



Thuja occidentalis L.
Family: Cupressaceae
Northern White-Cedar

The genus *Thuja* contains about 6 species world-wide native to North America [2] and Asia [4]. The word *thuja* comes from the Greek *thuis*, an aromatic wood (probably a juniper). The word *occidentalis* means western, referring to the western hemisphere (New World).

Other Common Names: Abendlandische lebensbaum, albero della vita americana, American arborvitae, arborvitae, arbre de vie de l'ouest, Atlantic red cedar, cedar, cedre blanc, cedro rosso dell'atlantico, eastern arborvitae, eastern cedar, eastern white cedar, gemeiner lebensbaum, gewone thuja, livstrad, Michigan white cedar, New Brunswick cedar, Noordamerikaanse levensboom, northern white cedar, swamp cedar, swamp-cedar, thuja, thuya de l'occident, tuia occidentale, tuya, tuya occidental, vanlig tuja, vitae, vit-ceder, western thuja, white cedar.

Distribution: Northern white cedar is native to Quebec (the Anticosti Islands and Gaspé Peninsula), New Brunswick, Prince Edward Island, southwestern Nova Scotia and Maine, west to northern Ontario and southeastern Manitoba, south to southeastern Minnesota and northeastern Illinois, east to extreme northwestern Indiana, Michigan, southern Ontario, southern New York, Rhode Island and Massachusetts. Also locally in central Manitoba and the Appalachian Mountains in western Pennsylvania, Ohio, West Virginia, western North Carolina, eastern Tennessee.

The Tree: Northern white cedar trees normally reach heights of 50 feet, with diameters of 2 feet. Exceptional trees may reach grow 80 feet tall, with a diameter of 5 feet. The record is 113 feet, with a diameter of 6 feet.

General Wood Characteristics: The sapwood of northern white cedar is thin and white, while the heartwood is a light brown. The wood has an aromatic spicy 'cedary or pencil-like' odor. It has an even grain, fine texture, and the lowest density of any commercial domestic wood (19 pcf). The heartwood is resistant to decay and subterranean termites. It is easy to work with hand tools, and is average in machinability. It is dimensionally stable, glues well and holds paint well. It is soft and has low mechanical properties (bending and compressive strength, hardness, stiffness, shock and splitting resistance and nail and screw holding ability).

Mechanical Properties (2-inch standard)

	Specific gravity	MOE GPa	MOR MPa	Compression		WML ^a Kj/m ³	Hardness N	Shear MPa
				Parallel MPa	Perpendicular MPa			
Green	0.29	4.41	29.0	13.7	1.59	39.3	1020	4.27
Dry	0.32	5.52	44.8	27.3	2.14	33.1	1420	5.86

^aWML = Work to maximum load.
Reference (59).

Drying and Shrinkage

Type of shrinkage	Percentage of shrinkage (green to final moisture content)

	0% MC	6% MC	20% MC
Tangential	4.9	3.9	1.5
Radial	2.2	1.8	0.7
Volumetric	7.2	5.8	2.4
References: (56, 192).			

Kiln Drying Schedules^a

Conventional temperature/moisture content-controlled schedules^a

Condition	4/4, 5/4 stock	6/4 stock	8/4 stock	10/4 stock	12/4 stock	British schedule 4/4 stock
Standard	T12-B4	NA	T11-B3	NA	NA	J

^aReference (28, 74, 185).

High temperature^a

Condition	4/4, 5/4 stock	6/4 stock	8/4 stock	Other products
Standard	409	NA	NA	NA

^aReferences (28, 184).

Working Properties: It is easy to work with hand tools, and is average in machinability. It is dimensionally stable, glues well and holds paint well.

Durability: The heartwood is resistant to decay and subterranean termites. It is rated as resistant to very resistant to heartwood decay.

Preservation: Northern white cedar is resistant to extremely resistant to preservative treatments (7).

Uses: Rustic fencing and posts, cabin logs, lumber, poles, shingles, shipping containers, piling, lagging, pails, tubs, ties, boat building (especially canoe ribs), tanks, novelties, wooden wares and pulp wood.

Toxicity: May cause allergic bronchial asthma, dermatitis and rhinitis (6,11&15).

Additional Reading and References Cited (in parentheses)

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