

How to space a floor?

Things you need to know how to space a floor a species list with expansion coefficient, calculator, spacers, and a moisture meter.

Species List from NWFA:

RELATIVE STABILITY OF SELECTED WOOD FLOORING SPECIES (Ranked by dimensional change coefficient)

The numbers in the chart reflect the dimensional change coefficient for the various species, measured as tangential shrinkage or swelling within normal moisture content limits of 6-14 percent. Tangential change values will normally reflect changes in plainsawn wood. Quartersawn wood will usually be more dimensionally stable than plainsawn.

The dimensional change coefficient can be used to calculate expected shrinkage or swelling. Simply multiply the change in moisture content by the change coefficient, then multiply by the width of the board.

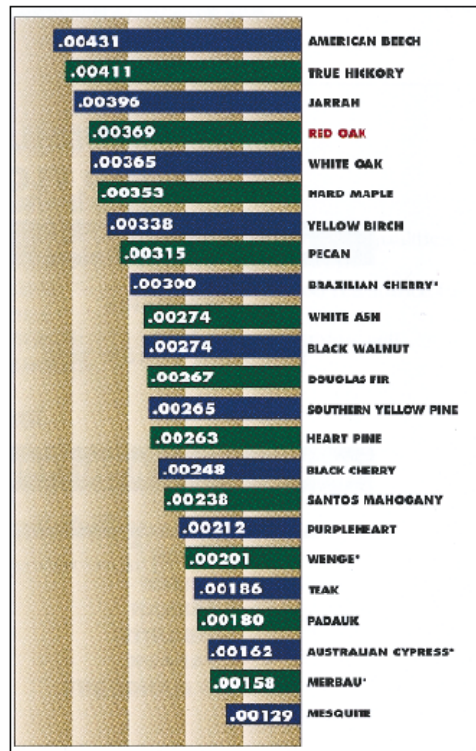
Example: A mesquite (change coefficient = .00129) board 5 inches wide experiences a moisture content change from 6 to 9 percent — a change of 3 percentage points.

Calculation: $3 \times .00129 = .00387 \times 5 = .019 \text{ inches}$.

In actual practice, however, change would be diminished in a complete floor, as the boards' proximity to each other tends to restrain movement.

The chart is best used for comparison.

* Although some tropical woods such as Australian cypress, Brazilian cherry, 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.



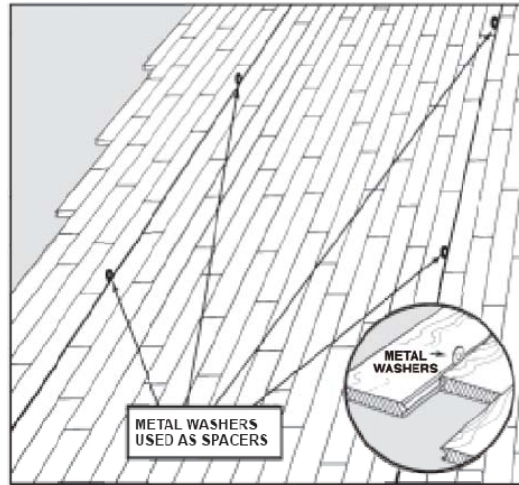
* Source: Stability ratings taken from Wood Handbook: Wood as an Engineering Material (Agriculture Handbook 72, Forest Products Laboratory, Forest Service, U.S. Department of Agriculture; revised 1987).

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NOFMA Species coefficient change:

	Plainsawn Flooring	Quartersawn Flooring
American (Black) Cherry	.00248	.00126
American Beech	.00431	.00190
Black Walnut	.00274	.00190
Hard Maple	.00353	.00165
Hickory / Pecan	.00315	.00169
American Red Oak	.00369	.00158
American White Oak	.00365	.00180

What are we trying to do? Figure out how often to put a spacer washers into a floor.



Formula for calculating expansion:

Size	(change in moisture content % of the board)	x	(coefficient expansion # from the chart)	x	board width	=	Amount of Growth
3 ¼"	9%(Target MC) - 7% (Now)	x	.00369 Plainsawn Red	x	3 ¼"	=	.023985"
2 ¼"	9%(Target MC) - 7% (Now)	x	.00369 Plainsawn Red	x	2 ¼"	=	.016605"
5"	9%(Target MC) - 7% (Now)	x	.00369 Plainsawn Red	x	5	=	.0369"

Formula to figure out the # of boards for every spacer washer?

Size	Spacer Size	/	Amount of Growth	=	# boards to put Spacer
3 ¼"	.125 (1/8" Gap)	/	.023985	=	5.21 boards
2 ¼"	.125 (1/8" Gap)	/	.016605	=	7.52 boards
5'	.125 (1/8" Gap)	/	.0369	=	3.38 boards

What is the total amount of expansion across a 25' room?

	12 / board size	x	Room width	x	Amount of Growth from above	Inches of growth
3 ¼"	3.6923	x	25'	x	.023985	2.21"
2 ¼"	5.33	x	25'	x	.016605	2.21"
5"	2.4		25'	x	.0369	2.21"