technology transfer *fact sheet*

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Fraxinus spp.
American Ash

Family: Oleaceae

Ash (Fraxinus sp.) is composed of 40 to 70 species, with 21 in Central and North America and 50 species in Eurasia. All species look alike microscopically. The name fraxinus is the classical Latin name for ash.

*Fraxinus americana**- American White Ash, Biltmore Ash, Biltmore White Ash, Canadian Ash, Cane Ash, Green Ash, Ground Ash, Mountain Ash, Quebec Ash, Red Ash, Smallseed White Ash, White Ash, White River Ash, White Southern Ash

Fraxinus anomala-Dwarf Ash, Singleleaf Ash

Fraxinus berlandierana-Berlandier Ash , Mexican Ash

Fraxinus caroliniana-Carolina Ash , Florida Ash, Pop Ash, Swamp Ash, Water Ash

Fraxinus cuspidata-Flowering Ash, Fragrant Ash

Fraxinus dipetala-California Flwoering Ash, California Shrub Ash, Foothill Ash, Flowering Ash, Fringe-flowering Ash, Mountain Ash, Two-petal Ash

Fraxinus gooddingii-Goodding Ash

Fraxinus greggii-Dogleg Ash, Gregg Ash, Littleleaf Ash

*Fraxinus latifolia**-Basket Ash, Oregon Ash, Water Ash, White Ash

*Fraxinus nigra**-American Black Ash, Basket Ash, Black Ash, Brown Ash, Canadian Ash, Hoop Ash, Splinter Ash, Swamp Ash, Water Ash

Fraxinus papillosa-Chihuahua Ash

*Fraxinus pennsylvanica**-Bastard Ash, Black Ash, Blue Ash, Brown Ash, Canadian Ash, Darlington Ash, Gray Ash, Green Ash, Piss Ash, Pumpkin Ash, Red Ash, Rim Ash, River Ash, Soft Ash,Swamp Ash, Water Ash, White Ash

*Fraxinus profunda**-Pumpkin Ash, Red Ash

*Fraxinus quadrangulata**-Blue Ash, Virginia Ash

Fraxinus texensis-Texas Ash

Fraxinus velutina-Arizona Ash, Desert Ash, Leatherleaf Ash, Modesto Ash, Smooth Ash, Toumey Ash, Velvet Ash

(* commercial species)

Distribution

The north temperate regions of the globe.

The Tree

Ashes are trees or shrubs with large, opposite, pinnately compound leaves, which are shed in the fall. The compound leaves have 2 to 11 leaflets. The flowers can be bisexual or there can be distinct male and female flowers on separate trees. The flowers have no petals and the fruits are dry with a flattened wing.

The Wood

General

The sapwood of ash is light brown, while the heartwood is brown to grayish brown. White as and Oregon ash have lighter heartwood than the other commercial species. The width of the sapwood is 3 to 6 inches. It is ring porous, with the latewood being composed of parenchyma which surrounds and unites the latewood pores in tangential bands. It has no characteristic odor or taste.

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			
				F. americana (white ash)				
Green	0.55	1.44	9,600	3,990	670	15.7	960	1,350
Dry	0.60	1.74	15,000	7,410	1,160	16.6	1,320	1,910
				F.latifolia (Oregon ash)				
Green	0.50	1.13	7,600	3,510	530	12.2	790	1,190
Dry	0.55	1.36	12,700	6,040	1,250	14.4	1,160	1,790
				F. nigra (black ash)				
Green	0.45	1.04	6,000	2,300	350	12.1	520	860
Dry	0.49	1.60	12,600	5,970	760	14.9	850	1,570
				F. pennsylvanica (green ash)				
Green	0.53	1.40	9,500	4,200	730	11.8	870	1,260
Dry	0.56	1.66	14,100	7,080	1,310	13.4	1,200	1,910
				F. profunda (pumpkin ash)				
Green	0.48	1.04	7,600	3,360	990	9.4	750	1,210
Dry	0.52	1.27	11,100	5,690	1,800	8.0	990	1,720
				F. quadrangulata (blue ash)				
Green	0.53	1.24	9,600	4,180	810	14.7	1,030	1,540
Dry	0.58	1.40	13,800	6,980	1,420	14.4	2,030	2,030

[a]WML = Work to maximum load.
[b]Reference (98).
[c]Reference (59).

Drying and Shrinkage

Type of shrinkage	Percentage of shrinkage (green to final moisture content) 0% MC	6% MC	20% MC
	F. americana (white ash)		
Tangential	7.8	6.2	2.6
Radial	4.9	3.8	1.6
Volumetric	13.3	10.7	4.5
	F.latifolia (Oregon ash)		
Tangential	8.1	–	–
Radial	4.1	–	–
Volumetric	13.2	–	–
	F. nigra (black ash)		
Tangential	7.8	6.2	2.6
Radial	5.0	4.0	1.7
Volumetric	15.2	12.2	5.1
	F. pennsylvanica (green ash)		
Tangential	7.1	5.7	2.4
Radial	4.6	3.7	1.5
Volumetric	12.5	10.0	4.2
	F. profunda (pumpkin ash)		
Tangential	6.3	–	–
Radial	3.7	–	–
Volumetric	12.0	–	–
	F. quadrangulata (blue ash)		
Tangential	6.5	–	–
Radial	3.9	–	–
Volumetric	11.7	–	–

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

Kiln Drying Schedule[a]

Condition	Stock 4/4, 5/4, 6/4	8/4	10/4	12/4	16/4
Standard	T8-D4	T5-B3	T5-B3	T3-B2	T3-A1

[a]References (6, 86).

Working Properties: Ash is straight grained, heavy, hard, strong, stiff and wears smooth with high shock resistance. It machines well and is better than average in nail and screw holding capacity. It glues moderately well. Black, green, Pumpkin and Blue ashes have lower specific gravities and lower strength properties, but are still moderately strong, hard, and stiff compared to other native hardwoods. They also split easier, shrink more, are average in workability and perform less well in service.

Durability: Classed as slightly to non-resistant to heartwood decay.

Preservation: No information available at this time.

Uses: Handle stock, baseball bats, unupholstered furniture, flooring, millwork, hand tools, sporting goods, boxes and crates.

Toxicity: No information available at this time.

Additional Reading and References Cited (in parentheses)

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