Care should be taken to ensure that the design allows for limiting excessive additional heat loss and risk of surface condensation at junctions between the floor and other building elements. Reference can be made to *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* (TSO 2002) or BR 262 : 2002 *Thermal insulation : avoiding risks*.

11 Condensation risk



For floors subject to Building Regulations, construction should be in accordance with BS 5250 : 2002, Clause 8.5 and with Appendix D as appropriate.

12 Floor loading

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

uniformly distributed load (kPa)	1.5
concentrated load (kN)	1.4

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

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

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



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

Installation

14 General

14.1 Installation of URSA XPS Floorboard must be in accordance with the Certificate holder's installation instructions and the requirements of this Certificate.

14.2 Typical methods are shown in Figure 1. Reference should also be made to BRE document BR 262 (2002) *Thermal insulation — Avoiding risks*.

14.3 All concrete floor surfaces should be smooth, level and flat to within 5 mm when measured with a 2-metre straight-edge. Irregularities greater than this must be removed. Minor irregularities (up to 10 mm deep) may be levelled with mortar or thin screed.

14.4 In ground-supported concrete floors, the concrete floor slab over which the boards are laid should be left as long as possible to maximise drying out and dissipation of constructional moisture, in accordance with BS 8203 : 2001, Section 3.1.2.

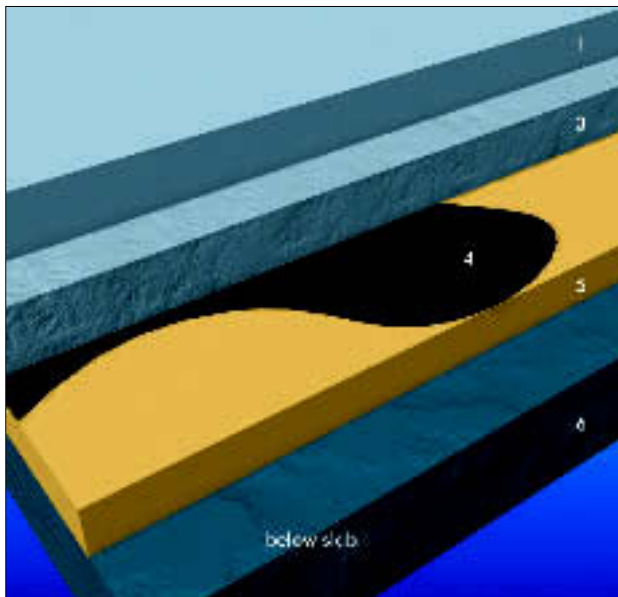
14.5 Where the boards are used over ground-supported concrete floor slabs a suitable damp-proof membrane in accordance with BS 8102 : 1990 or CP 102 : 1973, should be laid to resist moisture from the ground. If a liquid-type damp-proof membrane is applied to the slabs, it should be of a type compatible with extruded polystyrene and be allowed to dry out fully before laying the boards.

14.6 The boards can be used on a beam and block suspended concrete floor that is the subject of a current Agrément Certificate and installed in accordance with, and within the limitations imposed by, that Certificate, or those designed and installed to the precast concrete and general loading codes, that have been assessed as suitable.

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

14.8 Prior to installing the boards on exposed or semi-exposed intermediate timber floors the floor should be inspected thoroughly for possible defects and its condition should meet the recommendations of BS 8201 : 1987, Section 6.

Figure 1 Typical installation in concrete slabs



Key	
1	Screed
2	Slip membrane
3	Concrete slab
4	Damp-proof membrane
5	URSA XPS
6	Sub-base

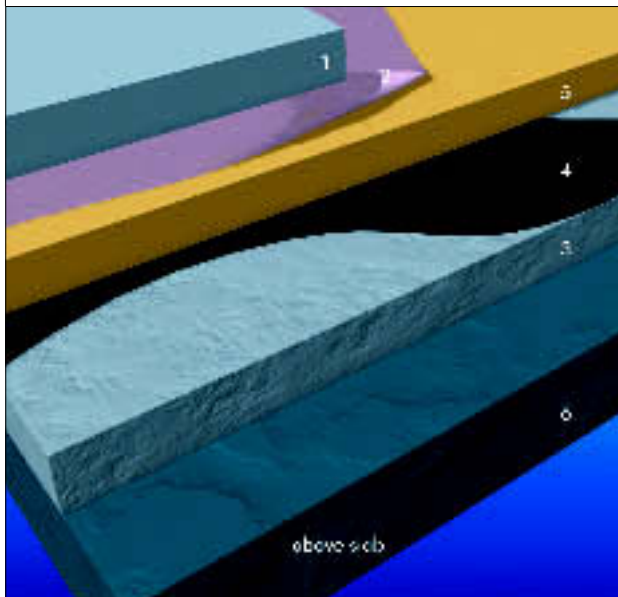
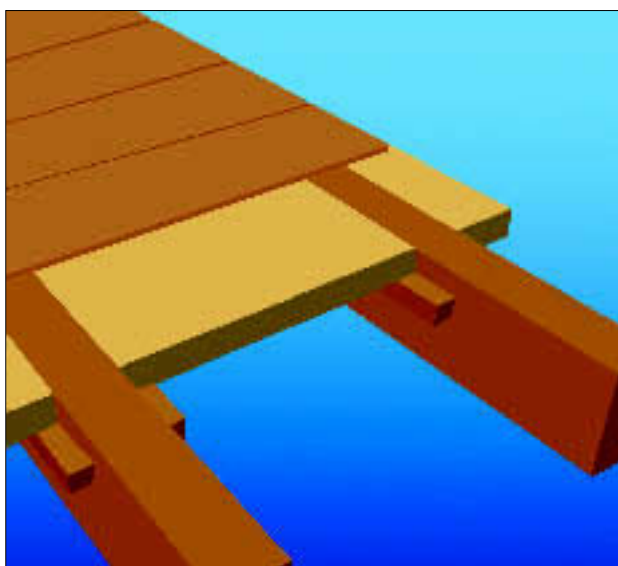


Figure 2 Installation in timber floors



14.9 Where a screed or concrete slab is laid over the product, vertical upstands of insulation should be provided and be of sufficient depth to fully separate the screed or slab from the wall and provide a minimum thermal resistance of $0.75 \text{ m}^2\text{KW}^{-1}$. Alternatively, a suitable cavity or external wall insulation material can be extended below the damp-proof course and a minimum of 150 mm below the top of the floor insulation to provide edge insulation to the floor. In this case, vertical upstands of insulation may not be necessary.

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

15 Procedure

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

15.2 The layer 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.

Cement-based screed overlay

15.3 Perimeter edge pieces are cut and placed around the edges. A properly compacted screed of at least 65 mm is laid. The relevant clauses of BS 8204-1 : 2003 should be followed and BRE Digest 224 : 1981 *Cellular plastics for buildings, Floors* and BRE Digest 104 : 1979 *Floor screeds* should be consulted.

Timber-based board overlay

15.4 Before laying the overlay boards, preservative-treated timber battens, in accordance with BS 1282 : 1999, are positioned at doorways, access panels and to support partitions. Adequate time should be allowed for preservatives to be fixed, and the solvents from solvent-based preservatives to evaporate.

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

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

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

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

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

15.10 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.

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

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

Concrete slab overlay (ground bearing only)

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

Suspended concrete floor

15.14 When the boards are being laid on a suspended floor of concrete tee beams with block infill, lay as detailed above for cement-based screed or particle board overlay.

16 Incorporation of services

16.1 The boards must not be used in direct contact with electrical heating cables or hot water pipes running at a temperature greater than 75°C.

16.2 Where possible, electrical conduits, gas and water pipes or other services should be contained in ducts or channels within the concrete slab of ground-supported floor. Where this is not possible, the services may be accommodated within the insulation, provided they are securely fixed to the concrete slab (see section 8.2). Electrical cables should be enclosed in a suitable conduit. With hot pipes the insulation must be cut back to maintain an air space.

16.3 Where water pipes are installed, either within the slab or the insulation, they must be

pre-lagged with close-fitting pipe insulation, eg extruded polyethylene foam.

16.4 Where the boards are installed on a floor of a suspended beam and block design, all services must be installed so as not to impair the floor performance in accordance with the Agrément Certificate (where appropriate) for that floor.

16.5 On overlay board floors, in situations where access to the services is desirable, a duct may be formed by mechanically fixing, to the floor, timber bearers of the same thickness as the insulation to provide support for a particle board cover. The duct should be as narrow as possible and not exceed 400 mm in width or the maximum particle board spans given in ENV 12872 : 2000 without intermediate support. Services should be suitably fixed to the floor base and not to the insulation boards (see section 10.5 with regard to limiting heat loss).

16.6 For timber intermediate floors all the services should be incorporated beneath the existing floor.

Technical Investigations

The following is a summary of the technical investigations carried out on URSA XPS Floorboard.

17 Investigations

17.1 An examination was made of data relating to:

- thermal conductivity
- compressive strength at 10% compression
- water absorption.

17.2 An assessment of the thermal and hygrothermal properties of the system was made including condensation risk calculations for typical installations.

17.3 A re-examination was made of the relevant data and investigations on which the previous Certificate (Certificate No 97/3407) was based. The conclusions drawn from the original data remain valid.

17.4 An examination was made of test data to EN 13164 : 2001 relating to:

- dimensions
- squareness
- flatness
- density
- λ value.

Additional Information

URSA Benelux has declared the designation codes (see Table 3) in accordance with Section 6 of EN 13164 : 2001.

Table 3 Certificate holder's declared designation codes/level or class — EN 13164 : 2001

Characteristic	Level/Classes					
	HR-250	HR-350	HR-500 (VIB)	N-III	N-V	N-VII
Thickness	T1	T1	T1	T1	T1	T1
Compressive stress at 10% deformation	CS(10\Y)300	CS(10\Y)350	CS(10\Y)500	CS(10\Y)300	CS(10\Y)500	CS(10\Y)700
Dimensional stability at 70°C/90% RH	DS(70,90)	DS(70,90)	DS(70,90)	DS(70,90)	DS(70,90)	DS(70,90)
Dimensional stability at 23°C/90% RH	DS(23,90)	DS(23,90)	DS(23,90)	DS(23,90)	DS(23,90)	DS(23,90)
Water absorption by immersion – total (%)	WL(T)0.7	WL(T)0.7	WL(T)0.7	WL(T)0.7	WL(T)0.7	WL(T)0.7
Water absorption by diffusion	WD(V)3	WD(V)3	WD(V)3	WD(V)3	WD(V)3	WD(V)3
Compressive creep (0.25 σ_c)	CC(2/1.5/50) 125	CC(2/1.5/50) 125	CC(2/1.5/50) 175	CC(2/1.5/50) 125	CC(2/1.5/50) 175	CC(2/1.5/50) 175
Thermal conductivity ($\lambda_{90/90}$ value) ($Wm^{-1}K^{-1}$)	0.029	0.029	0.029	0.034 0.036	0.034 0.036	0.034 0.036
Freeze/thaw class	FT2	FT2	FT2	FT2	FT2	FT2

Bibliography

BS 1282 : 1999 *Wood preservatives. Guidance on choice, use and application*

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

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

BS 7916 : 1998 *Code of practice for the selection and application of particleboard, oriented strand board (OSB), cement bonded particleboard and wood fibreboards for specific purposes*

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

BS 8102 : 1990 *Code of practice for the protection of structures against water from the ground*

BS 8201 : 1987 *Code of practice for flooring of timber, timber products and wood based panel products*

BS 8203 : 2001 *Code of practice for installation of resilient floor coverings*

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

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

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

BS EN 300 : 1997 *Oriented Strand Boards (OSB) — Definitions, classification and specifications*

BS EN 312 : 2003 *Particleboards — Specifications*

BS EN ISO 13370 : 1998 *Thermal performance of buildings — Heat transfer via the ground — Calculation methods*

CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*

EN 13164 : 2001 *Thermal insulation products for buildings — Factory made products of extruded polystyrene foam (XPS) — Specification*

ENV 12872 : 2000 *Wood-based panels — Guidance on the use of load-bearing boards in floors, roofs and walls*

Conditions of Certification

18 Conditions

18.1 This Certificate:

- (a) relates only to the product that is named, described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

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

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

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

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

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

18.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, URSA XPS Floorboard is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 02/3879 is accordingly awarded to URSA Benelux.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. Q. Newson', is written over a light grey background.

Date of Second issue: 30th March 2005

Chief Executive

**Original Certificate issued 7th August 2002. This amended version includes reference to revised national Building Regulations and Standards, change of Certificate holder's and product names, changes to thermal conductivity values, reference to EN 13164 : 2001 and new Conditions of Certification.*