

Physical Properties of Common Woods

Values of density marked * are for air dry samples.

The following table presents values for the properties of common woods.

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Common name	Botanical name	Density, g/cc	Density, lbs/cu.ft.	Modulus of rupture, air dry kg/sq.mm.	Modulus of elasticity, air dry, kg/sq.mm.
Alder		0.38	23.7		
Applewood or wild apple	<i>Pyrus malus</i>	0.745	46.51	8.96	894.
Ash, black	<i>Fraxinus nigra</i>	0.526	32.84	8.97	1126.
Ash, blue	<i>quadrangulata</i>	0.603	37.65	9.82	984.
Ash, green	<i>Fraxinus pennsylvanica lanceolata</i>	0.610	38.08	10.04	1170.
Ash, white	<i>Fraxinus americana</i>	0.638	39.83	11.01	1249.
Aspen	<i>Populus tremuloides</i>	0.401	25.03	6.04	838.
Aspen, large tooth	<i>Populus grandidentata</i>	0.412	25.72	6.38	996.
Balsa	<i>Ochroma</i>	*0.11-	6.86-	.	

(Tropical America)		0.2	12.49		
Basswood	<i>Tilia glabra</i> or <i>Tilia americanus</i>	0.398	24.85	6.13	1029.
Beech	<i>Fagus grandifolia</i> or <i>Fagus americana</i>	0.655	40.89	10.25	1180.
Beech, blue	<i>Carpinus caroliniana</i>	0.717	44.76	8.48	752.
Birch, gray	<i>Betula populifolia</i>	0.552	34.46	6.88	797.
Birch, paper	<i>Betula papyrifera</i>	0.600	37.46	8.79	1119.
Birch, sweet	<i>Betula lenta</i>	0.714	44.58	11.81	1520.
Birch, yellow	<i>Betula lutea</i>	0.668	41.70	11.88	
Boxwood/Buis	<i>Buxus sempervirens</i>	0.95-1.1	59.3-68.6		
Buckeye, yellow	<i>Aesculus octandra</i>	0.383	23.91	5.36	829.
Butternut	<i>Juglans cinerea</i>	0.404	25.22	5.72	830.
Cedar, eastern red	<i>Juniperus virginiana</i>	0.492	30.72	6.07	612.
Cedar, northern white	<i>Thuja occidentalis</i>	0.315	19.67	4.56	568.
Cedar, southern white	<i>Chamaecyparis thvoides</i>	0.352	21.98	4.77	655.
Cedar, (Tropical American)	<i>Cedrela odorata</i>	*0.37-0.70	23.10-43.70.		
Cedar, western red	<i>Thuja plicata</i>	0.344	21.48	5.38	819.
Cherry, black	<i>Prunus serotina</i>	0.534	33.34	8.81	1046.
Cherry, wild red	<i>Prunus pennsylvanica</i>	0.425	26.53	6.10	892.
Chestnut	<i>Castanea dentata</i>	0.454	28.34	6.16	870.

Cocobolo	<i>Dalbergia retusa</i>	1.10	68.6		
Coralwood	<i>Guilbourtia</i> spp.	1.1	68.6		
Corkwood	<i>Leitneria floridana</i>	0.207	12.92.		
Cottonwood, eastern	<i>Populus deltoides</i>	0.433	27.03	6.14	972.
Cypress, southern	<i>Taxodium distichum</i>	0.482	30.09	7.44	1010.
Dogwood (flowering)	<i>Cornus florida</i>	0.796	49.69	10.72	1085.
Douglas fir (coast type)	<i>Pseudotsuga taxifolia</i>	0.512	31.96	8.44	1357.
Douglas fir (mountain type)	<i>Pseudotsuga taxifolia</i>	0.446	27.84	6.72	981.
Ebony, Andaman marble-wood (India)	<i>Diospyros kursii</i>	*0.978	61.06	7.80	1270.
Ebony, Ebène marbre (Maritius, E. Africa)	<i>Diospyros melanida</i>	*0.768	47.95	5.55	1007.
Elm, American	<i>Ulmus americana</i>	0.554	34.59	8.44	948.
Elm, rock	<i>Ulmus racemosa</i> or <i>Ulmus thomasi</i>	0.658	41.08	10.55	1086.
Elm, slippery	<i>Ulmus fulva</i> or <i>pubescens</i>	0.568	35.46	9.29	1050.
Eucalyptus, Karri (W. Australia)	<i>Eucalyptus diversicolor</i>	*0.829	51.75	12.16	1885.
Eucalyptus, Mahogany (New South Wales)	<i>Eucalyptus hemilampra</i>	*1.058	66.05	11.50	1608.

Eucalyptus, West Australian mahogany	<i>Eucalyptus marginata</i>	*0.787	49.13	10.54	1462.
Fir, balsam	<i>Abies balsamea</i>	0.414	25.85	5.42	879.
Fir, Douglas (See Douglas Fir).					
Fir, silver	<i>Abies amabilis</i>	0.415	25.91	6.69	1076.
Concalco Alves		.96	60.0		
Greenheart (British Guiana)	<i>Nectandra rodioei</i>	*1.06-1.23	66.18-76.79.		
Grenadilla (Mpingo)	<i>Dalbergia melanoxyton</i>	1.2-1.25	74.9-78.0		
Gum, black	<i>Nyssa sylvatica</i>	0.552	34.46	6.82	839.
Gum, blue	<i>Eucalyptus globulus</i>	0.796	49.69	11.75	1683.
Gum, red	<i>Liquidambar styraciflua</i>	0.530	33.09	8.40	1045.
Gum, tupelo	<i>Nyssa aquatica</i>	0.524	32.71	6.85	889.
Hemlock eastern	<i>Tsuga canadensis</i>	0.431	26.91	6.06	846.
Hemlock, mountain	<i>Tsuga martensiana</i>	0.480	29.97	6.95	797.
Hemlock, western	<i>Tsuga heterophylla</i>	0.432	26.97	6.51	1015.
Hickory, bigleaf shagbark	<i>Hicoria laciniosa</i>		50.53	12.91	1335.
Hickory, mockernut	<i>Hicoria alba</i>		51.21	13.56	1570.
Hickory,	<i>Hicoria glabra</i>		51.21	14 25	1603.

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Hickory, shagbark	Hicoria ovata		52.17	14.39	1525.
Hornbeam	Ostrya virginiana	0.762	47.57	10.22	1199.
Ironwood, black	Rhamnidium ferreum	1.077-1.30	67.24-81.1	18.10	2100.
Jacarandá, Brazilian rosewood	Dalbergia nigra	*0.85	53.07		
Larch, western	Larix occidentalis	0.587	36.65	8.24	1188.
Lignum Vitae	Guaiacum officinale and Guaiacum sanctum	1.25-1.33	78 - 83		
Locust, black or yellow	Robinia pseudacacia	0.708	44.20	13.63	1448.
Locust honey	Gleditsia triacanthos	0.666	41.58	10.59	1165.
Magnolia, cucumber	Magnolia acuminata	0.516	32.21	8.91	1276.
Mahogany (W. Africa)	Khaya ivorensis	*0.668	41.70	<12.38	1079.
Mahogany (E. India)	Swietenia macrophylla	*0.54	33.71	6.73	817.
Mahogany (E. India)	Swietenia mahogani	*0.54	33.71	7.10	890.
Maple, black	Acer nigrum	0.620	>38.71	9.37	1141.
Maple, red	Acer rubrum	0.546	34.09	9.35	1155.
Maple, silver	Acer saccharinum	0.506	31.59	6.34	805.
Maple, sugar	Acer saccharum	0.676	42.20	10.97	1290.
Mpingo (Grenadilla)	Dalbergia melanoxylon	1.2-1.25	74.9-78.0		
Oak, black	Quercus velutina	0.669	41.77	9.66	1153.

Oak, bur	<i>Quercus macrocarpa</i>	0.671	41.89	7.21	723.
Oak, canyon live	<i>Quercus chrysolepis</i>	0.838	52.32	9.26	1149.
Oak, laurel	<i>Quercus montana</i>	0.674	42.08	9.45	1114.
Oak, live	<i>Quercus virginiana</i>	0.977	60.99	12.95	1381.
Oak, pin	<i>Quercus pallustris</i>	0.677	42.27		
Oak, post	<i>Quercus stellata</i> or <i>Quercus minor</i>	0.738	46.07	9.30	1063.
Oak, red	<i>Quercus borealis</i>	0.657	41.02	10.02	1274.
Oak, scarlet	<i>coccinea</i>	0.709	44.26		
Oak, swamp chestnut	<i>Quercus montana</i> (<i>Quercus prinus</i>)	0.756	47.20	9.73	1247.
Oak swamp white	<i>Quercus bicolor</i> or <i>Quercus platanoides</i>	0.792	49.44	12.36	1446.
Oak, white	<i>Quercus alba</i>	0.710	44.33	10.68	1251.
Persimmon	<i>Diospyros virginiana</i>	0.776	48.45	12.72	1443.
Pine, eastern white	<i>Pinus strobus</i>	0.373	23.29	6.26	898.
Pine, jack	<i>Pinus banksiana</i> or <i>Pinus divericata</i>	0.461	28.78	5.70	868.
Pine, loblolly	<i>Pinus taeda</i>	0.593	37.02	9.09	1354.
Pine, longleaf	<i>Pinus palustris</i>	0.638	39.83	10.90	1445.
Pine, pitch	<i>Pinus rigida</i>	0.542	33.84	7.40	965.
Pine, red	<i>Pinus resinosa</i>	0.507	31.65	8.81	1264.
Pine, shortleaf	<i>Pinus echinata</i>	0.584	36.45	9.34	1345.
Poplar, balsam	<i>Populus balsamifera</i> or <i>Populus candicans</i>	0.331	20.66	4.76	716.
Poplar, yellow	<i>Liriodendron tulipifera</i>	0.427	26.66	6.52	1058.
Redwood	<i>Sequoia sempervirens</i>	0.436	27.22	7.56	958.

Rosewood, Bolivian		0.71	44.3		
Rosewood, E. Indian		0.78	48.7		
Sassafras	Sassafras uariafolium	0.473	29.53	6.43	790.
Satinwood (Ceylon)	Chloroxylon swietenia	*1.031	64.37	9.68	1101.
Sourwood	Oxydendrum arboreum	0.593	37.02	8.24	1083.
Spruce, black	Picea mariana	0.428	26.72	7.24	1069.
Spruce, red	Picea rubra or Picea rubens	0.413	25.78	7.15	1071.
Spruce, white	Picea glauca	0.431	26.91	6.38	1001.
Sycamore	Platanus occidentalis	0.539	33.65	7.12	1002.
Tamarack	Larix laricina or Larix americana	0.558	34.84	8.23	1154.
Teak (India)	Tectona grandis	*0.5892	36.33	9.04	1195.
Walnut, black	Juglans nigra	0.562	35.09	10.42	1185.
Willow, black	Salix nigra	0.408	25.47	4.42	513.