

OSB



Range of applications

as stated in the manufacturer's approval pr according to EN 300

Technical class	Requirement	Service classes acc. to EN 1995-1-1
OSB/2	Load-bearing boards for use in dry conditions	1
OSB/3	Load-bearing boards for use in humid conditions	1 and 2
OSB/4	Load-bearing boards for use in humid conditions, heavy duty	1 and 2

General Description

OSB is a multi-layered wood-based composite. The individual layers consist of long slender wood strands bonded by a polymeric adhesive. The strands in the surface layers are oriented in the major axis of the board. The high aspect ratio of the strands (length to width 10:1) increases the board's bending strength in the direction of the strand. Strands in the core layer can be distributed randomly but generally they are aligned perpendicular to the grain of the surface layer (minor axis).

Typical board sizes [mm]

Length	2500 – 5000
Width	607 – 2500
Thickness	8 – 40

Technical references

Approval provided by the manufacturer

EN 300	Oriented Strand Boards (OSB) – Definitions, classification and specifications
EN 13986	Wood-based panels for use in construction Characteristics, evaluation of conformity and marking
EN 1995-1-1/2	Eurocode 5 – Design of timber structures Part 1-1: General – Common rules and rules for buildings Part 1-2: General – Structural fire design
ÖNORM B 1995-1-1/2	Eurocode 5: Nationale Festlegungen, nationale Erläuterungen und nationale Ergänzungen zu ÖNORM EN 1995-1-1/2 (Eurocode 5: National specifications for the implementation of EN 1995-1-1/2, national comments and national supplements)
EN 12369-1	Wood-based panels Characteristic values for structural design Part 1: OSB, particleboards and fibreboards
EN 13501-1	Fire classification of construction products and building elements Part 1: Classification using data from reaction to fire tests

OSB

**Mechanical properties**

as stated in the manufacturer's approval or according to EN 12369-1

The mechanical properties and densities (characteristic values) for OSB/2 and OSB/3 are provided in Table 1. These values apply if OSB/2 and OSB/3 are used as loadbearing boards in service class 1 conditions. If OSB/3 is used as load-bearing board in accordance with the conditions of service class 2, the characteristic values regarding mechanical properties and densities are provided in Table 1 too. The mechanical properties and densities (characteristic values) for OSB/4 are provided in Table 2. These apply if OSB/4 is used as loadbearing board under the conditions of service class 1 and 2. Please note that all the characteristic values regarding mechanical properties and densities provided in this table have to be modified according to EN 1995-1-1 based on the service class and the duration of load ( $k_{mod}$  and  $k_{def}$ ). To obtain the 5%-characteristic value of the stiffness, the average value listed in this tables should be multiplied by 0,85.

	OSB/2 and OSB/3		
Thickness [mm]	>6-10	>10-18	>18-25
$\rho_k$ [kg/m <sup>3</sup> ]	550	550	550
$f_{m,k}$ [N/mm <sup>2</sup> ]	0	18,0	16,4
	90	9,0	8,2
$f_{t,k}$ [N/mm <sup>2</sup> ]	0	9,9	9,4
	90	7,2	7,0
$f_{c,k}$ [N/mm <sup>2</sup> ]	0	15,9	15,4
	90	12,9	12,7
$f_{v,k}$ [N/mm <sup>2</sup> ]		6,8	6,8
$f_{r,k}$ [N/mm <sup>2</sup> ]		1,0	1,0
$E_m$ [N/mm <sup>2</sup> ]	0	4930	4930
	90	1980	1980
$E_{t,c}$ [N/mm <sup>2</sup> ]	0	3800	3800
	90	3000	3000
$G_v$ [N/mm <sup>2</sup> ]		1080	1080
$G_r$ [N/mm <sup>2</sup> ]		50	50

Table 1: Characteristic values for boards of the type OSB/2 and OSB/3 manufactured according to EN 300

OSB/4

	>6-10	>10-18	>18-25
Thickness [mm]			
$\rho_k$ [kg/m <sup>3</sup> ]	550	550	550
$f_{m,k}$ [N/mm <sup>2</sup> ]	0	24,5	23,0
	90	13,0	12,2
$f_{t,k}$ [N/mm <sup>2</sup> ]	0	11,9	11,4
	90	8,5	8,2
$f_{c,k}$ [N/mm <sup>2</sup> ]	0	18,1	17,6
	90	14,3	14,0
$f_{v,k}$ [N/mm <sup>2</sup> ]		6,9	6,9
$f_{r,k}$ [N/mm <sup>2</sup> ]		1,1	1,1
$E_m$ [N/mm <sup>2</sup> ]	0	6780	6780
	90	2680	2680
$E_{t,c}$ [N/mm <sup>2</sup> ]	0	4300	4300
	90	3200	3200
$G_v$ [N/mm <sup>2</sup> ]		1090	1090
$G_r$ [N/mm <sup>2</sup> ]		60	60

Table 2: Characteristics values for boards of the type OSB/4 manufactured according to EN 300

**Physical properties**

as stated in the manufacturer's approval or according to EN ISO 10456

	OSB
$\rho$ [kg/m <sup>3</sup> ]	650
$\lambda$ [W/mK]	0,13
$\mu$	30/50

Please note: the  $\mu$ -value of a material can be subject to substantial deviations. When uncertain use values provided in testing reports if such documents are available.

## OSB

**Fire performance**

\_as stated in the manufacturer's approval or  
 \_according to Commission Decision 2007/348/EC

	$\geq 600 \text{ kg/m}^3, \geq 9 \text{ mm}$
Euroclass	D
Smoke production	s2
Flaming droplets	d0

...except floor assemblies

\_according to EN 1995-1-2

	$\rho_k=450 \text{ kg/m}^3, 20 \text{ mm}$
charring rate $\beta_0$	0,9 mm/min

Please note: for other densities and thicknesses < 20 mm, the charring rate is to be calculated according to the following equation:

$$\beta_{0,p,t} = \beta_0 k_p k_h \text{ where}$$

$$k_p = \sqrt{(450/\rho_k)}$$

$$k_h = \sqrt{(20/h_p)}$$

$\rho_k$  ... characteristic density in kg/m<sup>3</sup>  
 $h_p$  ... Board thickness in mm

**Other**

Whenever OSB with groove and tongue is used for bracing and stiffening, a load transferring connection within the joints is necessary. Therefore it always has to be static proven.