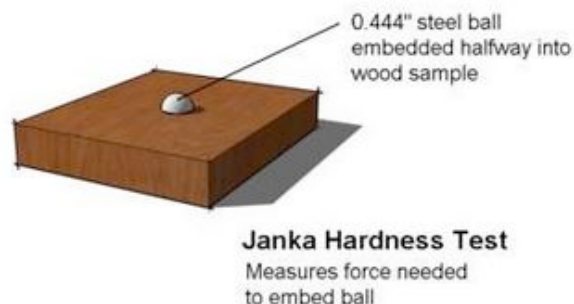


Janka hardness

The Janka hardness is a measure of the hardness of wood. It is a measure of the resistance of a sample of wood to denting and wear. It measures the force required to embed an 11.28 mm (.444 in) diameter steel ball (with an area of 100 mm²) into wood to half the ball's diameter. This method leaves an indentation.

The larger the number, the harder the wood. This number is useful in directly determining how well a wood will withstand dents, dings, and wear—as well as indirectly predicting the difficulty in nailing, screwing, sanding, or sawing a given wood species. A common use of Janka hardness ratings is to determine whether a species is suitable for use as flooring.

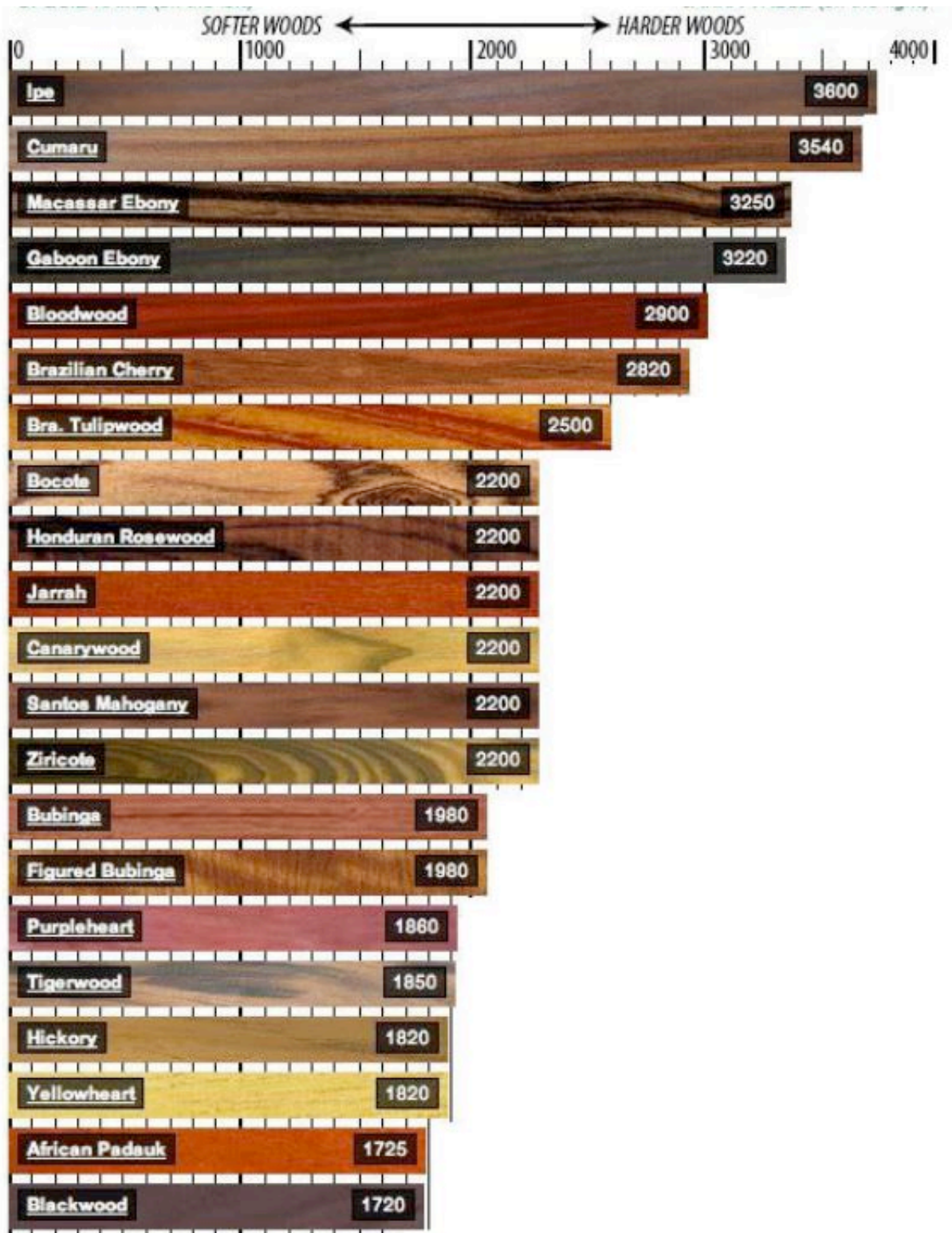


The results are stated in various ways, which can lead to confusion, especially when the name of the actual units employed is often not attached. In the United States, the measurement is in pounds-force (lb_f). In Sweden it is in kilograms-force (kg_f), and in Australia, either in Newtons (N) or kilonewtons (kN). Sometimes the results are treated as units, for example "660 Janka".

This number is given for wood that has been air dried to a 12% moisture content, unless otherwise noted. The hardness of wood varies with the direction of the wood grain. Testing on the surface of a plank perpendicular to the grain is said to be of "side hardness". Testing the cut surface of a stump is called a test of "end hardness". The side hardness of teak, for example, is in the range 3730 to 4800 N, while the end hardness is in the range 4150 to 4500 Newtons. The results may vary depending on where the wood is harvested.

For reference, white oak has a Janka hardness of 1,360 lb_f, while the super-hard lignum vitae has a hardness of an astounding 4,500 lb_f. Imagine a wood species that is over three times harder than white oak! As another example, northern red oak, has a Janka hardness rating of 1290 lb_f, while Brazilian cherry, with a rating of 2350 lb_f, is nearly twice as hard. On the lower end of the spectrum, basswood has a hardness of around 410 lb_f.

The following graphic comes from http://theoakstorega.com/Wood_Finish_Samples.html. The Janka Hardness test results tabulated below were done in accordance with ASTM D 1037-12 testing methods. Lumber stocks tested ranges from 1" to 2" thick. The tabulated Janka Hardness numbers are an average. There is a standard deviation associated with each species, but these values are not given. The chart is not to be considered an absolute; it is meant to help people understand which woods are harder than others.



Blackwood	1720
Wenge	1630
Zebrawood	1575
Hard Maple	1450
Curly Hard Maple	1450
Australian Cypress	1375
White Oak	1360
Qt. Sawn White Oak	1360
Ash	1320
Beech	1300
Red Oak	1290
Qt. Sawn Red Oak	1290
Birch	1260
Andiroba	1220
Garapa	1210
S. Amer. Mahogany	1200
Cocobolo	1136
Anigre	1110
Makore	1100

Peruvian Walnut	1080
Burmese Teak	1050
Plantation Teak	1050
Black Walnut	1010
Cherry	950
Curly Cherry	950
Soft Maple	950
Curly Soft Maple	950
Imbuia	950
Aromatic Cedar	900
Lacewood	840
African Mahogany	830
Spanish Cedar	600
Alder	590
Poplar	540
Butternut	490
Obeche	490
Basswood	410

Always use common sense. Things that work in one situation may not work in another. Follow all Safety Rules. If it feels wrong, it probably is; stop and rethink. **Your Mileage May Vary**