SINTEF

SINTEF Certification

No. 2148

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Technical Approval

SINTEF Building and Infrastructure confirms that

SmartPly 3 OSB flooring and roofing

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document

1. Holder of the approval

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2. Manufacturer

SmartPly Europe Ltd, Waterford, Ireland

3. Product description

Smartply 3 OSB (oriented strand board) are woodbased boards made of strands from Lodgepole Pine and Sitka Spruce, bonded together under high temperature and pressure with a moisture resistant resin and wax. The wood strands are cross-oriented in three layers. The face layer strands are mainly oriented with the wood fibres parallel to the length of the boards, and the core layer strands are mainly parallel to the width of the board.

The board quality covered by this approval is SmartPly 3, manufactured as OSB/3 according to EN 300 and CE-marked according to EN 13986. The boards are delivered with a sanded surface.

Standard board thicknesses are 15 mm, 18 mm and 22 mm, with tongue and groove profiles at the long edges as shown in Fig. 1. Standard sizes (net measure) are 1200 mm x 2400 mm and 590 mm x 2400 mm. Other sizes may be delivered on request.

Declared tolerances on dimension are as follows, measured according to EN 324-1 and EN 324-2:

Tolerance on thickness, sanded:	± 0.3 mm
Tolerance on length and width:	± 3.0 mm
Edge straightness tolerance:	1.5 mm/m
Squareness tolerance:	2.0 mm/m

Mean density is 600 kg/m³ ± 15 %.
Moisture content after production is 6.5 ± 1.5 %.

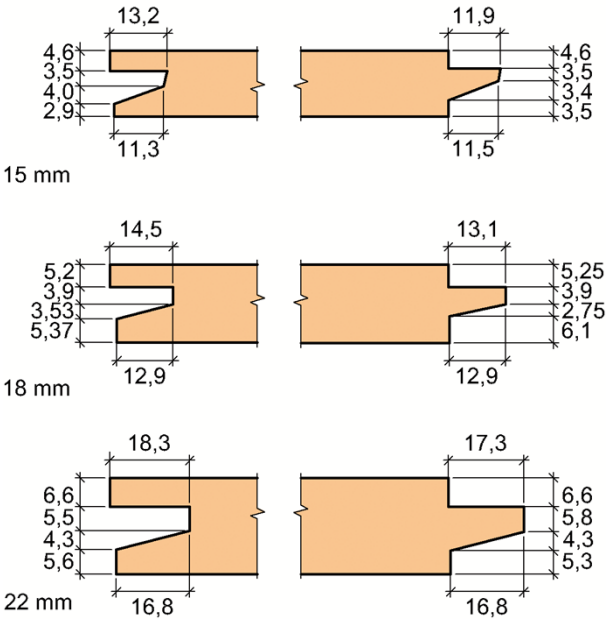

Fig. 1
SmartPly 3 OSB. Tongue and groove profiles

4. Fields of application

SmartPly 3 OSB can be used as floor sheathing on timber joists in residential housing and other buildings of similar construction and floor loads, and load-bearing roof sheathing in timber roof structures.

5. Properties

Strength and stiffness

The boards satisfy the requirements in EN 300. Table 1 shows the minimum characteristic strength and stiffness properties

Values for structural design are given in EN 12369-1.

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Table 1
Minimum characteristic strength and stiffness for Smartply OSB 3*

Property	Value in N/mm²		Test method
	Nom. board thickness, mm		
	15	18 and 22	
Bending strength			EN 310
- Parallel to board length	20	18	
- Parallel to board width	10	9	
E-modulus in bending			
- Parallel to board length	3500	3500	
- Parallel to board width	1400	1400	
Internal bond	0,32	0,30	EN 319

* The values represent the 5 % fractile as specified in EN 300

Porperties related to fire

Reaction to fire classification according to EN 13501-1 is D-s2, d0 for 18 and 22 mm boards, and D_{FL}-s1 as flooring.

Properties related to moisture

- Moisture movement in the plane of the boards is considered to be approximately 2 mm/m determined according to EN 318 when the moisture content change from equilibrium at 35 % RH to equilibrium at 85 % RH.
- The factor for water vapour diffusion resistance for dry conditions is $\mu = 50$ according to NS-EN ISO 10456.
- Thickness swelling after 24 hours water immersion is ≤ 15 % measured in accordance with EN 317.
- The glue in the board material is moisture resistant. SmartPly 3 OSB panels may be exposed to free water for a limited period during construction, but in permanent service the moisture content of the surrounding air must not exceed 85 % RH except for short periods.
- The boards are not specially treated against growth of mould or fungi.

Thermal insulation

Design thermal conductivity λ_d is 0.13 W/(m·K) according to NS-EN ISO 10456.

6. Environmental aspects

Substances hazardous to health and environment

The product contains no hazardous substances withpriority in quantities that pose any increased risk forhuman health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

Effect on indoor environment

The product is not regarded as emitting any particles, gases or radiation that have a perceptible impact on the indoor climate, or to have any significant impact on health.

Waste treatment/recycling

The product shall be sorted as wood material, not creosote impregnated, on the building/demolition site. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Environmental declaration

No environmental declaration (EPD) has been worked out for the product.

7. Special conditions for use and installation

Floor sheathing

- 18 mm Smartply 3 OSB panels may be used as floor sheathing on timber joists with maximum joist spacing c/c 600 mm, providing a maximum uniformly distributed live floor load of 3.0 kN/m² and a 2.0 kN maximum concentrated load. This loadbearing capacity corresponds to imposed floor load category B according to Norwegian Standard 3491-1.
- The use of 18 mm panels on c/c 600 mm joist spacing requires stiff flooring materials like parquet, timber flooring or flooring laminates. 22 mm boards shall be used under the same conditions if thin flooring materials like vinyl or linoleum are applied.
- The boards shall always be installed with the long side perpendicular to the floor joists, and with the end joints staggered.
- The tongue and groove joints shall be glued, and all end joints supported by joists.
- Stiff and thick flooring materials may be placed directly on the OSB boards. For thin flooring materials like vinyl and linoleum the boards should be fully treated with a filler compound and sanded before installation of the flooring.
- The boards may be used as floor sheathing in residential bathrooms.
- The boards may be used as sheathing in platform construction where the boards are temporarily exposed to precipitation.
- The use of SmartPly 3 OSB panels in floor sheathing, including fixing and installation, shall otherwise be in accordance with the principles in SINTEF Building Research Design Sheet no. 522.861 and 522.861.

Roof sheathing

- SmartPly 3 OSB boards may be used as loadbearing roof decking in timber roof structures with maximum spans as shown in Table 2. The table covers all roof slopes, and includes roofs with snow slide barriers.
- On flat roofs with slope < 1:20 and snow load ≥ 3.0 kN/m² the board thicknesses in Table 2 should be increased with 3 mm to avoid excessive long term deflection.

Table 2
Minimum board thickness for Smartply OSB 3 loadbearing roof sheathing

Span (rafter spacing) mm	Snow load * kN/m²	Minimum board thickness mm
Roof covered with ordinary roofing (membrane shingles etc.)		
600	$s_k \leq 6.0$	15
	$6.0 < s_k \leq 7.0$	18
	$7.0 < s_k \leq 9.0$	22
900	$s_k \leq 3.5$	15
	$3.5 < s_k \leq 4.5$	18
	$4.5 < s_k \leq 6.0$	22
1200	$s_k \leq 2.5$	18
	$2.5 < s_k \leq 3.5$	22
Roof covered with turf roofing		
600	$s_k \leq 2.5$	15
	$2.0 < s_k \leq 4.5$	18
	$4.5 < s_k \leq 6.0$	22

* Characteristic snow load on ground, s_k, according to NS-EN 1991-1-3:2003+NA:2008 (based upon the fundamental value for the municipality, with possible addition for height above the municipality centre)

- The boards shall always be installed with the long side perpendicular to the rafters, and with end joints supported and staggered.
- The boards must always be installed with a ventilated air void on the underside. The boards shall always be covered on top with a roofing felt or other watertight membrane, even when the roof construction has a tile roofing or other types of discontinuous roofing on battens and counterbattens.
- The fixing, installation and use of SmartPly 3 OSB as roof sheathing shall otherwise be in accordance with the principles in SINTEF Building Research Design Sheet no. 525.861.

8. Factory production control

Supervisory factory production control of SmartPly 3 OSB is carried out by Irish Board of Agrément (IAB), which operate as part the National Standards Authority of Ireland (NSAI) as part of the CE-marking of the product according to EN 13986; Certificate EC 0050-CPD-0015.

SmartPly Europe Ltd has a quality system certified to EN ISO 9001:2008 by IQNET (The International Certification Network) and NSAI (National Standards Authority of Ireland), certificate number IE-19.3756

9. Basis for the approval

The approval is based on product certification according to EN 300 issued by IAB, certificate no. 97/0093, plus structural performance tests and reaction to fire test documented in the following test reports:

- Norwegian Institute of Wood Technology. Report no 382535-LM1 – 6, dated 22.06.1998
- Norwegian Institute of Wood Technology. Report no 320111-LM1, dated 05.04.2001
- Norwegian Institute of Wood Technology. Report no 320111-LM2, dated 04.04.2001
- Exova warringtonfire Test Report No. 162340 og 162341 av 14.07.2007.

Calculation of Table 2 has been performed by SINTEF Building and infrastructure.

10. Marking

SmartPly 3 OSB panels covered by this approval shall be CE-marked according to EN 13986, including the name of the manufacturer, the board quality OSB 3, and a production number or date of manufacture. The boards and/or packaging may also be marked by the approval mark for SINTEF Building Technical Approval 2148.

Approval mark

11. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402

12. Technical management

Project manager for this approval is John Einar Thommesen, SINTEF Building and Infrastructure, dep. Architectural engineering, Oslo/Trondheim.

for SINTEF Building and Infrastructure

Marius Kvalvik
Approval Manager