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Agrément Certificate

01/3857

Product Sheet 3

NORBORD STERLING OSB

STERLING OSB/3 FOR SHEATHING

This Agrément Certificate Product Sheet⁽¹⁾ relates to Sterling OSB/3 for Sheathing, a loadbearing oriented strand board for use as sheathing on timber-frame domestic and non-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 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 may be regarded as having a Class 3 surface spread of flame rating (see section 7).

Resistance to moisture — provided adequate precautions are taken, the product, when incorporated into a construction, should perform satisfactorily (see section 8).

Durability — the sheathing 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

Date of First issue: 30 April 2015

Brian Chamberlain
Head of Technical Excellence

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 1113. 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, Sterling OSB/3, 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 section 6 of this Certificate.	
Requirement:	B3	Internal fire spread (structure)
Comment:	The product can contribute to meeting regulatory requirements. See section 7 of this Certificate.	
Requirement:	C2(b)(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 8 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⁾ , 1.1.2 ⁽¹⁾ and 1.1.3 ⁽¹⁾ . See section 6 of this Certificate.	
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 2.2.1 ⁽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⁾ . See section 7 of this Certificate.	
Standard:	2.4	Cavities
Comment:	Cavity barriers must be provided in accordance with the product's Class 3 surface spread of flame rating, with regard to Annex 2C, clause 2, C.1, and clauses 2.4.1 ⁽¹⁾⁽²⁾ and 2.4.2 ⁽¹⁾ . See section 7 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⁾ , 3.15.6 ⁽¹⁾ and 3.15.7 ⁽¹⁾ . See section 8 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 this 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

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:	29	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. 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 section 6 of this Certificate.	
Regulation:	35	Internal fire spread — Structure
Comment:	The product can contribute to a construction meeting regulatory requirements. See section 7 of this Certificate.	

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: 1 Description (1.2), 3 Delivery and site handling (3.2) and 12 General of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Sterling OSB/3 for Sheathing, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Part 6 Substructures (excluding roofs)*, Chapters 6.2 *External timber-framed walls* and Chapter 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. 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 Sterling OSB/3 for Sheathing comprises softwood flakes/strands bonded together with phenolic resins, MDI (methylene diphenyldiisocyanate) binder and waxes.

1.2 The board is available with the following panel sizes and characteristics:

Thickness (mm)	9, 11
Width (mm) x height (mm) ⁽¹⁾	1200 x 2400, 1220 x 2440, 1250 x 2500.
Nominal density (kg·m ⁻³)	620
Edge	square or tongue-and-groove
Finish	sanded or unsanded.

(1) Other sizes are available on request.

2 Manufacture

2.1 The board 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 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 resins, binder and wax and formed into a three-ply mat. In the outer two layers the strands/flakes (and woodgrain) are bound with resin and oriented in the direction of the major axis; in the core layer, the strands are bound with a binder and oriented in the direction of the minor axis. The board is formed by curing the mat under pressure and temperature and cutting to size.

2.3 Quality control includes checks on raw materials and on the finished product, in accordance with the requirements of BS EN 300 : 2006, for appearance, dimensions, moisture resistance and content, swelling, strength and elasticity.

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.

2.5 The management system of Norbord Europe Ltd has been assessed and registered as meeting the requirements of ISO 9001 : 2008 by British Standards Institute (Registration No. Q05688).

3 Delivery and site handling

3.1 Each board bears the legends 'Sterling OSB/3', 'EN300' and 'E1' (formaldehyde class) and the production reference, size, thickness and the BBA logo incorporating the number of this Certificate. The bundles of tongue-and-groove boards are protected with OSB edge protectors and cardboard, and bundles of some sizes of plain edge boards are covered with cardboard.

3.2 For delivery, boards are banded together in bundles up to 1.7 tonnes in weight and 900 mm in height. They are covered in transit to minimise changes in moisture content. When handling, particular care should be taken to protect the edges and corners. Banding should be cut on arrival at site but protective coverings should not be removed until the boards are ready for conditioning (see section 8.4).

3.3 Handling, storage and delivery of the product should be carried out in accordance with the requirements DD CEN/TS 12872 : 2007.

3.4 To prevent distortion, boards should be stacked flat and clear of the floor, on level bearers, at centres not exceeding 600 mm. The top board should be covered to prevent warping.

3.5 The boards should be stored in a dry environment.

Assessment and Technical Investigations

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

Design Considerations

4 General

4.1 Sterling OSB/3 for Sheathing is satisfactory for use as structural sheathing in timber buildings.

4.2 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.

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


4.4 In accordance with BS EN 300 : 2006, Sterling OSB/3 is satisfactory for use in environmental conditions covered by biological hazard class 2 for wood and wood-based products, as defined in BS EN 335 : 2013. In such environments, the board is covered and fully protected from the elements. As a general rule, it is recommended that the moisture content of the product should not exceed 16% for any significant period nor 20% at any time. Prolonged exposure to an air temperature of 20°C and a relative humidity of 90% may result in the recommended moisture content being exceeded.

4.5 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 wall constructions into which it is incorporated.

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 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.

6.2 As a guide, when calculated in accordance with BS EN 1995-1-1 : 2004, Method B, the racking resistance of a timber-frame wall⁽¹⁾ without vertical loading and with sheathing fixed with nails⁽²⁾ is given in Table 1.

Table 1 Racking resistance of timber-frame wall⁽¹⁾

Thickness of sheathing (mm)	Nail ⁽²⁾ spacing (mm)	Racking resistance ($\text{kN}\cdot\text{m}^{-1}$)
9	100	3.62
9	150	2.77
11	100	3.78
11	150	2.90

(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 $700 \text{ N}\cdot\text{mm}^{-2}$.

7 Behaviour in relation to fire



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

7.2 Where the product is incorporated in a wall construction which is subject to fire resistance requirements, an appropriate assessment or test must be carried out by a laboratory UKAS-accredited for the test concerned.

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 and width of a board by 0.3 mm per metre run.

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 BS 8103-3 : 2009, should be provided when installing the board.

8.4 To minimise subsequent movement, before installation all wet site operations should be completed and the boards conditioned as close as is practicable to the environmental conditions likely to occur in service. To achieve this, the moisture content of the board prior to installation, determined with a properly-calibrated moisture meter, should be close to the service class equilibrium moisture content (emc) values given in DD CEN/TS 12872 : 2007, Table 1:

- service class 1 $4\% \leq \text{emc} \leq 11\%$
- service class 2 $11\% \leq \text{emc} \leq 17\%$
- service class 3 $\text{emc} > 17\%$.

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

8.6 The water vapour resistance factor (μ) of OSB, as given in BS EN 13986 : 2004, should be either taken as the design value given in BS EN 12524 : 2000 [30 (wet cup), 50 (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. The experimental value of water resistance factor determined in accordance with BS EN ISO 12572 : 2001 (wet cup) for the 9 mm thick Sterling OSB/3 board is 219.

8.7 In accordance with normal good practice for wood-based sheathing materials used in cold frame construction, external walls in which the product is incorporated must include an effective vapour control layer on the room side, suitable weather protection on the outside surface, a ventilated cavity and damp-proof courses. The product should be treated as conventional plywood sheathing with regard to detailing at openings, eaves and sole plate, the fixing of wall ties and breather paper, and the effect of openings on racking strength.

8.8 The moisture content of sheathing material is affected by the humidity conditions existing in the cavity of which it forms one face. The cavity should be of conventional construction for timber framed buildings, freely drained and ventilated. The outer masonry leaf should have adequate resistance to wind-driven rain, particularly in regions classified as severe exposure. Raked mortar joints or high-porosity masonry should be avoided, particularly in these latter areas.

9 Formaldehyde content

The extractable formaldehyde content of the product 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, when the product is used in accordance with this Certificate, the quantity of formaldehyde gas emitted from the board 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 product will have adequate durability and should have a life equal to that of the structure 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 product.

11.3 Under normal conditions of use the product is unlikely to suffer damage, but if damage does occur, repairs can be carried out in accordance with the Certificate holder's instructions.

12 General

12.1 Sterling OSB/3 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 boards.

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

13 Procedure

13.1 Installation of Sterling OSB/3 should be in accordance with DD CEN/TS 12872 : 2007 or BS 8103-3 : 2009, and the Certificate holder's recommendations.

13.2 The boards should be completely dry and laid after all wet site operations have been completed.

13.3 Exposure to the elements should be minimised during installation. If wetted, the boards must be allowed to dry out thoroughly before applying any floor coverings or surface coatings, or subjecting them to the full design load.

Technical Investigations

14 Tests

Tests were carried out and the results assessed 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.

15 Investigations

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

15.2 With regard to racking resistance, Sterling OSB/3 has been assessed as equivalent to OSB (type F2).

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 : 2011 *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 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 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 13986 : 2004 *Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking*

BS EN ISO 12572 : 2001 *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties*

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

ISO 9001 : 2008 *Quality management systems — Requirements*

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.