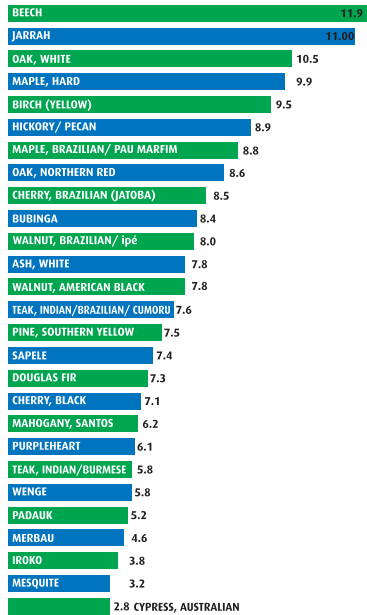


RELATIVE STABILITY OF SELECTED WOOD FLOORING SPECIES

(Ranked by percentage of tangential shrinkage from green to oven-dry moisture content)



The numbers in the chart reflect the percentage of tangential shrinkage from green to oven-dry moisture content for the various species. Tangential change values normally will reflect changes in plainsawn wood. Quartersawn wood usually will be more dimensionally stable than plainsawn.

These percentages are listed only as a means of comparison of stability between the species. As these values represent change from green to oven-dry, actual percentage change on job sites will be drastically less.

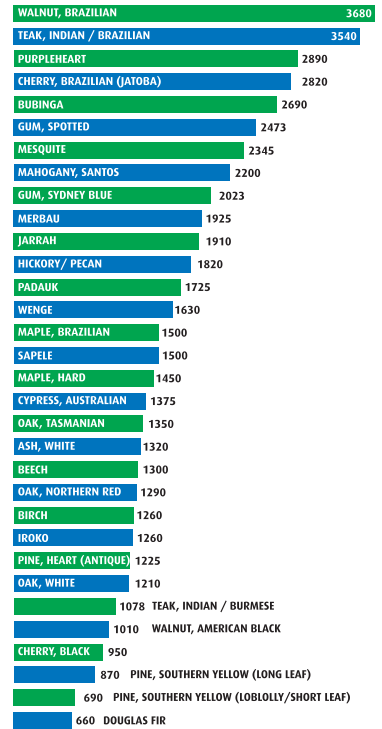
Although some tropical woods such as Australian Cypress, merbau and wenge appear in this chart to have excellent moisture stability compared to domestic oak, actual installations of many of these woods have demonstrated significant movement in use. To avoid problems later, extra care should be taken to inform potential users of these tendencies prior to purchase.

Several species listed in this book are not included in the chart. This data currently is not available for tasmanian oak, sydney blue gum and spotted gum. Due to its composited construction, cork is not included and due to its engineered construction, bamboo is not included. Also, due to the many different species and ages of the wood classified as antique heart pine, that wood is not listed.

- Source: Stability ratings taken from the U.S. Dept. of Agriculture, Forest Service, Forest Products Laboratory, Center for Wood Anatomy Research Web site: www.fpl.fs.fed.gov/ftp/pub/woodanatomy/technotes/technote.html
- Douglas fir rating is an average of ratings for coast, interior West and interior North species.
- Pine rating is an average of ratings for loblolly, longleaf, shortleaf and slash species.

RELATIVE HARDNESS OF SELECTED WOOD FLOORING SPECIES

(Ranked by Janka hardness rating)



The Janka (or side) hardness test measures the force required to embed a .444-inch steel ball to half its diameter in wood. It is one of the best measures of the ability of a wood species to withstand denting and wear. By the same token, it also is a good indicator of how hard or easy a species is to saw or nail. Northern red oak, for example, has a Janka hardness rating of 1290. Spotted gum, with a rating of 2473, is nearly twice as hard. If you're accustomed to working with red oak and decide to tackle a job with spotted gum, you can expect it to be much harder to cut and nail.

A rating is not included for bamboo, as bamboo flooring varies greatly between different manufacturers' products and between vertical and horizontal construction. Likewise, a rating is not included for cork flooring.

Source: Hardness ratings for most species taken from the U.S. Dept. of Agriculture, Forest Service, Forest Products Laboratory, Center for Wood Anatomy Research Web site: www.fpl.fs.fed.gov/ftp/pub/woodanatomy/technotes/technote.html

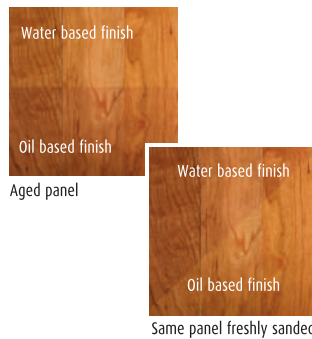
- Douglas fir rating is an average of ratings for Coast, Interior West and Interior North species.
- Values for Brazilian cherry, amplitment and Thai/Burmese oak represent average values.

While Janka values give a general sense of hardness, many other factors also contribute to a wood floor's durability, including the type of cut (i.e. plainsawn, quartersawn), denseness of cell structure, and finish used.

COLOR CHANGES IN WOOD FLOORING

Whether finished or unfinished, wood changes color over time due to oxidation and exposure to light. Some species darken in color over time, while others lighten. There is no set value for "color fastness" of a species, so contractors and their customers need to be aware of how much change they should expect from the species they choose. Certain species, including American cherry, Brazilian cherry and many imported species are especially notorious for their tendency to change in color. A demonstration of this change is shown below. The panels on the left for each species show how the wood had aged since originally being sanded and finished for this publication in 1994. The panels on the right are the same panels as they appear now after being freshly sanded and finished in 2004. It is important to note that all panels shown on the following pages are shown freshly sanded and finished. Some color change is to be expected for all species and a drastic change can be expected for some.

AMERICAN CHERRY



BRAZILIAN CHERRY



WALNUT, BRAZILIAN 3900

While Janka values give a general sense of hardness, many other factors also contribute to a wood floor's durability, including the type of cut (i.e. plain-sawn, quarter-sawn), denseness of cell structure, and finish used.