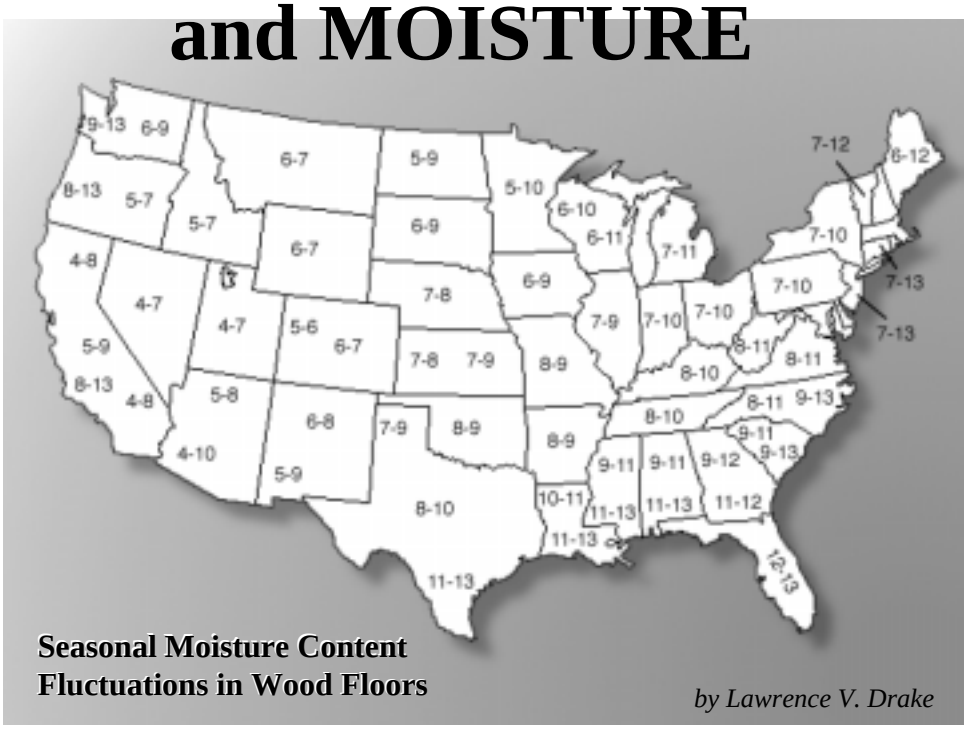
WOOD FLOORS and MOISTURE



Seasonal Moisture Content Fluctuations in Wood Floors

by Lawrence V. Drake

The pairs of figures on the map represent moisture content in wood products used indoors. The first figure represents the average in January and the second represents the average in July. Source: U.S. Department of Agriculture, Forest Products Lab.

Cupping, crowning and gapping between wood floor strips/planks typically is caused by moisture content fluctuations in the product, usually the result of seasonal environmental changes or exposure to a hidden source of moisture.

All wood contains some amount of moisture. Wood is like a sponge. If moisture is present, it will absorb the moisture and expand. If the air around the wood is dry, the moisture will evaporate out of the wood and the wood will shrink.

Typically, indoor air is much dryer in the winter than in the summer. The dryer winter air absorbs moisture out of the wood, causing the wood to shrink. As spring and summer arrive, the wood absorbs moisture from the more humid summer air and expands. A good flooring contractor will take this into consideration when installing the wood floor. The wood should be totally acclimated to the environment before it is installed. This is, by far, the most important step for a successful installation. Once the wood is acclimated it is installed according to the season. In the summer, the boards are installed tight together because they will shrink in the winter. If it is installed in the winter, a small gap is left so that the board will have somewhere to go when it expands in the summer.

A moisture meter is a "must have" tool for the wood floor installer as well as the radiant heating contractor. Because moisture content is the first measurement that should be taken when a problem is encountered, it is a radiant heating contractor's best trouble shooting tool. A record should be made of the moisture content of the wood at the time of installation.

If large gaps between the boards appear, a measurement of the moisture content of the wood can be easily taken and compared to the normal moisture content for that geographical area and season (see map) as well as the reading at the time of installation. If the reading is within the normally expected moisture content, chances are the wood floor installer did not account for seasonal shrinkage when the floor was installed or did not acclimate the wood properly.

Cupping is generally an indication that the wood has expanded but had no where to go because the boards were installed too tight. The result is that it pushes up at the edges of the boards causing them to cup. This is most often associated with floors that have been installed tightly together in the winter when the moisture content is low. When humidity in the house rises during the summer, the floor absorbs moisture, grows and cups. In some cases this can also cause crowning as the board humps up in the middle trying to expand.

Flooring absorbing excessive moisture on the underside generally results in cupping while flooring absorbing excessive moisture from the top often results in crowning.

Placing heat under a wood floor can affect the moisture content. It generally tends to reduce the moisture in the wood the higher the temperature. Keeping floor temperatures low (below 85˚F surface temperature) is the best guard against undesirable wood movement. Maintaining proper humidity levels (30-50%) in the building year round also will prevent excessive movement in wood floors.

To help flooring contractors identify the cause of wood movement problems and to avoid having the radiant floor blamed, the radiant heating installer should understand the moisture content issue and have a moisture meter handy. □