

North American Hardwood Species Comparison Chart



Simple. Natural. Hardwoods.®

WORKING PROPERTIES						MECHANICAL PROPERTIES							
Lumber (12% Moisture Content)	Machining	Sanding	Finishing	Gluing	Nailing/ Screwing (No Pilot Hole)	Weight per bdft	Specific Gravity (Density)	Hardness (Janka)	Bending Strength (MOR)	Bending Stiffness (million psi) (MOE)	Dimensional Movement (Shrinkage)		T/R Ratio (Stability)
											R (%)	T (%)	
Alder	10	10	10	9	7	2.45	.41	590	9800	1.380	4.4	7.3	1.7
Ash	9	10	9	8	6	3.56	.61	1320	15000	1.740	4.9	7.8	1.6
Basswood	10	10	9	8	8	2.50	.37	410	8700	1.460	6.6	9.3	1.4
Cherry	10	9	10	9	7	3.07	.52	950	12300	1.490	3.7	7.1	2.2
Hickory	3	7	7	3	3	4.14	.67	1820	13700	1.730	4.9	8.9	1.9
Hard Maple	9	8	10	9	4	3.73	.64	1450	15800	1.830	4.8	9.9	2.1
PC Maple	9	9	10	9	5	2.74	.50	850	10700	1.450	3.7	7.1	1.9
Soft Maple	8	9	10	9	5	3.19	.55	950	13400	1.640	4.0	8.2	2.1
Red Oak (Northern)	10	10	9	9	7	3.64	.63	1220	14380	1.761	4.0	8.6	2.2
Oregon White Oak	9	9	9	8	8	4.34	0.72	1640	10200	1.090	4.2	9.0	2.1
White Oak (Eastern)	9	10	9	7	7	3.94	.68	1350	14380	1.762	4.4	8.8	2.0
Poplar	9	8	10	9	6	2.81	.43	540	10100	1.580	4.6	8.2	1.8
Walnut	9	8	9	7	7	3.36	.56	1010	14600	1.680	5.5	7.8	1.4
Yellow Birch	10	8	10	8	2	3.53	.62	1260	16600	2.010	7.3	9.5	1.3

Information is based on The Wood Database

Property Definitions



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WORKING PROPERTIES

A rating of 10 represents the best performance.

MACHINING:

An average of five operations: shaping, turning, mortising, planing and boring.

SANDING:

How it responds to the sanding process.

FINISHING:

Whether a wood is easy, medium, difficult or the most versatile to finishing.

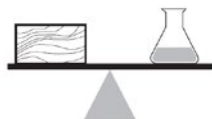
GLUING:

Wood with the least residues (oil, gum, pitch, etc.) glues the best.

NAILING/SCREWING (NO PILOT HOLE):

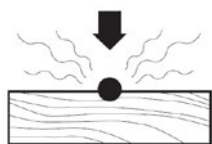
Woods that accept screws, nails and other fasteners with the best holding strength.

MECHANICAL PROPERTIES



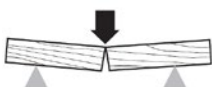
SPECIFIC GRAVITY (DENSITY):

A wood's specific gravity is an indication of its density. The number itself is the ratio of the wood's density compared to that of water (1.0). The larger the value the more dense the wood.



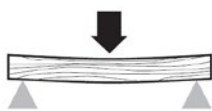
HARDNESS (JANKA BALL TEST):

The value is the force required to embed a 0.444 inch diameter steel ball to one-half its diameter into the radial and tangential surfaces of solid wood. The higher the value the harder the lumber.



BENDING STRENGTH (MODULUS OF RUPTURE):

The maximum load carrying capacity in bending. The larger the number the higher the load the lumber can support before failing.



BENDING STIFFNESS (MODULUS OF ELASTICITY):

Bending stiffness or elasticity is a description of deformation under load or stress. The larger the number the less deformation the lumber will have under load.



DIMENSIONAL MOVEMENT (SHRINKAGE):

Wood products shrink and swell as they absorb or lose moisture. Dimensional movement is expressed as a percent of that change. $R = \text{thickness}$, $T = \text{width}$