All the way to the floor

Flooring is usually dried to the national average moisture content expected in use so that shrinkage and swelling are minimized and buckling or large gaps between boards does not occur. However, the careful drying and manufacturing of wood flooring cannot entirely prevent an unsuccessful installation.

Manufacturers who have controlled storage may control the moisture content of the wood up until the point it is placed on the truck for delivery. Various parts of the country have EMCs that range from the dry, desert areas of the Southwest (under 5 percent EMC) to the moist areas along the Gulf of Mexico (over 10 percent EMC). Additionally, a wide range of relative humidities can be experienced between individual job sites in the same locale, such as an ocean-front or lakeside home versus one that's a few miles inland.

Many manufacturers record moisture-meter readings before the flooring leaves the facilities, and such readings are attached to invoice and packing lists. The use of moisture meters, from manufacturing to distribution to installation, is discussed on page 15.

Dimensional stability

When flooring manufacturers and distributors talk about relative stability of various wood flooring species, they are referring to how a floor "moves" once it is put down.

The numbers in the accompanying chart were developed by the Forest Products Laboratory of the U.S. Department of Agriculture. They reflect the dimensional change coefficient for the various species, measured as tangential shrinkage or swelling within normal moisture content limits of 6-14 percent. 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 red oak (change coefficient = .00369) board 5 inches wide experiences a moisture content change from 6 to 9 percent — a change of 3 percentage points.

Calculation:

3 x .00369 = .01107 x 5 = .055 inches.

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

For a more complete discussion of dimensional stability, see NWFA Technical Publication No. A200: Wood Species Used in Wood Flooring. Write to NWFA at 233 Old Meramec Station Rd., Manchester, MO 63021.

GROWING BOARDS

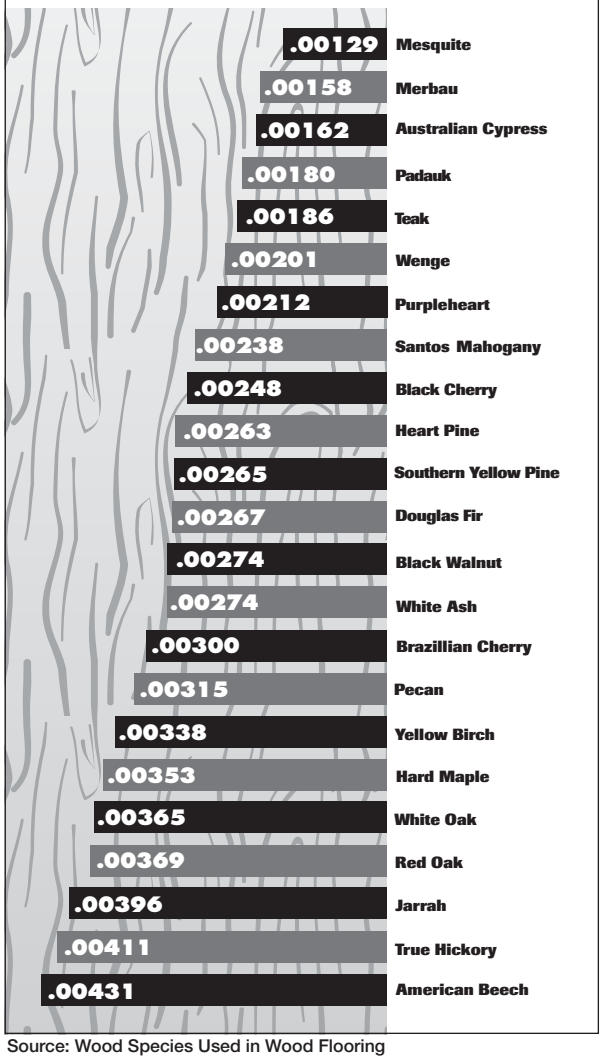
How much can temperature and humidity affect the dimensions of a hardwood floor? Take a look at one 5-inch red oak plank board:

1) Within "normal living conditions" (say, an interior temperature of 70 degrees and a relative humidity of 40 percent), the board has a moisture content of 7.7 percent and is 5 inches wide.

2) If the relative humidity falls to 20 percent, the moisture content of the board will be 4.5 percent, and the same 5-inch board will shrink by .059 inches. Across 10 feet of flooring. that could translate to as much as 1.4 inches of shrinkage.

3) If the humidity rises to 65 percent, the board's moisture content would be 12 percent and the same 5-inch board would expand by .079 inches. Across 10 feet of flooring, this could translate to 1.9 inches of expansion.

DIMENSIONAL CHANGE COEFFICIENT FOR 23 COMMON WOOD SPECIES



Source: Wood Species Used in Wood Flooring