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Agrément Certificate

21/5939

Product Sheet 2

SMARTPLY MAX OSB/3 PANELS

SMARTPLY MAX FOR ROOFING

This Agrément Certificate Product Sheet⁽¹⁾ relates to SMARTPLY MAX for Roofing, a loadbearing oriented strand board suitable for internal use in humid conditions for roofing.

(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 structure (see section 6).


Resistance to moisture — provided adequate precautions are taken, the product will have adequate moisture resistance (see section 8).

Durability — the product, incorporated into the completed roofing, will have a service 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

Date of First issue: 25 October 2021


Hardy Giesler
Chief Executive Officer

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

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Regulations

In the opinion of the BBA, SMARTPLY MAX 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

Comment:

Loading

The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection. See sections 4.1, 4.2 and 6 of this Certificate.

Requirement: C2(c)

Comment:

Resistance to moisture

The product can contribute to a roof structure, suitably designed to prevent excessive condensation. See section 8 of this Certificate.

Regulation: 7(1)

Comment:

Materials and workmanship

The product is acceptable. See section 11 and the *Installation* part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:

8(1)

Comment:

Durability, workmanship and fitness of materials

The use of the product satisfies the requirements of this Regulation. See section 11 and the *Installation* part of this Certificate.

Regulation:

9

Standard:

1.1(a)(b)

Comment:

Building standards applicable to construction

Structure

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, 4.2 and 6 of this Certificate.

Standard:

3.15

Condensation

A vapour control layer must be provided on the room side of the construction to prevent damage arising from the passage of moisture vapour from the interior of the building, in accordance with clauses 3.15.3⁽¹⁾⁽²⁾. See section 8 of this Certificate.

Standard:

7.1(a)(b)

Comment:

Statement of sustainability

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

Comment:

Building standards applicable to conversions

Comments in relation to the products 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)

Comment:

(iii)(b)

Fitness of materials and workmanship

The product is acceptable. See section 11 and the *Installation* part of this Certificate.

Regulation:	29	Condensation
Comment:		The product can be incorporated into a roof structure, suitably designed to prevent harmful effects from interstitial condensation. See section 8 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, 4.2 and 6 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (Principal Designer) and contractor (Principal Contractor) to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.5) and 13 *General* of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, SMARTPLY MAX for Roofing, 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 7.1 *Flat roofs, terraces 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.

Technical Specification

1 Description

1.1 SMARTPLY MAX for Roofing comprises softwood flakes/strands bonded together with methylene diphenyl diisocyanate (MDI) resin and wax.

1.2 The panel is produced in standard thicknesses⁽¹⁾ of 11, 15, 18 and 22 mm, and panel sizes⁽¹⁾ of 2440 by 590 mm, 2400 by 600 mm, 2440 by 1220 mm, 2397 by 1197 mm and 2397 by 1220 mm.

(1) Other thicknesses, in the range of 9 to 24 mm, and other panel sizes are available to order.

1.3 The nominal density of the panel is 600 kg·m⁻³.

1.4 The panel is available with square or tongue-and-groove edges (on two long edges or all four edges), and is either sanded or unsanded.

2 Manufacture

2.1 The panel is manufactured to the specification detailed in BS EN 300 : 2006 for OSB/3, relating to loadbearing oriented strand boards used in humid conditions.

2.2 Quality control includes checks on raw materials, the production process and on the finished product.

2.3 In the manufacturing process, logs, to the Certificate holder's specification, are debarked and cut to length before passing through a waferiser machine. After drying and screening to remove fines, the strands/flakes are blended with resin and wax and formed into a three-ply mat. In the outer two layers the strands/flakes are oriented in the direction

of the major axis; in the core layer, the strands are oriented in the direction of the minor axis. The panel is formed by curing the mat under pressure and temperature and cutting to size.

2.4 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 nonconformities
- 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.

3 Delivery and site handling

3.1 Handling, storage and delivery of the panels 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, clear of the floor, on level bearers, at centres not exceeding 600 mm.

3.3 The panel should be stored in a dry environment.

3.4 Each panel bears the product name, the production date, nominal thickness, 'OSB/3', 'E1' (formaldehyde class), arrows indicating the major axis, and 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.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on SMARTPLY MAX for Roofing.

Design Considerations

4 Use



4.1 SMARTPLY MAX for Roofing is suitable for use as decking on pitched or flat roofs⁽¹⁾ 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 : 2018.

(1) However, it should not be used as a flat roof decking in buildings where the insulation is installed above the supporting deck and the thermal design does not eliminate the possibility of condensation, or where occupancy conditions are likely to lead to high levels of humidity. In Scotland, cold deck roof systems are not recommended.

4.2 Roof structures incorporating the panels must be designed to resist the load requirements specified in BS EN 1991-1-1 : 2002 and BS EN 1991-1-4 : 2005.

4.3 Design and installation of the panel should be in accordance with BS EN 1995-1-1 : 2004 and PD CEN/TR 12872 : 2014 or BS 12871 : 2013 and 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.

4.4 Humid conditions corresponding to service class 2 of BS EN 1995-1-1 : 2004 are characterised by a moisture content in the material corresponding to a temperature of 20°C and a relative humidity of the surrounding air exceeding 85% for only a few weeks per year. In accordance with BS EN 300 : 2006, SMARTPLY MAX for Roofing is suitable for use in environmental conditions covered by use 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.

4.5 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.

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

4.7 Roof timbers on which the panel is supported should be designed and used in accordance with BS EN 1995-1-1 : 2004. Roof voids should be ventilated in accordance with BS 5250 : 2011.

4.8 A flat roof, decking constructed from SMARTPLY MAX for Roofing 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 BBA Certificate, when laid in accordance with that Certificate.

4.9 In conventional timber flat roof decking, a vapour control layer must be provided in cold roof designs to prevent damage to the structure due to the passage of moisture (vapour) from the interior of the building in accordance with BS 5250 : 2011.

5 Practicability of installation

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

6 Structural performance



For buildings within the scope of BS 8103-3 : 2009 (low-rise buildings), OSB/3 flat roof decks should be designed with minimum panel thickness and maximum support centres as outlined in BS 8103-3 : 2009, Table 81, an extract of which can be seen in Table 1 of this Certificate.

Table 1 Maximum recommended centres of support of OSB in flat roof decking⁽¹⁾⁽²⁾⁽³⁾

Application	Minimum board thickness (mm)	Maximum centre of support members (mm)
Roofs of small garages and similar	11	400
buildings (without access other than	15	600
for maintenance and repair)	18	600
Roofs over habitable areas, with	15	450
access (in addition to that provided	18	600
for maintenance and repair)	22	600
Roofs over habitable areas, where	11	450
no access (other than that necessary	15	600
for maintenance and repair) is	18	600
provided	22	600

(1) Although the imposed load associated with the applications highlighted in rows 1 and 3 are similar, the thicknesses quoted for garages and outbuildings provide adequate construction in these lower-risk situations.

(2) The recommendations in this Table are made on the assumption that the roof is constructed in accordance with accepted design principles for weather resistance and control of condensation within the roof. If the roof construction necessitates the provision of ventilation, the design can create an unrestricted cross-flow of air through the structure.

(3) Other thicknesses or spans might be appropriate where supported by performance test or calculated design.

7 Behaviour in relation to fire

7.1 The fire resistance of roof constructions incorporating the panels may be calculated with reference to BS EN 1995-1-2 : 2004 or, where necessary, by undertaking an appropriate test at a UKAS or equivalent accredited laboratory for the test concerned.

7.2 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, the OSB/3 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, the OSB/3 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 panel.

8.4 To minimise subsequent movement, before installation all wet site operations should be completed and the panel conditioned 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 (i.e. 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 due to the passage of moisture (vapour) from the interior of the building in accordance with BS 5250 : 2011.

8.6 In a roof construction, in calculations for interstitial condensation according to BS 5250 : 2011, the water vapour resistance factor (μ) of plywood can be taken as 70 (wet cup) or 200 (dry cup) from BS EN 12524 : 2000, Table 1, or determined by testing in accordance with BS EN ISO 12572 : 2001.

9 Formaldehyde content

The panel achieves a Class E1 formaldehyde specification in accordance with BS EN 300 : 2006. Therefore, when used in accordance with 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 10), 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 panel 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.

12 Reuse and recyclability

As wood-based materials, the product can be readily recycled.

13 General

13.1 SMARTPLY MAX for Roofing can be 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. Safety glasses/goggles must be worn when cutting.

13.2 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.

14 Procedure

14.1 Installation of SMARTPLY MAX for Roofing should be by use of conventional methods in accordance with PD CEN/TR 12872 : 2014 or BS 8103-3 : 2009, and the manufacturer's recommendations.

14.2 The panels must be laid after all wet site operations have been completed.

Technical Investigations

15 Tests

Tests were carried out to determine:

- material characteristics
- hard body impact resistance.

16 Investigations

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

16.2 A review was made of a report supplied by the Certificate holder giving details of tests by a notified body leading to the reaction-to-fire classification in accordance with BS EN 13501-1 : 2007.

16.3 A review was made of a report supplied by the Certificate holder giving details of static point load tests on the product as structural floor decking for load category A and B (residential and office use).

Bibliography

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS 6229 : 2018 *Flat roofs with continuously supported flexible waterproof 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 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 1128 : 1996 *Cement-bonded particleboards — Determination of hard body impact resistance*

BS EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*

NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 : Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 : Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005 + A1 : 2010 UK National Annex to *Eurocode 1 : Actions on structures — General actions — Wind actions*

BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

NA to BS EN 1995-1-1 : 2004 + A2 : 2014 UK National Annex to *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 1995-1-2 : 2004 *Eurocode 5 : Design of timber structures — General — Structural fire design*

NA to BS EN 1995-1-2 : 2004 UK National Annex to *Eurocode 5 : Design of timber structures — General — Structural fire design*

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 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 13986 : 2004 + A1 : 2015 *Wood-based panels for construction — Characteristics, evaluation of conformity and marking*

BS EN 12871 : 2013 *Wood based panels - Determination of performance characteristics for load bearing panels for use in floors, roofs and walls*

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*

17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.