SMARTPLY® MAX DB

SMARTPLY MAX DB is a tongue and groove OSB/3 panel designed to meet the residential internal floor sound insulation requirements for use in all timber-based joists.

The panel has been tested in a UKAS accredited laboratory on OSB-web i-joists, metal web and solid timber joists as part of the internal floor and achieved a sound reduction of at least 40dB to airborne sounds complying with the requirements of the Building Regulations requirements in England, Wales, and Northern Ireland.

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SUITABILITY:

Manufactured in accordance with EN 300, SMARTPLY MAX DB is a load bearing panel ideal for use as decking for internal flooring to meet the sound insulation requirements.

EN 300 classifies OSB panels by their properties which relate to their intended use. SMARTPLY MAX DB is classified as follows:

- OSB/3 - load bearing panel for use in humid conditions

Structures comprising SMARTPLY MAX DB should be assigned to service class 1 or 2 as defined in EN 1995-1-1 (Eurocode 5). According to this standard, SMARTPLY MAX DB is suitable for use in both of these service classes.

Manufactured on the state of the art Contiroll® OSB production line in our own factory. SMARTPLY MAX DB is a structural panel designed for internal flooring on timber based joists.

SPECIFICATION & DESIGN

As design values can vary between manufacturers, it is important to ensure that the SMARTPLY panels specified by the designer are those used on site. All SMARTPLY panels are clearly marked with the following information:

a SMARTPLY logo
b UKCA marking
  i. UKCA logo
  ii. Accredited body
  iii. DOP number
c FSC® certification (if applicable)
d CE marking
  i. CE logo
  ii. Notified body
  iii. DOP number
e Relevant Standard (EN13986/EN300) and AVCP level (2+ structural)
f Panel grade (OSB/3 - OSB/4)
g Thickness
h Formaldehyde class (eg - E1)
i Additional marking:
  i. Date and time stamp
  ii. Main axis arrow
  iii. Product certification (IAB, BBA, WPA, FR BUILD) if applicable

Note: Markings may vary depending on product type.

FEATURES & BENEFITS

- High quality, moisture resistant load bearing flooring
- Excellent strength – 18mm panels stronger than 22mm chipboard along the main axis
- 30% lighter than 22mm chipboard – lighter to lift and cheaper haulage costs
- Greater m^2 coverage – 100 sheets per pack of 18mm covers 144m^2 compared to 82 sheets per pack of 22mm P5 covering 118m^2
- Manufactured using no added formaldehyde resins
- Produced from FSC® certified timber
- For use with joists 600mm apart – most common width
- Smooth and consistent quality
- Tongue and groove for quick and easy installation

SMARTPLY MAX DB - NO ADDED FORMALDEHYDE

SMARTPLY OSB is manufactured using advanced resin technology that results in a high performance, no added formaldehyde panel. This specialist resin formulation provides a supreme bond with the wood strands as it has a reaction with the wood itself, when put under intense heat, creating a chemical weld. This is a different and superior type of bond to the mechanical weld that formaldehyde-based products exhibit. Depth of penetration is well beyond the minimum 0.3mm needed for a wood resin to provide adequate adhesive strength. This extra resin penetration also greatly improves the wood's resistance to thickness swell.

SPECIFICATION

- T&G4 2400mm x 600mm x 18mm
- T&G2 2397mm x 1200mm x 18mm
- Other sizes available upon request, subject to minimum order quantities.

INSTALLATION

SMARTPLY MAX DB is an OSB/3 grade panel and should be installed by following the recommendations provided in the SMARTPLY FLOOR technical datasheet.

To achieve the performance quoted in this datasheet , the floor system built must comply with the details provided in the performance section of this datasheet.

PERFORMANCE

The Building Regulations Approved Document E in England, Wales and the Technical Booklet G in Northern Ireland for sound building performance require that internal floors within dwellings have a minimum airborne sound insulation of 40 decibels (dB).

A deemed to satisfy solution for internal flooring on timber-based joists includes wood-based panels with a minimum mass of 15kg/mm^2, minimum 100mm of mineral wool insulation, and ceiling of a single layer of plasterboard with a minimum mass of 10kg/m^2.

If the internal floor system differs from this approved system, then the floor performance must be demonstrated by tests performed in accredited laboratory.

SMARTPLY MAX DB was tested in a series of timber-based joists floor systems in a UKAS accredited laboratory and the floor systems achieved at least 40dB insulation form airborne sounds, therefore allowing a lighter wood-based panel to achieve the required performance.

The compliant systems are as follow:

Floor decking	18mm SMARTPLY MAX DB
Suitable floor joists	OSB-web I-joists min. 220mm at 600mm centres Metal web joists min. 220mm at 600mm centres Solid timber joists min. 220mm at 600mm centres
Insulation:	100mm mineral wool insulation (8– 36 kg/m^3)
Ceiling panel:	15mm plasterboard (≥ 10.1 kg/m^2)

The performance of the floor system tested in a UKAS accredited laboratory were assessed independently by The Robin McKenzie Partnership (RMP) a consultancy division of Edinburgh Napier University.

OSB-Web I-joists system:

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TABLE 1:
Mechanical and physical properties of SMARTPLY MAX DB

OSB Grade	OSB/3
Panel thickness	18mm
Thickness tolerance	+/- 0.8mm
Moisture content	2 - 12%
Formaldehyde release	E1 - No Added Formaldehyde
Airborne sound insulation (as part of a timbe based joists floor system)	Rw = 40 dB

STRUCTURAL DESIGN OF SMARTPLY MAX DB

BS 8103-3 provides “deemed to satisfy” tables and other structural design guidance to enable supervisory/technical staff of building companies to determine the thickness, type and any limitations of OSB components for floors and roofs of dwellings of limited size. A structural engineer should be employed where the building falls outside the scope of this part of BS 8103. Further technical guidance is provided in the relevant SMARTPLY product technical data sheets.

Characteristic values for strength and stiffness of MAX DB are given in Table 2 (below). These can be used for limit state designs to EN 1995-1-1 (Eurocode 5). For permissible stress designs to BS 5268, conversion factors are given in BS 5268-2 to convert these characteristic strength and stiffness values into grade strength and stiffness values. The properties listed include bending, tension, compression and shear.

When MAX DB is used structurally under service class 1 conditions, the characteristic values of the mechanical properties given in Table 2 shall apply. To convert these values into design values they should be modified according to EN 1995-1-1 (Eurocode 5) for duration of load (kmod, kdef).

When MAX DB is used structurally under service class 2 conditions, the characteristic values of the mechanical properties given in Table 2 shall apply. To convert these values into design values they should be modified according to EN 1995-1-1 (Eurocode 5) for both service class and duration of load (kmod, kdef).

TABLE 2:
Structural properties of SMARTPLY MAX DB

Properties	Designation	Units	Thickness = 18mm
Bending strength - Main axis	$f_{m,0,k}$	N/mm^2	14.8
Bending modulus of elasticity - Main axis	$E_{0,mean}$	N/mm^2	4930
Bending strength - Short axis	$f_{m,90,k}$	N/mm^2	7.4
Bending modulus of elasticity - Short axis	$E_{90,mean}$	N/mm^2	1980
Planar shear strength	$f_{v,r,k}$	N/mm^2	1.0
Planar shear modulus	$G_{r,mean}$	N/mm^2	50
Characteristic point load - Spacing 600mm	$f_{max,k}$	kN	4.71
Point load mean stiffness - Spacing 600mm	R_{mean}	N/mm	426

TRANSPORTATION, STORAGE & HANDLING

Careful transportation, storage and handling are important to maintain panels in their correct condition for use. Precautions must be taken during storage, prior to delivery and on site to minimise changes in moisture content of the OSB panels due to weather.

Panels must be stored on dry bases, and packs must be evenly supported on bearers with spacer sticks at regular intervals (depending on panel thickness but max 600c/c).

Packs should be sheeted with tarpaulins or other impervious material so arranged to give full cover, but at the same time to permit free passage of air around and through the pack. Care must be taken not to deform stacked panels. Bands should be cut as soon as practical and safe to avoid permanently deforming the panels. During transport and handling it is particularly important to protect edges and corners with suitable coverings to prevent damage from chafing or slings. Where the panels are required to have low moisture contents, it might not be possible to maintain suitable conditions on site other than for short periods, and deliveries must be arranged accordingly.

ASSEMBLY & ERECTION

The erection sequence and site storage must be planned so as to minimise the length of time that panels are left uncovered. In the case of prefabricated floor cassettes, lifting points must be clearly indicated and care needs to be taken during lifting to avoid distortion of the panels, straining of the fixings and joints and damage to edges.

Installed OSB panels can withstand short periods of temporary wetting during construction, although such exposure must be minimised as much as possible. Temporary protection is recommended where panels are installed before the structure is adequately weatherproofed. Water must never be allowed to pool on the surface of panels, particularly at panel edges and T&G joints. A floor squeegee is recommended to remove rainwater from panels. Alternatively, a small number of 10mm diameter holes can be drilled through the OSB to allow water to drain away, but advice should be sought from the designer to ensure that acoustic and fire performance of the finished floor assembly is not compromised.

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MOISTURE CONTENT

Moisture content of wood-based panel products varies in accordance with the moisture content of the surrounding environment and is affected primarily by the relative humidity (RH) of the surrounding air. It moves towards and maintains an equilibrium moisture content (emc), i.e. one that is in equilibrium with the surrounding air. This means that the moisture contents of the panel products will vary depending on the situation of use and with time as temperature and humidity conditions change.

As required by EN 300, the ex-works moisture content of SMARTPLY OSB panels is in the range of 2 - 12 %, depending on the type of panel.

Unconditioned newly manufactured panels can increase in moisture content when installed in a building under construction and subsequently change in moisture content as the building is occupied, heated and dries out, with the consequence of dimensional changes. For guidance purposes it may be assumed that a 1% change in panel moisture content will cause a dimensional change in panel width, length and thickness as given in Table 1.

CONDITIONING

To minimise dimensional changes, the panels must be conditioned in the service class for the intended use by loose laying or stacking with spacers as appropriate. The length of time allowed for conditioning will vary depending on the panel and the likely condition of use. A minimum period of 48 hours is required but a longer period of up to 1 week is necessary in more extreme conditions. Failure to adequately condition panels can result in buckling of the installed OSB panels.

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QUALITY & ENVIRONMENTAL CERTIFICATION

SMARTPLY OSB panels are manufactured in accordance with the requirements of EN 300: *Oriented Strand Boards (OSB) - definitions, classification and specifications.*

SMARTPLY OSB is CE marked in accordance with the harmonised standard EN 13986: *Wood-based panels for use in construction – characteristics, evaluation of conformity and marking*. This standard is a technical specification for woodbased panels which implements the provisions of the Construction Products Regulation (CPR). In addition to the CE mark, SMARTPLY OSB panels are marked 2+ Structural for ease of reference. SMARTPLY OSB is UKCA marked in accordance with the designated standard BS EN 13986.

SMARTPLY OSB panels have technical agrements for Ireland from NSAI and in the UK from BBA. Due to this certification it is permitted for structural use by Homebond (Ireland) and NHBC (UK) when used in accordance with the requirements of the Building Regulations in the country of use. Other quality certification include KOMO (Netherlands).

SMARTPLY operates under an Integrated Management System (IMS) for Quality (ISO 9001), Environment (ISO 14001), Health and Safety (ISO 45001) and Energy (ISO 50001), which is certified by the National Standard Authority of Ireland (NSAI).

SMARTPLY has Forest Stewardship Council (FSC®) Chain of Custody certification for its manufacturing, processing, sales and distribution processes.

SMARTPLY operates under an Integrated Pollution Prevention Control (IPPC) licence, which is monitored by the Environmental Protection Agency (EPA) in Ireland.

All SMARTPLY products are manufactured using formaldehyde-free resin.

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SERVICE

For further information and/or technical advice please contact your local SMARTPLY Technical Sales Manager or SMARTPLY Technical Support Personnel through any of our European offices.

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As we continually update our technical datasheets, please check on **www.mdfosb.com** that you have the latest version.

IMPORTANT NOTES

The recommendations provided in this technical data sheet for the correct use of SMARTPLY MAX DB are specifically designed to ensure longevity and performance of this quality product in service. It is therefore essential that these recommendations are strictly followed.

The product is designed to be installed by a competent general builder or contractor, experienced with this type of product, in strict accordance with the technical guidance provided in the relevant SMARTPLY product technical data sheets.

SMARTPLY EUROPE DAC cannot be held responsible for damages arising from non-adherence to these recommendations, or product failures resulting from inadequate structural design or misuse of this product.

In order to provide comprehensive guidance for the correct use of SMARTPLY MAX DB, this technical datasheet makes reference to relevant BS and EN standards. SMARTPLY EUROPE DAC cannot be held responsible for claims arising from the use of any information that has been extracted from such sources.

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