



Alnus rubra

Family: Betulaceae

Red Alder

Alder (*Alnus* spp.) is represented by 20 to 30 species, with 15 species in North and Tropical America and 15 species in Eurasia. All species look alike microscopically. The word *alnus* is the classical Latin name of alder.

Red alder (*Alnus rubra*) is the only commercial species in North America. Red alder is the most common hardwood in the Pacific Northwest and the largest of the American alders. It is a fast-growing, pioneer species and has nitrogen-fixing nodules on its roots. The wood is diffuse porous, moderately light, and soft.

Alnus maritima-seaside alder.

Alnus oblongifolia-Arizona alder, lanceleaf alder, Mexican alder, New Mexican alder, oblong-leaved alder.

*Alnus rhombifolia**-Oregon-al, sierra alder, **white alder**.

Alnus rubra-**red Alder**, Amerikaanse rode els, aliso Americano, aune d'Oregon, ontano dell'Oregon, Oregon-al, Oregon alder, Oregon erle, Pacific Coast alder, western alder.

Alnus rugosa-gray alder, hazel alder, hoary alder, smooth alder, **speckled alder**, tag alder.

Alnus serrulata-black alder, common alder, **hazel alder**, smooth alder, tag alder.

Alnus sinuata-green alder, mountain alder, northern alder, **sitka alder**, wavyleaf alder.

Alnus tenuifolia-al amerikansk, aliso Americano, aune du canada, California alder, **mountain alder**, ontano American, river alder, rhombic-leaved alder, thinleaf alder, western alder, white alder.

* commercial species

Distribution

North America: Pacific coast region from southeastern Alaska to western British Columbia and south through western Washington and western Oregon to southern California. The range of red alder extends from southern California (latitude 34°N) to southeastern Alaska (60°N). Red alder is not commonly found east of the Cascade or Sierra Nevada Ranges, although there are several isolated populations in northern Idaho. The species develops best at low elevations of less than 1,500 ft (457 m) in northern Oregon, Washington, and British Columbia. In the central part of its range, scattered trees occur as high as 3,300 ft (1,006 m), but most stands are below 2,500 ft (762 m).

The Tree

On good sites, red alder can attain heights of 100 to 130 ft (30 to 40 m) and diameters of 22 to 30 inches (56 to 76 cm). In closed stands, the trees typically have clear, slightly tapered boles and narrow, dome-like crowns. The light gray bark is thin and smooth. Red alder forms extensive, fibrous root systems. The roots have numerous nitrogen-fixing nodules, which are a symbiotic association between the tree and beneficial bacteria belonging to the genus *Frankia*.

The Wood

General

Red alder wood is almost white when freshly cut but quickly changes to a light tan or light brown with a yellow or reddish tinge when exposed to the air. Heartwood is formed only in trees of advanced age, and there is no visible boundary between heartwood and sapwood.

Mechanical Properties (2-inch standard)

	Specific gravity	MOE x10 ⁶ lbf/in ²	MOR lbf/in ²	Compression		WML ^a in-lbf/in ³	Hardness lbf	Shear lbf/in ²
				Parallel lbf/in ²	Perpendicular lbf/in ²			
Green	0.37	1.17	6,500	2,960	250	8.0	440	770
Dry	0.41	1.38	9,800	5,820	440	8.4	590	1,080

^aWML = Work to maximum load.
Reference (98).

Drying and Shrinkage

Type of shrinkage	Percentage of shrinkage (green to final moisture content)		
	0% MC	6% MC	20% MC
Tangential	7.3	5.8	2.4
Radial	4.4	3.5	1.5
Volumetric	12.6	10.1	4.2

References: 0% MC (98),
6% and 20% MC (90).

Kiln Drying Schedules^a

Condition	Stock				
	4/4, 5/4, 6/4	8/4	10/4	12/4	16/4
Standard	T10-D4	T8-D3	T6-C3	T6-D3	-
Darker	T11-D3	-	-	-	-
Lighter	T5-D5	-	-	-	-

^aReferences (6, 86).

Working Properties: Red alder is excellent for turning and polishing and takes glue, paint and stain well.

Durability: Rated as slightly or nonresistant to heartwood decay.

Preservation: Logs should be processed quickly, particularly during warm weather, as decay proceeds rapidly. If processing must be delayed, the logs should be stored in water. Green lumber should be carefully stacked for air-drying or promptly kiln-dried to prevent damage from microbial stain.

Uses: Nonstructural lumber, factory appearance-grade lumber, chips for pulp and paper, furniture, cabinets, pallets, core stock for plywood, interior finishing, fuelwood, charcoal, chips for smoke curing.

Toxicity: Can cause dermatitis (64).

Additional Reading and References Cited (in parentheses)

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