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Agrément Certificate
21/5939
Product Sheet 3

SMARTPLY MAX OSB 3

SMARTPLY MAX FOR SHEATHING

This Agrément Certificate Product Sheet(1) relates to SMARTPLY MAX for Sheathing, a loadbearing oriented strand board suitable for use as sheathing.

(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 wall structure, can contribute to structural strength and stiffness by distributing the dead and imposed loads to the supporting structure (see section 6).

Behaviour in relation to fire — the product has a reaction-to-fire classification is of D-s1, d0 and is restricted in some cases (see section 7).

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

Durability — the product 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.

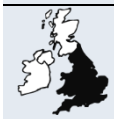
On behalf of the British Board of Agrément

Date of First issue: 25 October 2021

Hardy Geisler
Chief Executive Officer

Regulations

In the opinion of the BBA, SMARTPLY MAX for Sheathing, 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:	**B3(1)(2)(3)(4)**	**Internal fire spread (structure)**
Comment:		The product is restricted by this Requirement. See sections 7.1, 7.2 and 7.4 of this Certificate.
Requirement:	**C2(b)(c)**	**Resistance to moisture**
Comment:		The product can contribute to a wall structure, suitably designed to prevent excessive condensation. See section 8 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The product is acceptable. See section 11 and the *Installation* 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 *Installation* part of this Certificate.
Regulation:	**9**	**Building standards - 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:	2.1	Compartmentation
Standard:	2.2	Separation
Standard:	2.3	Structural protection
Standard:	2.9	Escape
Comment:		The product can contribute to satisfying regulatory requirements, with reference to clauses 2.2.1(1)(2), 2.2.2(1), 2.2.3(1), 2.2.4(1), 2.2.6(1), 2.2.8(1) and 2.3.2(1) of these Standards. See sections 7.1 and 7.2 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is restricted by this Standard with respect to 2.6.5(1) and 2.6.6(2). See section 7.3 of this Certificate.
Standard:	3.15	Condensation
Comment:		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), 3.15.6(1)(2) and 3.15.7(1)(2). See section 8 of this Certificate.

Standard:	7.1(a)	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**	**Building standards applicable to conversions** Comments in relation to 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 *Installation* part of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		A vapour control layer must be provided on the room side of the construction to prevent damage due to 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 4.1and 6 of this Certificate.
Regulation:	**35(1)(2)(3)(4)**	**Internal fire spread — Structure**
Comment:		The product can contribute to satisfying regulatory requirements. See sections 7.1 and 7.2 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 (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

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

Additional Information

NHBC Standards 2021

In the opinion of the BBA, SMARTPLY MAX for Sheathing, 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 6.2 *External timber-framed walls* and 6.3 *Internal walls.*

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 Sheathing 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 9 and 11 mm and panel sizes(1) of 2400 by 1220 mm, 2440 by 1220 mm, 2697 by 1197 mm and 2397 by 1197 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 $kg \cdot m^{-3}$.

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 Certificate number.

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 Sheathing.

Design Considerations

4 Use

4.1 SMARTPLY MAX for Sheathing is suitable for use as structural sheathing in timber-frame buildings.

4.2 Fabrication and installation of sheathing panels, including the provision of moisture movement gaps, must be in accordance with PD CEN/TR 12872 : 2014 and BS EN 1995-1-1 : 2004. Exposure to the elements should be minimised during installation.

4.3 The timber structures in which the panel is incorporated must be designed and constructed to comply with BS EN 1995-1-1 : 2004.

4.4 The panel is suitable for use in service classes 1 (dry) and 2 (humid conditions) of BS EN 1995-1-1 : 2004. This is 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 OSB/3 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 $W \cdot m^{-1} \cdot K^{-1}$ and as such will not have a significant effect on the thermal transmittance (U value) of the wall construction.

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

6.1 The design racking resistance of a timber-frame wall incorporating OSB/3 sheathing nailed to studding should be calculated in accordance with the guidance given in BS EN 1995-1-1 : 2004 and its UK National Annex, by a chartered structural engineer or similarly experienced and qualified person, based upon the vertical design load on the wall and the nail spacing and nail characteristics used to attach the sheathing.

6.2 As a guide, when calculated in accordance with BS EN 1995-1-1 : 2004, Method B, the basic racking resistance of a timber-frame wall(1) without vertical loading and with 9 mm thick sheathing fixed with nails(2) at 100 mm spacing is 3.62 $kN \cdot m^{-1}$, and at 150 mm spacing is 2.77 $kN \cdot m^{-1}$.

(1) Studs: timber grade C16, minimum size 38 by 75 mm and spaced at a maximum of 600 mm.
(2) Nails: minimum diameter 3.1 mm, minimum length 50 mm and ultimate tensile strength 700 $N \cdot mm^{-2}$.

7 Behaviour in relation to fire

7.1 The panels have a reaction-to-fire classification of D-s1, d0 in accordance with BS EN 13501-1 : 2007.

7.2 Where the panel is incorporated in a wall construction which is subject to fire resistance requirements, an appropriate assessment or test must be carried out by a United Kingdom Accreditation Service (UKAS) accredited laboratory for the test concerned.

7.3 The product is classified High Risk in Scotland and may be used more than 1 m from a boundary. The product may also be used on domestic buildings with no storey more than 11 m above the ground and on non-domestic buildings without height restriction.

7.4 The product should not be used on buildings in England that have a storey at least 18 m above ground level and contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

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.

8.5 Damp-proof membranes and vapour control layers should be incorporated where necessary in accordance with the requirements of BS 8103-3 : 2009 and BS 5250 : 2011.

8.6 The water vapour resistance factor (μ) of plywood, as given in BS EN 13986 : 2004, should be either taken as the design value given in BS EN 12524 : 2000 [70 (wet cup), 200 (dry cup)] or determined in accordance with BS EN ISO 12572 : 2001. Such values may be used in any interstitial condensation calculations to BS 5250 : 2011.

8.7 Where required, the product should be treated as a conventional sheathing panel with regard to detailing and damp-proofing at openings, eaves and sole plate, and the fixing of wall ties. Walls must have an effective vapour control layer on the warm side, suitable weather protection on the outside, a vented cavity and membrane in accordance with BS 5250 : 2011.

8.8 The outer weatherproofing should have adequate resistance to wind-driven rain, particularly in regions classified as severe exposure.

9 Formaldehyde content

The panels achieve 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, 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 has a service life equal to that of the wall 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.

Installation

13 General

13.1 SMARTPLY MAX for Sheathing 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 much 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 Sheathing 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 Exposure to weather should be minimised during installation. If wetted, boards must be allowed to dry out thoroughly before applying any surface coatings, or subjecting them to the full design load.

Technical Investigations

15 Tests

Tests were carried out to determine:

- material characteristics
- surface spread of flame
- 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 Calculations were carried out in accordance with BS EN 1995-1-1 : 2004 to determine the racking resistance of the product.

16.3 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.

Bibliography

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

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

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

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

BS EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

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.