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Agrément Certificate  
**98/3488**  
Product Sheet 3

### SMARTPLY WOOD-BASED PANEL

### SMARTPLY OSB/3 FOR SHEATHING

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to SmartPly OSB/3 for Sheathing, a loadbearing oriented strand board suitable for use in humid conditions as sheathing.

#### AGRÉMENT 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 structure, can contribute to structural strength and stiffness by distributing the dead and imposed loads to supporting structure (see section 5).

**Behaviour in relation to fire** — the product's surface spread-of-flame rating and reaction-to-fire classification have been determined (see section 6).

**Resistance to moisture** — when installed in accordance with this Certificate, the panels will have adequate moisture resistance (see section 7).

**Durability** — the sheathing will have a life equal to that of the building in which it is installed (see section 10).

The BBA has awarded this Agrément 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: 15 March 2012

Originally certified on 28 July 1998

Handwritten signature of Brian Chamberlain in black ink.

Brian Chamberlain

Head of Approvals — Engineering

Handwritten signature of Greg Cooper in black ink.

Greg Cooper

Chief Executive

*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](http://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, SmartPly OSB/3 for Sheathing, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



## The Building Regulations 2010 (England and Wales)

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 3.1, 5.1 and 5.2 of this Certificate.
Requirement:	B3(1)(2)(3)(4)	Internal fire spread (structure)
Comment:		The product can contribute to meeting this Requirement. See sections 6.1 to 6.3 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The use of the product satisfies the requirements of this Regulation. See sections 10.1 and 10.2 and the <i>Installation</i> 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 <sup>(1)(2)</sup> , 1.1.2 <sup>(1)(2)</sup> and 1.1.3 <sup>(1)(2)</sup> of this Standard. See sections 3.1, 5.1 and 5.2 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 meeting regulatory requirements, with reference to clauses 2.1.1 <sup>(2)</sup> , 2.1.1.2 <sup>(2)</sup> , 2.2.1 <sup>(1)(2)</sup> , 2.2.2 <sup>(1)(2)</sup> , 2.2.3 <sup>(1)(2)</sup> , 2.2.4 <sup>(1)(2)</sup> , 2.2.5 <sup>(2)</sup> , 2.2.6 <sup>(1)</sup> , 2.2.8 <sup>(1)</sup> and 2.3.2 <sup>(1)(2)</sup> . See sections 6.1 to 6.3 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	D1	Stability
Comment:		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection. See sections 3.1, 5.1 and 5.2 of this Certificate.
Regulation:	E4(1)(2)(3)(4)	Internal fire spread — Structure
Comment:		The product can contribute to meeting regulatory requirements. See sections 6.1 to 6.3 of this Certificate.

## Construction (Design and Management) Regulations 2007

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

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

See sections: 2 *Delivery and site handling* (2.5) and 11 *General* (11.1 and 11.2) of this Certificate.

# Non-regulatory Information

## NHBC Standards 2011

NHBC accepts the use of SmartPly OSB/3 for Sheathing, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.2 *External timber-framed walls* and Chapter 6.3 *Internal walls*.

## General

This Certificate relates to SmartPly OSB/3 for Sheathing, a loadbearing oriented strand board for use as sheathing. It is suitable for use in humid conditions.

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.

This Certificate is a Confirmation of Irish Agrément Certificate No 02/0093, issued to SmartPly Europe Ltd by the Irish Agrément Board, June 2002.

## Technical Specification

### 1 Description

1.1 SmartPly OSB/3 for Sheathing comprises softwood flakes/strands bonded together with MDI (methylene diphenyl diisocyanate) resin and wax. The panel is manufactured to the specification detailed in BS EN 300 : 2006 for OSB/3 loadbearing oriented strand boards used in humid conditions.

1.2 The panel is produced in standard thicknesses<sup>(1)</sup> of 9 mm and 11 mm and panel sizes<sup>(1)</sup> of 2400 by 1220 mm, 2440 mm by 1220 mm, 2697 mm by 1197 mm and 2397 mm by 1197 mm.

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

1.3 The nominal density of the panel is 600 kg·m<sup>-3</sup>.

1.4 The panel is available with square or tongue-and-groove edges, and is either sanded or unsanded.

1.5 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.

1.6 Quality control includes checks on raw materials and on the finished product.

### 2 Delivery and site handling

2.1 Handling, storage and delivery of the panels should be carried out in accordance with the requirements of DD CEN/TS 12872 : 2007 and BS 8103-3 : 2009.

2.2 To prevent distortion, panels should be stacked flat, clear of the floor, on level bearers, at centres not exceeding 600 mm.

2.3 The panel should be stored in a dry environment.

2.4 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.

2.5 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 OSB/3 for Sheathing.

## Design Considerations

### 3 General



3.1 The product is suitable for use as structural sheathing in timber-frame buildings. The 9 mm by 2397 mm by 1197 mm panel is marketed as *SmartFrame* for this purpose.

3.2 Fabrication and installation of sheathing panels, including the provision of moisture movement gaps, must be in accordance with DD CEN/TS 12872 : 2007 and BS EN 1995-1-1 : 2004. Exposure to the elements should be minimised during installation.

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

3.4 In accordance with BS EN 300 : 2006, SmartPly OSB/3 is suitable for use in environmental conditions covered by biological hazard classes 1 and 2 for wood and wood-based products, as defined in BS EN 335-3 : 1996. In such environments, the panel is covered and fully protected from the elements. Prolonged exposure to an air temperature of 20°C and a relative humidity of 90% may result in the recommended moisture content being exceeded.

3.5 The design thermal conductivity ( $\lambda$  value) of OSB, given in BS EN 12524 : 2000, is 0.13 W·m<sup>-1</sup>·K<sup>-1</sup> and as such will not have a significant effect on the thermal transmittance (U value) of the wall construction.

## 4 Practicability of installation

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

## 5 Structural performance



5.1 The safe racking resistance of a timber-frame wall incorporating OSB sheathing nailed to studding should be calculated in accordance with the guidance given in BS EN 1995-1-1 : 2004, 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.

5.2 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<sup>(1)</sup> without vertical loading and with 9 mm thick sheathing fixed with nails<sup>(2)</sup> at 100 mm spacing is 3.62 kN·m<sup>-1</sup>, and at 150 mm spacing 2.77 kN·m<sup>-1</sup>.

(1) Studs: timber grade C16, minimum size 38 mm 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·mm<sup>-2</sup>.

## 6 Behaviour in relation to fire



6.1 When tested in accordance with BS EN 13501-1 : 2007, the panel achieved a reaction-to-fire classification of D-s1, d0.

6.2 When tested in accordance with BS 476-7 : 1997, the panel achieved a Class 3 surface spread-of-flame rating.

6.3 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 Resistance to moisture

7.1 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%.

7.2 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.

7.3 To avoid distortion and damage to finishes, movement gaps, in accordance with the recommendations of DD CEN/TS 12872 : 2007, should be provided when installing the panel.

7.4 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.

7.5 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 : 2002.

7.6 In a wall construction, in calculations for interstitial condensation according to BS 5250 : 2002, the water vapour resistance factor ( $\mu$ ) of OSB can be taken as 50 (dry cup) from BS EN ISO 10456 : 2007, Table 3.

7.7 Where required, the product should be treated as 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 : 2002.

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

## 8 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.

## 9 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.

## 10 Durability



10.1 The panel will have adequate durability and should have a life equal to that of the wall in which it is installed.

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

## Installation

### 11 General

11.1 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.

11.2 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.

### 12 Procedure

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

## Technical Investigations

### 13 Tests

Tests were carried out to determine:

- material characteristics in accordance with the requirements of BS EN 300 : 2006 for OSB/3
- surface spread of flame in accordance with BS 476-7 : 1997
- hard body impact resistance in accordance with BS EN 1128 : 1996.

### 14 Investigations

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

14.2 Calculations were carried out in accordance with BS EN 1995-1-1 : 2004 to determine the racking resistance of the product.

14.3 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 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 5250 : 2002 *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 335-3 : 1996 *Durability of wood and wood-based products — Definition of hazard classes of biological attack — Application to wood-based panels*

BS EN 1128 : 1996 *Cement-bonded particleboards — Determination of hard body impact resistance*

BS EN 1995-1-1 : 2004 *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 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

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

DD CEN/TS 12872 : 2007 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*

## 15 Conditions

15.1 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.

15.2 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.

15.3 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
- remain covered by a valid Irish Agrément
- are reviewed by the BBA as and when it considers appropriate.

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

15.5 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
- individual 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.

15.6 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.