

DOUGLAS FIR

Botanical name:	<i>Pseudotsuga menziesii</i> (Syn.: <i>Pseudotsuga taxifolia</i>), family PINACEAE
Distribution:	North America (west coast); cultivated in Europe, Chile and New Zealand
Other important trade names:	Douglasie, Douglas Tanne (D); Douglas fir, Oregon fir, Oregon pine
Abbreviation as per DIN EN 13556:	PSMN

Colour and structure of the wood:

Heartwood brown to red to yellow. Clear colour contrast between sapwood and heartwood, narrow. Sapwood is white to yellowish grey, heartwood light yellowish brown to reddish brown. The growth zones boundary is clearly marked by the dark latewood and the light earlywood. With older trees, the year rings are characteristically narrow. The wood produced in Europe stems from relatively young trees and thus shows a mostly large proportion in rough aged wood. The smell of the wood is distinctive (the volatile resins give particularly fresh wood a sharp aromatic smell, making it possible to distinguish between the very similar wood of the larch).

Properties:

Weight fresh [kg/m ³]		640 – 800
Bulk density air-dry (12-15 % u) [g/cm ³]		0.51 – 0.58
Compression strength u ₁₂₋₁₅ [N/mm ²]		42 – 68
Bending strength u ₁₂₋₁₅ [N/mm ²]		70 – 100
Modulus of elasticity (bending) u ₁₂₋₁₅ [N/mm ²]		11000 – 13200
Toughness [kJ/m ²]		38 – 60
Hardness (BRINELL) ⊥ to the grain u ₁₂₋₁₅ [N/mm ²]		17 – 20 – 30
Drying shrinkage (fresh up to u ₁₂₋₁₅)	radial [%]	2.5
	tangential [%]	4.0
Differential shrinkage [%/%]	radial	0.15 – 0.19
	tangential	0.24 – 0.31
pH value (suspension)		3.7
pH value (surface)		4.7
Natural durability (DIN-EN 350-2)	from natural forests	category 3 – 4

Additional information:

Splinter wounds can cause painful inflammations. The resin contains terpenes, one of which is a known allergen.

Workability:

The workability of the wood depends on the year ring width. Narrow ring wood can be worked very easily. Splits can occur with wide ring wood when stemming or nailing. Bonding good to medium.

Drying:

No difficulties occur with kiln drying, however this should be done carefully to avoid the outflow of resins. With greater strengths, a fine formation of cracks can appear on the surface.

Use:

Outdoor or indoor use, supporting or non-supporting. Especially suitable for: Outdoor use with no ground contact, horticulture and landscaping, children's play area and equipment, exterior cladding (facades), rotary cut veneer (for plywood) (in the USA as weather proof bonded building plywood), frame structure (windows, house doors, conservatories), floors (parquet, boards, etc.) and stairs.



Macroscopic cross-section of Douglas Fir
(10 times magnification lens)



Wood surface of Douglas Fir (radial section)
best growth quality of natural habitat USA

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Surface treatment:

In individual cases woods with a high proportion of resins can cause problems. In case of restrained touches of heartwood discolouring may occur therefore the use of knot sealer and/or antistain products as primer and intermediate coat is advisable. Treatability very poor (sapwood moderate to poor; EN 350–2, 1994). Discolouring occurs in contact with iron ions (iron/tannin reaction).

Coating systems:

The coating systems selected here are variants which ensure utmost durability and lasting quality.

Other coating systems are basically possible; however, they must be coordinated with Teknos.

Details on processing can be found in the technical data sheets for each product.

Windows, doors, conservatories and folding shutters:

System coating	Translucent
Wood preservative	GORI 356 / TEKNOL AQUA 1410-01
Primer	AQUAPRIMER 2900-22
Intermediate	AQUAFILLER 6500-01
Topcoat	AQUATOP 2600-9X

System coating	Opaque
Wood preservative	GORI 356 / TEKNOL AQUA 1410-01
Primer	ANTISTAIN AQUA 5200-01
Intermediate	ANTISTAIN AQUA 5200-01
Topcoat	AQUATOP 2600-2X

System coating	Colourless
Wood preservative	GORI 356 / TEKNOL AQUA 1410-01
Intermediate	AQUAFILLER 6500-01
Topcoat	AQUATOP 2600-6X

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Wood is a unique, beautiful and very versatile material

The features and properties of wood vary greatly and therefore individual attention is required in processing and surface finishing.

With this Teknos wood data sheet we would like to go into detail on the features and range of applications in the coating of important wood species.

The data sheet originated from a collaboration with the Johann Heinrich von Thünen-Institute in Hamburg.

The pH values of wood have been determined as important chemical variables for the first time.

The concentration dependence of extracts such as tannic acids or tannins to the pH value is important.

A good surface coating and targeted selection of system structures shall be safer based on these variables determined by Thünen-Institute and demonstrate wood-related problem solving.

All system structures named in the data sheet are selected according to utmost durability and quality and are considered to be relevant systems. However, a practical test is always necessary.

Due to different application possibilities and stresses of parts to be coated, variations are required.

To select individual systems easily, the Teknos technical department will be happy to assist you.

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