IRISH AGRÉMENT BOARD

BUILDING PRODUCT CERTIFICATION

CERTIFICATE No. 02/0093

Cl/SfB (RJ1)

Smart*Ply* Europe
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Smart*Ply* OSB (Oriented Strand Board)

Planche Universelle
Universalbrett

The Irish Agrément Board is designated by Government to issue European Technical Approvals.

Irish Agrément Board Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2000.**

The Irish Agrément Board operates in association with the **National Standards Authority of Ireland (NSAI)** as the National Member of UEAtc.

PRODUCT DESCRIPTION

This Certificate relates to **Smart***Ply* OSB (Oriented Strand Board) 6mm - 25 mm board for use as wall sheathing, structural flooring, heavy duty/ industrial flooring, roof sarking and roof decking, in domestic dwellings. The board is manufactured from wood flakes which are dried and blended with resin and wax and pressed into a mat. This mat is then cured, trimmed to size and sanded (if required). The board is available in OSB2 and OSB3 grades.

MANUFACTURE AND MARKETING

The product is manufactured and marketed by **Smart***Ply* Europe, Belview Slieverue via Waterford. Telephone: 051-851233. International: +353 -51-851233, Fax: +353-51-851130

USE

The board uses include, but are not limited to, wall sheathing, structural flooring, heavy duty/industrial flooring, roof sarking and roof decking and when supported at centres not exceeding 600mm. The range includes 6 mm board for use as floor wearing surface, 9 mm wall sheathing, 18 mm floor and roof decking, 25 mm thick board for industrial flooring applications.

PART 1 CERTIFICATION

1.1 ASSESSMENT

In the opinion of the Irish Agrément Board (IAB), **Smart***Ply* OSB is fit for the purposes defined above, and meets the requirements of the Building Regulations 1997 to 2000 as indicated in Section 1.2 of this Certificate.

1.2 Building Regulations 1997 to 2000

Requirements:

A1 (1) – Loading

The product contributes to the structural strength and stiffness of a floor by distributing the dead and imposed loads to the supporting structure. (See Part 3 of this Certificate).

B3 (1) Internal fire spread (Structure)

The construction detailed in section 4.1 of this certificate has been assessed as having a modified half hour period of fire resistance.

B3(3) Internal fire spread (Structure)

Smart*Ply* OSB has a class 3 surface spread of flame. Therefore, when used in a construction containing a cavity the maximum cavity dimension in any direction is limited to 10 m.

C4 – Resistance to weather and ground moisture
Smart*Ply* OSB meets the requirement when installed as indicated in Section 2.4 of this Certificate.

D1 & D2 – Materials And Workmanship.
Smart*Ply* OSB is composed of acceptable materials as indicated in Section 4.6 of this Certificate.

J3 Protection of Building
Combustible material shall be separated by solid non combustible material not less than 200 mm thick, from any heating appliance or from any flue pipe or opening to a heating appliance.

L1 Conservation of Fuel and Energy
The board will not contribute significantly to the U value of the element of which it forms part.

PART 2 TECHNICAL SPECIFICATION AND CONTROL DATA

2.1 PRODUCT DESCRIPTION
Smart*Ply* OSB comprises wood flakes/strands bonded together with a blend of resins and wax. The board is manufactured in accordance with EN300 – Oriented Strand Boards (OSB).

PRODUCT RANGE
Smart*Ply* OSB Boards are manufactured in grades OSB2 and OSB3. The boards are available in sizes up to 2697 x 1220 (laid measure) in the range of thicknesses from 6 to 25mm. In the thickness range 6–12.5mm boards are square edged, otherwise boards are tongued and grooved or square edged. Other sizes are available on request. The boards are available sanded if required.

2.2 MANUFACTURE
Logs meeting specified requirements are debarked before passing through a flaking machine. The strands/flakes are dried and screened to remove the fines, then blended with resin and wax. The flakes are formed into a mat and aligned in the outer two surface layers in the direction of the major axis (the strength direction) with the core layer oriented at right angles to create a three ply structure. This design increases the structure and performance of the board as it distributes the strength, stiffness and spanning capacity of the panels (boards) along and across the boards. The mat is then cured under pressure and temperature and cut to size, stamped, stacked and packaged.

2.2.1 QUALITY CONTROL
Quality control is carried out on a continuous basis from incoming raw material to finished product and quality control includes a visual examination of the logs, checks on moisture content and dimensions of the flakes/strands, percentage resin and wax, time and temperature of pressing, and dimensional and strength tests on the finished board. After manufacture the boards of grade OSB3 are conditioned to a minimum moisture content of 5%. The boards are then stored on level bearers to prevent distortion.

2.3 DELIVERY, STORAGE AND MARKING
Smart*Ply* OSB boards are delivered banded together in Bundles up to two tonnes or as specified by customers.

The boards should be covered during transport in such a way as to minimise changes in moisture content due to weather.

On site the boards must be stored clear of the ground on level bearers to prevent distortion. In common with most timber products, effective protection against the weather during storage is essential.

Each board bears the **Smart***Ply* logo, date of manufacture and shift code of production and IAB Certificate number plus board grade and arrows to indicate major axis.

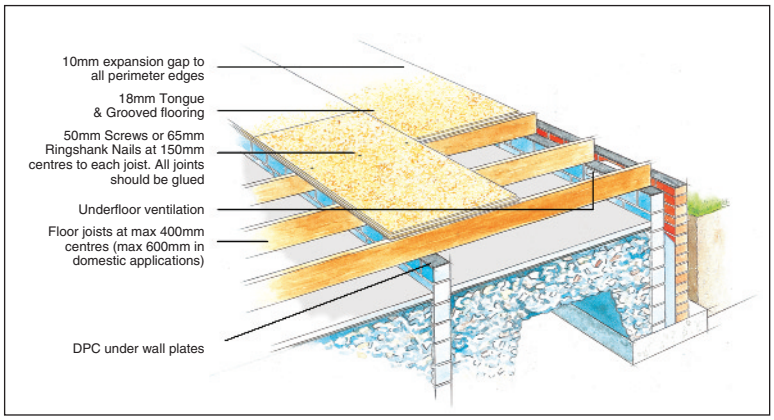


Figure 1

2.4 INSTALLATION PROCEDURE

Floors

All floors
2.4.1 Installation must be in accordance with the manufacturer's instructions. Boards should be laid with the major axis of the boards crossing the joists.

2.4.2 The tongued and grooved or square edged boards must be nailed or screwed to all supports using ring shank nails or screws (with a minimum penetration to the support of 2.5 x board thickness) at a maximum of 150mm centres on all joists. The cross joints on the board should be staggered and the joints between the boards should be glued (on tongued and grooved boards).

All cut edges which are not supported with joists and all edges of square edged boards must be supported on noggings.

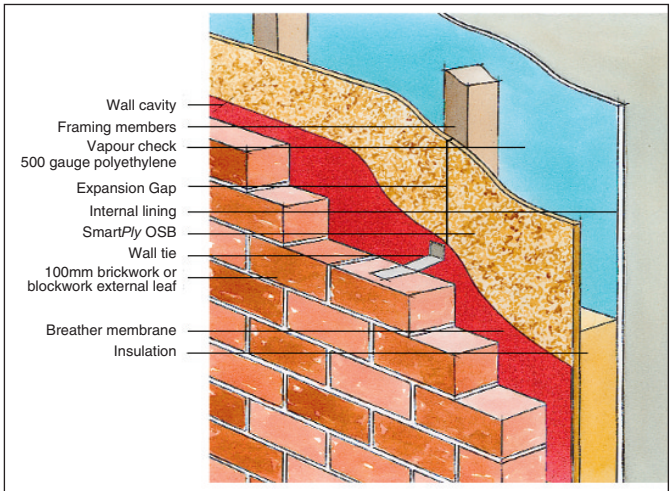


Figure 2: Wall Sheathing

2.4.3 Square Edges of boards at the perimeter of a floor, and edges that are not coincident with joists, should be supported on bridgings.

2.4.4 Provision must be made for possible expansion by providing a gap wherever boards abut any rigid upstand such as a perimeter wall, column or fireplace surround. This gap should be not less than 10mm wide. Large floors may need a wider gap and intermediate expansion gaps to allow for a possible overall expansion of 2mm per metre length of floor.

2.4.5 **Smart***Ply* OSB Board is suitable for temporary exposure to the elements during installation; however, such exposure must be for the shortest possible period. Where possible therefore, flooring should not be laid until the dwelling is glazed and substantially watertight. If wetted, the boards must be allowed to dry out thoroughly before applying any floor coverings or surface coatings or subjecting the boards to the full design load. Where exposure to moisture is a possibility OSB 3 should be used as it is more resistent to moisture.

2.4.6 Single boards can be lifted manually. When boards are lifted mechanically, care must be taken to ensure that the lifting ropes or slings do not cause damage to edges.

Ground floors

2.4.7 The ground beneath the floor should be free of topsoil and vegetable matter and be covered to resist moisture and prevent plant growth.

2.4.8 A void of at least 150 mm must be provided between the underside of the floor joists and the ground cover.

2.4.9 The space beneath the floor must be ventilated by providing ventilators on each external wall. The ventilators should be large enough to give an actual opening at least equivalent to 1500 mm^2 for each metre run of wall. Any pipes needed to carry ventilating air should have a diameter of at least 100mm.

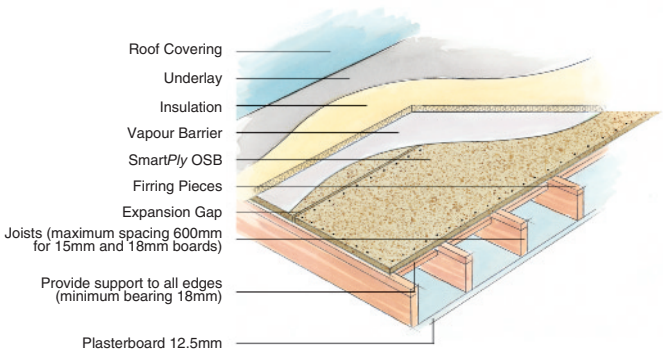


Figure 3: Warm Deck Roofs

2.4.10 A continuous damp-proof course should be laid along the support walls below the floor.

2.4.11 Damp-Proofing and ventilation arrangements must be in accordance with normal good practice, for example, provision of damp-proof sleeves to ventilators, and adequate drainage of the cavity.

2.4.12 **Wall Sheathing**

In accordance with normal good practice for wood-based sheathing materials used in cold frame construction, external walls in which the boards are incorporated must include an effective vapour check on the room side, suitable weather protection on the outside surface, ventilated cavity and damp-proof courses. **Smart***Ply* OSB3 Board 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.

The moisture content of sheathing material is affected by the humidity conditions existing in the cavity of which it forms one face. Provision should be made for possible expansion due to the uptake of moisture. The cavity should be of conventional construction for timber frame, 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.

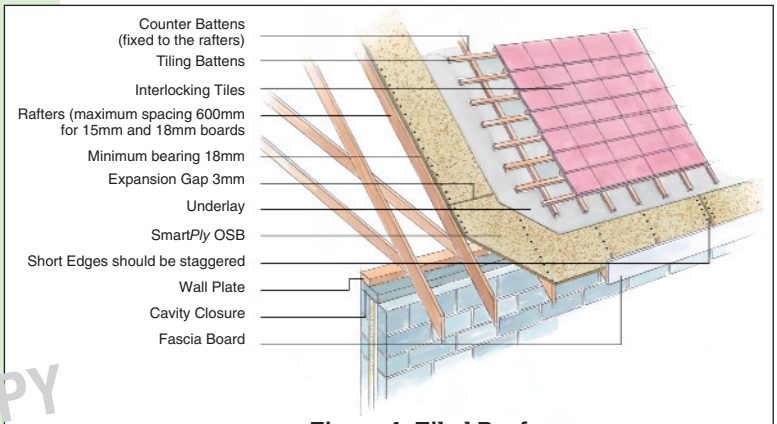


Figure 4: Tiled Roof

2.4.13 **Roof Decking**
Installation of OSB boards on roof decks should be in accordance with sections 2.4.1 to 2.4.6 of this certificate. As for conventional timber roof decking, properly designed roof waterproofing systems, flashing, vapour control systems and drainage systems must be provided.

PART 3 DESIGN DATA

3 General

3.1 The product has been assessed for use as structural flooring, wall sheathing and roof decking in domestic dwellings and other residential buildings for installation in environmental conditions where the moisture content does not exceed 16% for any significant period and does not exceed 20% at any time as defined in BS 5268: Part 2: 2002, *Structural use of Timber-Code of practice for permissible stress design, materials and workmanship (service classes 1 and 2).*

Smart*Ply* OSB Board will provide a suitable substrate for floor coverings nailed or stuck down with solvent or water based adhesives or loose-laid.

3.2 **Flooring**
Smart*Ply* OSB Board can accept the loads associated with domestic use as defined in BS 6399: Part 1: 1996 *Design loading for buildings – Code of practice for dead and imposed loads* for designed joist spacings of not more than 600 mm provided the fixings are in accordance with part 2 of this Certificate.

3.3 **Wall Sheathing**
The board may be considered as a Category 1 material in accordance with Table 2 of BS 5268: Part 6: Section 6.1: 1996. The datum thickness for the board is 9mm. The basic racking resistance for 9mm board when used with the datum conditions for fasteners for Category 1 sheathing is 1.68kNm^{-1} and can be used with the modification factors defined in BS 5268: Part 6: Section 6.1: 1996.

3.4 **Roof Decking**
The board is suitable for use, with an appropriate waterproofing specification, as a roof deck having a minimum finished fall in excess of 1:80 (depending on the waterproofing specification) and where no access is provided to the roof other than that necessary for cleaning and repair.

As for conventional timber roof decking, a vapour control layer must be provided in cold roof designs to prevent damage to the structure as a result of the passage of moisture in the form of vapour from the interior of the building.

3.5 **Roof Sarking**
The board is suitable for use as a sarking layer subject to the same structural/environmental considerations as for roof decking. As for conventional sheet sarking systems a counter batten system and waterproof run off membrane system, must be included in roof design to ensure run off to gutters.

3.6 **Structural Performance**
The timber structures in which the board is incorporated must be designed and constructed to comply with BS 5268: Part 2: 2002 and BS 5268: Part 6: Section 6.1: 1996.

In addition to the requirements specifically referred to in this Certificate, the primary timber structure over which **Smart***Ply* OSB Board is laid must be designed and constructed to comply with one of the following technical specifications:

(1) BS 5268: Part 2: 1996.
(2) Technical Guideline Documents to Parts A (Structure) and B (Fire) of the Building Regulations 1997 to 2000.
(3) Eurocode 5.

PART 4 TECHNICAL INVESTIGATIONS

4.1 Behaviour in relation to fire

4. 1.1 The surface of the boards is classified as Class 3 as defined in BS 476: Part 7: 1997 Method of test to determine the classification of the surface spread of flame of products.

4.1.2 An intermediate floor construction incorporating tongued and grooved **Smart***Ply* OSB board supported on timber joists at least 35 mm wide with a ceiling of 12.5 mm plasterboard fixed with 40 mm galvanized nails at 150 mm centres with joints taped and filled and backed by timber has been assessed as having a modified half-hour fire resistance.

4.1.3 Where any other form of floor construction incorporating **Smart***Ply* OSB board is subject to fire resistance requirements, an appropriate assessment or test must be carried out by a laboratory accredited for the test concerned.

4.2 Behaviour in relation to moisture

4.2.1 The hygroscopic properties of **Smart***Ply* OSB Board differ from those of solid timber and under the same exposure conditions, the equilibrium moisture content of the board can be 2 to 3% less than the value for solid timber.

4.2.2 In common with other timber products **Smart***Ply* OSB Board is subject to moisture movement. Excessive movement may result in distortion. To limit such movement BS 5268: Part 2: 2002 recommends that wood products should:

(a) be checked for moisture content at the time of installation. The determination of moisture content by a properly calibrated moisture meter will be sufficiently accurate for this purpose.

(b) have a moisture content at the time of installation, close to the moisture content they will attain in service.

4.2.3 In normal service during the period between its moisture conditioning in the factory and installation, **Smart***Ply* OSB Board can be expected to increase in moisture content and generally achieve the condition specified in BS 5268: Part 2 : 2002. Where, for example, installation is planned immediately following factory conditioning or the service moisture content is expected to be at the higher end of the range referred to, a check on the moisture content of the board prior to installation is advised. In all cases, the moisture movement gaps referred to in section 2.4.4 must be provided.

4.2.4 **Smart***Ply* OSB board should be protected from wetting when used in high risk areas such as kitchens and bathrooms. For such conditions OSB3 must be used. General guidance on its use is given in BS 7916: 1998 *Code of practice for the selection and application of particleboard, oriented strand board (OSB), cement bonded particleboard and wood fibre boards for specific purposes*.

4.3 Thermal insulation

The thermal conductivity value of the boards is such that they will not have a significant effect on the thermal transmittance (U value) of the constructions into which they are incorporated. For the calculation of interstitial condensation risk a λ value of 0.13 W/(m°K) may be assumed.

4.4 Physiological properties

In common with most other wood-based panels, **Smart***Ply* OSB Board can emit small amounts of formaldehyde gas. The total extractable formaldehyde content is not greater than 8mg/100g when measured in accordance with EN 300 Table 1: 1997: & EN120 (1996). Therefore the quantity of gas emitted from the flooring alone, in the context of use given in this Certificate, is such that its use will not increase the level of gas within the building to an extent which will affect habitability.

4.5 Practicability of installation

4.5.1 **Smart***Ply* OSB Board is easily cut and fixed using conventional woodworking tools. For better performance, the use of TCT tooling is recommended.

4.5.2 The boards can withstand normal site handling and fixing; if damaged they must not be used.

4.6 Durability

4.6.1 When used in the conditions set out in this certificate, **Smart***Ply* OSB Board will have adequate resistance to bacterial and fungal attack and physical degradation due to moisture.

4.6.2 Care should be taken in design, detailing and construction of buildings to ensure that moisture does not accumulate within the board. Moisture contents in excess of those stated in this Certificate may lead to failure of the material through fungal attack or physical breakdown.

4.6.3 As with all building materials, care should be taken in detailing buildings to prevent vermin and other pest infestation.

4.6.4 When used in suspended ground floors, attention must be given to the adequate provision of timber treatment, under-floor space and ventilation in accordance with one of the following technical specifications:

(1) BS CP 102: 1973 Protection of buildings against water from the ground. '

(2) Clause 3.1.8 of TGD to Part C of the Building Regulations 1997 to 2000.

4.6.5 The service life of **Smart***Ply* OSB Board is dependent upon the environment. When installed in accordance with this Certificate it will have a life at least equivalent to that expected from wood based sheet materials.

4.7 TESTS AND ASSESSMENTS WERE CARRIED OUT:

(a) To indicate the long term performance of the boards, tests were carried out on OSB3 boards in accordance with EN 300: 1997 to examine the strength loss after exposure to boiling water and for susceptibility to thickness swelling. The resistance of OSB board to attack by decay fungi and insects was also assessed.

(b) To determine the surface spread of flame classification in accordance with BS 476: Part 7: 1997.

(c) To determine the extractable formaldehyde level in accordance with EN120: 1996: .

(d) To determine the movement related to varying moisture content. (Clause 20 of BS 5669 Part 1 1989).

(e) To establish the moisture vapour transmission rate for the boards in accordance with BS 3177: 1959 (1995).

(f) The static load/deflection as specified in tables 3, 4 and 5 of EN 300: 1997.

(g) The moisture content of the boards as manufactured. (Table 1 of EN 300).

(h) Internal bond-dry (Tables 3 and 4 of EN 300: 1997).

4.8 OTHER INVESTIGATIONS

(i) Existing data relating to the durability of timber products in the specified environment were examined.

PART 5 CONDITIONS

5.1 CONDITIONS OF CERTIFICATION

The National Standards Authority of Ireland ("NSAI") following consultation with the Irish Agrément Board ("IAB") has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this certificate and in accordance with the manufacturer's instructions and usual trade practice. This certificate shall remain valid so long as:

(a) the specification of the product is unchanged;

(b) the Building Regulations, 1997 to 2000 and any other regulation or standard applicable to the product/process, its use or installation remain unchanged;

(c) the product continues to be assessed for the quality of its manufacture and marking by NSAI;

(d) no new information becomes available, which in the opinion of the NSAI would preclude the granting of the certificate;

(e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.

5.2 The IAB mark and certification number may only be used on or in relation to products/processes in respect of which a valid certificate exists. If the certificate becomes invalid, the certificate holder must not use the IAB mark and certification number and must remove them from products already marked.

5.3 In granting this certificate, the NSAI makes no representation as to:

(a) the presence or absence of patent rights subsisting in the product/process; or

(b) the legal right of the certificate holder to market, install or maintain the product/process; or

(c) whether individual products have been manufactured or installed by the certificate holder in accordance with the descriptions and specifications set out in this certificate.

5.4 This certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this certificate relating to the safe use of the certified product or process are preconditions to the validity of the certificate. However, the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act, 1989 or of any other current or future statute or current or future common law duty of care owed by the manufacturer or by the certificate holder.

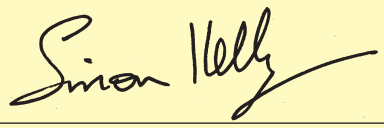
5.6 The NSAI is not responsible to any person or body for loss or damage, including personal injury, arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this certificate to any Act of the Oireachtas, regulation made thereunder, statutory instrument, code of practice, national standards, manufacturer's instructions or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this certification.

THE IRISH AGRÉMENT BOARD

This Certificate No. 02/0093 is accordingly granted by the NSAI on behalf of The Irish Agrément Board to **Smart***Ply* Europe .

Date of Issue: June 2002

Signed: 

Chief Executive, NSAI

Readers may check that the status of this Certificate has not changed by contacting the

Irish Agrément Board,
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Revised June 2002

IRISH AGRÉMENT BOARD

BUILDING PRODUCT CERTIFICATION

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