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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
08/4546
Product Sheet 2

EUROSTRAND BOARDS

EUROSTRAND OSB 3 AND OSB 3 E0 BOARDS FOR ROOFING

This Agrément Certificate Product Sheet(1) relates to Eurostrand OSB 3 and OSB 3 E0 Boards for Roofing, a loadbearing oriented strand panel 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 panels, when incorporated into a roofing structure, can contribute to structural strength and stiffness by distributing the dead and imposed loads to supporting structure (see section 6).

Resistance to moisture — the panels have adequate moisture resistance (see section 7).

Durability — the completed roofing 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: 2 May 2013

Brian Chamberlain
Head of Approvals — Engineering

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

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, Eurostrand OSB 3 and OSB 3 E0 for Roofing, if installed, used and maintained in accordance with the provisions of this Certificate, will meet or contribute to meeting 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 sections 10.1 and 10.2 and the *Installation* 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 *Installation* 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) of this Standard. See sections 4.1 and 6 of this Certificate.
Standard:	3.15	Condensation
Comment:		The board 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.

(1) Technical Handbook (Domestic).

The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(i)(iii)(b)	Fitness of materials and workmanship
Comment:		The product is acceptable. See sections 10.1 and 10.2 and the *Installation* part of this Certificate.
Regulation:	29	Condensation
Comment:		The boards can be incorporated into a roof structure, suitably designed to prevent harmful effects due to interstitial condensation. See section 4.1 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.

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: 3 *Delivery and site handling* (3.5) and 11 *General* (11.1 and 11.2) of this Certificate.

Non-regulatory Information

NHBC Standards 2013

NHBC accepts the use of Eurostrand OSB 3 and OSB 3 E0 for Roofing, when installed and used 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 products in accordance with harmonised European Standard BS EN 13986 : 2004. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Eurostrand OSB 3 Board for Roofing comprises softwood flakes/strands bonded together with MUF (melamine-urea formaldehyde) resin, MDI (diisocyanate diphenylmethane) binder and wax. Eurostrand OSB 3 E0 Board for Roofing comprises softwood flakes/strands bonded together with formaldehyde-free MDI binder glue in core and surface layer.

1.2 The panel is produced in standard sizes[1] of:

thickness (mm)	9, 11, 15, 18, 22 and 25
length by width (mm)	2397 x 1197, 2400 x 1200, 2440 x 1220, 2500 x 1250, 2697 x 1197
Nominal density ($kg \cdot m^{-3}$)	$\geqslant$ 600.

(1) Other thicknesses (in range of 9 mm to 25 mm) and sizes are available to order

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

2 Manufacture

2.1 The board 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 into strands. After drying and screening to remove fines, the strands/flakes are blended with resin, 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 in the direction of the minor axis. The board is formed by curing the mat under pressure and temperature and cutting 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 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.

2.3 The management system of Egger Holzwerkstoffe Wismar GmbH & Co KG has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by IQNet and Quality Austria (Certificate AT-00184/0).

2.4 The product is manufactured in Germany by the Certificate holder, and distributed in the UK by EGGER (UK) Limited, Anick Grange Road, Hexham, Northumberland NE46 4JS. Tel: 01434 602191, Fax: 01434 605103, e-mail: building.uk@egger.com website: www.egger.com

3 Delivery and site handling

3.1 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.

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 panels should be stored on a level surface in a dry environment.

3.4 Each standard size panel bears the product name, the production date and time, nominal thickness, 'EN 13986', 'OSB/3', 'E1' (formaldehyde class), and the BBA Certificate number. Where panels are cut to special order this information is given on a label attached to the packaging.

3.5 For delivery, the panels are banded together in bundles up to 2 tonnes in weight and 1030 mm in height. The panels are 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 Eurostrand OSB 3 and OSB 3 E0 for Roofing.

4 General

4.1 Eurostrand OSB 3 and OSB 3 E0 panels are suitable for use as decking on pitched roofs or on flat(1) roofs and can also be used as a pitched roof lining for tiles or slates (sarking) as defined in DD CEN/TS 12872 : 2007, BS 8103-3 : 2009 and BS 6229 : 2003.

(1) However, the board should not be used as flat roof decking to buildings where the insulation occurs 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.

4.2 The panels are suitable for use in humid conditions, corresponding to service class 2 of BS EN 1995-1-1 : 2004. This is characterised by 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.

4.3 Design and installation of the panel should be in accordance with BS EN 1995-1-1 : 2004 and DD CEN/TS 12872 : 2007 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.

4.4 In accordance with BS EN 300 : 2006, Eurostrand OSB 3 and OSB 3 E0 are suitable for use in environmental conditions covered by biological hazard class 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.

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 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 : 2002.

4.8 On a flat roof, decking constructed from Eurostrand OSB 3 and OSB 3 E0 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.

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.

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

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.

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 buildings (without access other than for maintenance and repair)	11	400
	15	600
	18	600
Roofs over habitable areas, with access (in addition to that provided for maintenance and repair)	15	450
	18	600
	22	600
Roofs over habitable areas, where no access (other than that necessary for maintenance and repair) is provided	11	450
	15	600
	18	600
	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 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. 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).

7.5 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 : 2002.

7.6 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, or determined by testing in according in accordance with BS EN ISO 12572 : 2001.

8 Formaldehyde content

The panels achieve a Class E1 formaldehyde specification in accordance with BS EN 300 : 2006. The OSB 3 E0 is bonded with formaldehyde-free MDI glue in core and surface layer, 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 roofing 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 roof in which it is installed.

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

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

Installation

11 General

11.1 Eurostrand OSB 3 and OSB 3 E0 Board for Roofing 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 Eurostrand OSB 3 and OSB 3 E0 should be by use of conventional methods in accordance with DD CEN/TS 12872 : 2007 or BS 8103-3 : 2009 and the Certificate holder'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.

14 Investigations

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

Bibliography

BS 5250 : 2002 *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 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 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 ISO 10456 : 2007 *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*

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

BS 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
- 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.

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
- 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.

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.

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