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Agrément Certificate
07/4498
Product Sheet 2

KRONOSPAN WOOD-BASED PANEL

KRONOSPAN OSB/3 FOR ROOFING

This Agrément Certificate Product Sheet⁽¹⁾ relates to Kronospan OSB/3 for Roofing, a loadbearing oriented strand panel suitable for use on roofs as lining, decking or sarking in domestic buildings.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

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



KEY FACTORS ASSESSED

Structural performance — the product, when incorporated into a roofing structure, can contribute to structural strength and stiffness by distributing the dead and imposed loads to the supporting roof structure (see section 6).

Resistance to moisture — the product will have adequate moisture resistance (see section 8).

Durability — the completed roofing will have a life equal to that of the building in which it is installed (see section 11).

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

A handwritten signature in black ink, appearing to read 'Simon Wroe'.

Simon Wroe
Head of Approvals — Engineering

A handwritten signature in black ink, appearing to read 'Claire Curtis-Thomas'.

Claire Curtis-Thomas
Chief Executive

Date of Second issue: 26 April 2016

Originally certificated on 6 February 2008

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Kronospan OSB/3 for Roofing, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	A1	Loading
Comment:		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection. See sections 4.1 and 6 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The product can be incorporated into a roof structure suitably designed to prevent excessive interstitial and surface condensation. See section 4.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The use of the product satisfies the requirements of this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)(b)	Structure
Comment:		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection, in accordance with clauses 1.1.1 ⁽¹⁾⁽²⁾ , 1.1.2 ⁽¹⁾⁽²⁾ and 1.1.3 ⁽¹⁾⁽²⁾ of this Standard. See sections 4.1 and 6 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can be incorporated into a roof structure suitably designed to prevent excessive condensation with reference to clause 3.15.3 ⁽¹⁾ , 3.15.6 ⁽¹⁾ and 3.15.7 ⁽¹⁾ . See section 4.1 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to meeting 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.
Regulation:	12	Building standards applicable to conversions
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⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



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

Regulation:	23(a)(i)(iii)(b)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	30	Stability
Comment:		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection. See sections 4.1 and 6 of this Certificate.
Regulation:	29	Condensation
Comment:		The product can be incorporated into a roof structure suitably designed to prevent harmful effects owing to interstitial condensation. See section 4.1 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.5) and 12 *General* of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Kronospan OSB/3 for Roofing, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 7.1 *Flat roofs and balconies* and 7.2 *Pitched roofs*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13986 : 2004. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Kronospan OSB/3 for Roofing is a loadbearing oriented strand panel comprising softwood flakes/strands bonded together with MDI (methylene diphenyl diisocyanate) resin and wax. The product is manufactured in nine standard thicknesses with the dimensions given in Table 1.

Thickness (mm)	Density (kg·m ⁻³)	Panel size (mm)
11		
12	610	
14		
15	580	
16		2440 x 1220
18		
22	570	
25		
32	550	

1.2 The product is available with square or tongue-and-groove edges.

2 Manufacture

2.1 The product is manufactured to the specification detailed in BS EN 300 : 2006 for OSB/3 loadbearing oriented strand boards. Timber logs, to the Certificate holder's specification, are debarked and cut to length before passing through a flaking machine. After drying and screening to remove fines, the strands/flakes are blended with MDI resin and wax and formed into a three-ply mat, which is pressed and cured under pressure and temperature, and cut to size.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of non-conformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Kronospan Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Bureau Veritas (Certificate LVRIG03115A).

3 Delivery and site handling

3.1 Handling, storage and delivery of the product should be carried out in accordance with the requirements of PD CEN/TR 12872 : 2014 and BS 8103-3 : 2009.

3.2 To prevent distortion, panels should be stacked flat with all four edges flush, or clear of the floor on level bearers at centres not exceeding 600 mm. The stack of boards must be kept in an enclosed dry area or under a waterproof cover, with the edges protected to prevent warping.

3.3 The product should be stored in a dry environment.

3.4 Each panel is marked in accordance with the requirements of BS EN 13986 : 2004 and with the BBA logo incorporating the number of this Certificate.

3.5 For delivery, panels are banded together in bundles up to 1.7 tonnes in weight and 900 mm in height. The panel is covered in transit to minimise changes in moisture content. Particular care should be taken to protect the edges and corners. Banding should be cut on arrival at site but protective covering should not be removed until the panels are ready for conditioning (see section 8.4).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Kronospan OSB/3 for Roofing.

Design Considerations

4 General



4.1 Kronospan OSB/3 is satisfactory for use as decking on pitched roofs or on flat roofs and can also be used as a pitched roof lining for tiles or slates (sarking) as defined in PD CEN/TR 12872 : 2014, BS 8103-3 : 2009 and BS 6229 : 2003.

4.2 Design and installation of the product should be in accordance with BS EN 1995-1-1 : 2004 and PD CEN/TR 12872 : 2014 or BS 8103-3 : 2009. Characteristic values for structural design may be taken from BS EN 12369-1 : 2001. During installation, the panel should be protected from the weather and should be dry when the weatherproof membrane is applied.

4.3 In accordance with BS EN 300 : 2006, Kronospan OSB/3 is satisfactory for use in environmental conditions covered by biological hazard classes 1 and 2 for wood and wood-based products, as defined in BS EN 335 : 2013. In such environments, the panel is covered and fully protected from the elements. As a general rule, it is recommended that the moisture content of the product at the time of installation should not exceed 12% in accordance with BS 8103-3 : 2009. Prolonged exposure to an air temperature of 20°C and a relative humidity of 90% may result in the recommended moisture content being exceeded.

4.4 The design thermal conductivity (λ value) of OSB, given in BS EN 12524 : 2000, is $0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ and as such will not have a significant effect on the thermal transmittance (U value) of the roof construction.

4.5 The permissible thickness of panel is dependent upon application and support centres, as defined in BS 8103-3 : 2009.

4.6 Roof timbers on which the product is supported should be designed and used in accordance with BS EN 1995-1-1 : 2004 and/or the relevant Building Regulations. Roof voids should be ventilated in accordance with BS 5250 : 2011.

4.7 On a flat roof, decking constructed from Kronospan OSB/3 provides a suitable substrate for waterproofing specifications of:

- built-up felt roofing to BS 8217 : 2005
- mastic asphalt roofing to BS 8218 : 1998
- other built-up roof waterproofing systems covered by a current Agrément Certificate, when laid in accordance with that Certificate.

5 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Structural performance



6.1 For buildings within the scope of BS 8103-3 : 2009 (low-rise buildings), OSB/3 flat roof decks should be designed with minimal panel thickness and maximum support centres as outlined in BS 8103-3 : 2009 Table 81. Other thicknesses might be appropriate where supported by performance test from a UKAS-accredited laboratory or calculation by a suitably-qualified and experienced individual.

6.2 Panels of thickness 22 mm can withstand the concentrated and impact loads in accordance with the requirements of BS EN 12871 : 2001 and are suitable for flat roof applications in category H as defined in BS EN 1991-1-1 : 2002.

7 Behaviour in relation to fire

At roof penetrations (eg flues), adequate fire protection should be provided in accordance with Building Regulations.

8 Resistance to moisture

8.1 In common with all timber products, OSB is subject to moisture movement. As a guide, an increase in moisture content of 1% increases the length by 0.02%, width by 0.03% and thickness by 0.5%.

8.2 Under similar environmental conditions, OSB will take longer to equilibrate and will attain an equilibrium moisture content approximately 2% to 3% lower than solid timber.

8.3 To avoid distortion and damage to finishes, movement gaps, in accordance with the recommendations of PD CEN/TR 12872 : 2014, should be provided when installing the product.

8.4 To minimise subsequent movement, all wet site operations should be completed before installation and the panel conditioned for a minimum of 48 hours as close as is practicable to the environmental conditions likely to occur in service. To achieve this, the maximum moisture content of the panel at the time of installation or fixing, as determined

using a properly-calibrated moisture meter, should be as given in BS 8103-3 : 2009, Annex A, Table A.1 (ie 12% for flat roof decking and sarking for pitched roofs).

8.5 In conventional construction of timber flat roof decking, a vapour control layer must be provided in cold roof designs to prevent damage to the structure owing to the passage of moisture (vapour) from the interior of the building in accordance with BS 5250 : 2002.

8.6 In a roof construction, in calculations for interstitial condensation according to BS 5250 : 2002, the water vapour resistance factor (μ) of OSB can be taken as 30 (wet cup) or 50 (dry cup) from BS EN ISO 10456 : 2007, Table 3, depending on the construction.

9 Formaldehyde content

In common with other wood-based panels, which include formaldehyde as a component of the resin, the product may emit small amounts of formaldehyde gas. The extractable formaldehyde content is not greater than 8.0 mg per 100 g when measured in accordance with BS EN 120 : 1992. This complies with the lower Class E1 formaldehyde specification included in BS EN 300 : 2006. Therefore, in the context of this Certificate, the quantity of formaldehyde gas emitted from the panel alone will not raise the overall building level to an extent which will affect habitability.

10 Maintenance

As the product has suitable durability (see section 11), will normally be confined within the building structure and, in most cases, will be covered with finishes, maintenance is not required.

11 Durability



11.1 The product will have adequate durability and should have a life equal to that of the roof in which it is installed.

11.2 Care should be taken when designing, detailing and constructing buildings to ensure that moisture does not accumulate within the panel.

Installation

12 General

12.1 The product is easily cut and fixed using conventional woodworking tools. Normal precautions should be taken to avoid inhalation of wood dust when cutting, drilling and sanding the panels.

12.2 The product can withstand normal site handling and fixing. Damaged panels should not be used. Normal safety precautions should be observed when handling large panels.

13 Procedure

Installation of Kronospan OSB/3 should be in accordance with DD CEN/TS 12872 : 2007 or BS 8103-3 : 2009 and the manufacturer's recommendations.

Technical Investigations

14 Tests

Tests were carried out to determine the product's material characteristics in accordance with the requirements of BS EN 300 : 2006 for OSB/3.

15 Investigations

15.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

15.2 An assessment was made of the product's durability and behaviour in relation to moisture.

Bibliography

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

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 8103-3 : 2009 *Structural design of low-rise buildings — Code of practice for timber floors and roofs for housing*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS 8218 : 1998 *Code of practice for mastic asphalt roofing*

BS EN 120 : 1992 *Wood-based panels — Determination of formaldehyde content — Extraction method called the perforator method*

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

BS EN 335 : 2013 *Durability of wood and wood-based products — Use classes: definitions, application to solid wood and wood-based products*

BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 12369-1 : 2001 *Wood-based panels — Characteristic values for structural design : OSB, particleboards and fibreboards*

BS EN 12524 : 2000 *Building materials and products — Hygrothermal properties — Tabulated design values*

BS EN 13986 : 2004 *Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking*

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

PD CEN/TR 12872 : 2014 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*

Conditions of Certification

16 Conditions

16.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

16.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

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

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

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

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

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

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