

While the best way to learn about how a wood species will act is to work with it yourself, some data is available to give an indication of how various species compare to one another. For example, if you're accustomed to working with white oak, which has a side hardness rating of 1,360 pounds (see Strength Properties, next page) and you decide to tackle a flooring installation using Ipe, with a side hardness rating of 3,680 pounds, you can be pretty sure that the Ipe is going to be harder to saw and nail than Familiar Oak. (Side hardness is a measure of the amount of force required, in pounds, to embed a .444-inch steel ball to one-half its diameter into a piece of wood.)

The species listed were selected to give a sampling of woods used with some regularity in flooring, and ranked from most dense to least dense, according to specific gravity, which is not an absolute measure of hardness, but rather a reference point for comparing various species. It is, according to *Wood Handbook: Wood as an Engineering Material*, published by the U.S. Department of Agriculture's Forest Products Laboratory, "an excellent index of the amount of wood substance a piece of wood contains." Also, according to *Wood Handbook*, "the ease of working wood with hand tools generally varies directly with the specific gravity of the wood. The lower the specific gravity, the easier it is to cut the wood with a sharp tool.

Side hardness, on the other hand, is an actual measure of strength and hardness, but it, too, may be best used for comparison of the familiar to the unfamiliar.

Species /Source	Specific Gravity (green)	Side Hardness (green/dry)
Ipe—Latin America	.92	3,060/3,680
Goncallo—Latin America	.84	1,910/2,160
Karri—Australia	.82	1,360/2,040
Brazilian Rosewood—Latin America	.80	2,440/2,720
Tropical Oak (Quercus)—Latin America	.76	NA/2,500
Bubinga—Africa	.71	NA/2,690
Courbaril—Latin America	.71	1,970/2,350
Caribbean Pine—Latin America	.68	980/1,240
Purpleheart—Latin America	.67	1,810/1,860
Jarrah—Australia	.67	1,290/1,910
Merbau—Asia	.64	1,380/1,500
Afromosia—Africa	.61	1,600/1,560
Angelique—Latin America	.60	1,100/1,290
White Oak—North America	.60	1,060/1,360
Beech—North America	.56	850/1,300
Northern Red Oak—North America	.56	1,000/1,290
Maple—North America	.56	970/1,450
Sapele—Africa	.55	1,020/1,520
Teak (Tectona Grandis)—Asia	.55	930/1,000
Longleaf Pine—North America	.54	590/870
Iroko—Africa	.54	1,080/1,260
Southern Red Oak—North America	.52	860/1,060
Black Walnut—North America	.51	900/1,010
Avoidire—Africa	.48	NA/1,080
Cherry—North America	.47	660/950
Honduras Mahogany—Latin America	.45	740/800
Eastern White Pine—North America	.34	290/380

- Specific gravity is a measure of the ratio of the density of wood to the density of water. It is a standard reference point for comparing the density of two species.
- Side hardness is a measure of the amount of force required, in pounds, to embed a .444-inch steel ball to one-half its diameter into a piece of wood. As such, it represents a fairly reliable measure of a wood's resistance to wear, marring and indentation.

Source: *Wood Handbook: Wood as an Engineering Material*, published by the forest Products Laboratory, U.S. Department of Agriculture, and National Wood Flooring Association Technical Bulletin No. 93002, "Relative Hardness of Wood Species."