HEMLOCK, WESTERN

Botanical name: *Tsuga heterophylla,* Familie PINACEAE

Other important species: *T. canadensis* (Central to Eastern North America), *T. heterophylla* (Western North America)

Distribution: North America

Other important trade names: Western hemlock, hemlock spruce, Alaska pine, grey fir, silver fir

Abbreviation as per DIN EN 13556: TSCN = *T. canadensis*; TSHT = *T. heterophylla*

Colour and structure of the wood:

Heartwood light. Sapwood matches the colour of heartwood. The colour of the wood varies slightly in the capacity of changing proportions of early and latewood. The light brown to brown grey heartwood darkens easily when exposed to light. Growth zone boundaries clearly recognisable (by colour differences between dark latewood and lighter earlywood). The width of the growth zones is largely dependent on location and age of the trees. Very old trees provide extremely fine textured wood with annual ring widths clearly below 3 mm. By regularly switching between early and latewood clear raised “cathedral effect” formed by innermost growth rings develop on tangential surfaces and narrow stripes develop on radial surfaces.

Properties:

Weight fresh [kg/m³]		650 – 700
Bulk density air-dry (12-15 % u) [g/cm³]		0.46 – 0.51
Compression strength $u_{12\text{-}15}$ [N/mm²]		36 – 54
Bending strength $u_{12\text{-}15}$ [N/mm²]		70 – 80
Modulus of elasticity (bending) $u_{12\text{-}15}$ [N/mm²]		8500 – 11500
Toughness [kJ/m²]		37 – 52
Hardness (BRINELL) ⊥ to the grain $u_{12\text{-}15}$ [N/mm²]		14
Drying shrinkage (fresh up to $u_{12\text{-}15}$)	radial [%]	3.2
	tangential [%]	5.5
Differential shrinkage [%/%]	radial	(0.11) – 0.20
	tangential	(0.24) – 0.33
pH value (suspension)		3.2
pH value (surface)		-
Natural durability (DIN-EN 350-2)	from natural forests	category 4

Workability:

Western Hemlock is easy to work manually or using machine tools. Sharp tools are used to achieve very smooth surfaces and sharp edges. Nails and screws hold well, the straight grained wood is easily cleavable. Bonding good.

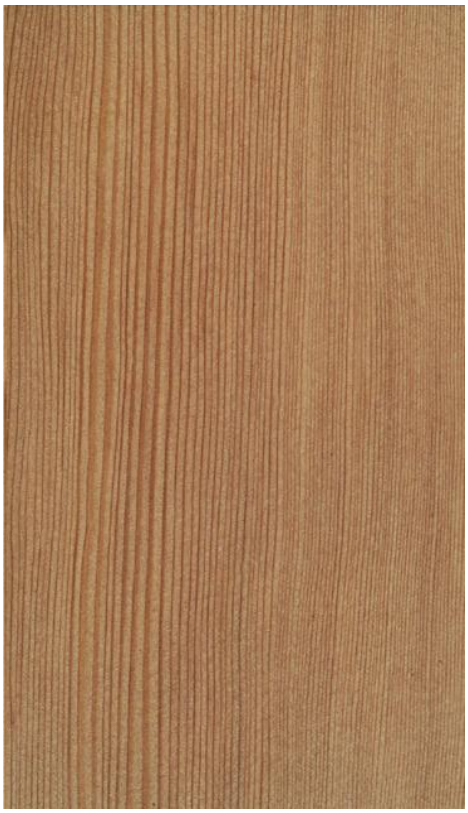
Drying:

Drying is relatively slow but usually without difficulties; in kiln drying the high initial moisture shall be taken into consideration.

Use:

Outdoor and indoor use; supporting or non-supporting. Especially suitable for: Outdoor construction with no ground contact (under roof), exterior cladding (facades), frame structure (windows, house doors, conservatories), wall and ceiling coverings (internal) (also extension of sauna rooms).

Macroscopic cross-section of Hemlock
(10 times magnification lens)



Wood surface of Hemlock (radial section)

Surface treatment:

No known problems. Treatability moderate to poor (sapwood moderate; EN 350–2, 1994). Corrosion of iron in contact with wood: weak (ferrous metals and alkali lead to dark discolouring in damp wood).

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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WE MAKE THE WORLD LAST LONGER

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.