CLEMSON EXTENSION

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RESIDENTIAL HOUSING

Wood Moisture Content

This leaflet discribes the practical meaning to the homeowner of readings from a wood moisture meter.

The wood moisture content (WMC) of wooden members of the substructure of residences being sold in the state is routinely being disclosed in the closing process of the sale to buyers. The reading is usually provided by pest control operators, and is included in or near the “termite letter” (form CL-100 Official South Carolina Wood Infestation Report).

The notation such as “WMC-18” is usually meaningless, or at the most, a curiosity since seldom is there a question or interpretation of the notation. But the disclosure is highly significant.

South Carolina suffers extensive moisture damage in residences across the state steming from multiple causes. The problem is so widespread and the damage so costly to repair that pressure for disclosure of conditions has led to the reporting of substructural wood moisture content.

Following here is an interpretation of the meaning.

WMC - Wood Moisture Content - Weight of water expressed as a percentage of oven dry weight of wood; water in intermolecular regions of cell wall. Full fiber saturation (fsp) ranges from 28-31 percent depending on temperature and kind of wood.

Scale's Meanings:

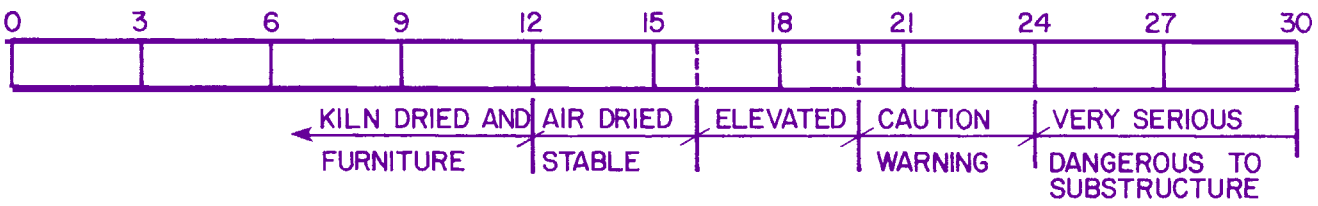
Below 12 - Readings in this area are gathered from kiln or oven dried woods and furniture grades of wood, and represent very dry conditions.

12-16 - Readings are common to construction grades, air dried lumber and “healthy” residential substructures (beneath first floor in crawl spaces). These are the readings desired.

16-20 - Readings indicate a possible elevated level of wood moisture. Such readings should alert the homeowner to look for a source of excess moisture in the crawl space, and to be sure that foundation vents are opened for continuous year round ventilation. The excess moisture source should be corrected if found.

20-24 - Readings indicate a serious problem somewhere. The excess moisture source must be immediately corrected, and the situation carefully monitored until the WMC returns to the 12-16 range.

25-30 - Actual, and often extensive, damage is evident when readings reach this level. The substructure may show decayed areas, ranging from small to very large, of rotten floor joist, sills, and subflooring. Often this is the “too late” level of reading for correcting problem situations without repair costs in the thousands of dollars.



Decay organisms are active at full fiber saturations of 28-31%. Weather conditions and the strength of the excess moisture source cause the WMC to fluctuate by several points. Thus, a reading of WMC-27 one week may be expected to be 26 or 28 another week.

Decay organisms are a natural part of our environment. For the most part they are beneficial in that they are a part of the life cycle of forests. If we did not have them, every tree that ever fell in the forest would still be underfoot. But when we produce conditions in our buildings that promote their activity there, we have created highly undesirable circumstances causing our buildings to decay (just as fallen trees in forests decay under the same conditions).

It is not practical or economical to build houses with all substructural members of treated lumber. Rather we have maintained a healthful environment for both the structure and its occupants by maintaining relatively dry conditions beneath homes. By not providing a source of moisture, wood decay organisms cannot live without the essential ingredient of water.

Actually there usually exists a range of readings within the substructure from the best, not problem areas, to higher readings in locations where a problem may exist. A single reading statement, in itself, is difficult to interpret since it can only be one reading from one particular point somewhere in the total substructure. But if the single reading given should be an “elevated”, or above, reading, further investigation of the total situation is needed.
For more information on wood decaying organisms, request our bulletin entitled “Biodeterioration of Wood in Houses”, HL 236.

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