

# **AUBIN WOODWORKING, INC**

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## **HUMIDITY GUIDELINES FOR WOODWORK INSTALLATION**

**“Wood Moves!” Wood is a hygroscopic material, and under normal use conditions all wood products contain some moisture. Wood readily exchanges this moisture with the surrounding atmosphere. In high humidity, wood picks up moisture and swells. In low humidity, wood releases moisture and shrinks. To avoid problems, it is recommended by AWI and the USDA Forest Service that relative humidity in most of the United States is maintained within the range of 25-55%. Architectural woodwork products are required to be manufactured as designed by the Architect and to contract documents from wood that has been dried to appropriate average moisture content and maintained at this condition up to the time of delivery.**

**Subsequent dimensional change in wood is and always has been an inherent natural property of wood. It is important to provide woodwork that will withstand this expected movement. Fabrication, finishing and installation techniques need to be incorporated to allow for this expected movement.**

**Moisture related problems can be minimized by following some general rules:**

- Match the wood moisture content to the equilibrium moisture content of the environment in which it is to be installed which should be between 25% and 55%. In other words, let wood products acclimate to match their surroundings. AWI recommends that wood stabilize at the jobsite for 72 hours before installation.**
- Insure that all surfaces are sealed properly. The most important function of finishing wood is to impede the exchange of moisture with the atmosphere, thus helping to reduce the consequences of wood movement. Given enough time, moisture will be absorbed into wood from a humid atmosphere or will escape to a dry atmosphere. It must also be noted that the varnishes, lacquers, paints and finishes in general that are applied to wood, be it wall panels or furniture, only slow the product from reaching an ambient condition. The finish itself is used to enhance and to beautify the wood, it is not a cure-all that will envelop the wood and make it impervious to humidity conditions. Eventually, the wood itself will seek the norm conditions under which it is subjected to.**

- **It is necessary to introduce construction details that will allow the wood to shrink and swell. Such details typically are found in the form of "expansion" joints such as a tongue and groove, a splined joint, and a variety of reveal details all of which have the design intent to allow for the movement of the wood. Therefore, in consideration of the hygroscopic nature of the product that we are working with, it is important to fully realize the limitations and to build safeguards into the design of the product that will allow for movement.**

**Installation of wood product in an environment above or below the ideal range of 25% to 55% will cause excessive shrinking or swelling. This movement may result in the opening and closing of the joints. Maintaining an environment which approximates 25% to 55% relative humidity as closely as possible will minimize movement and will insure that the wood remains at the 5% to 10% moisture level.**

**Cell damage occurs when excessive humidity causes wood to swell to the point that it moves into the adjoining items, thereby crushing the cells of the wood, so when it returns to normal 25% to 55% relative humidity, there is a gap in the wood.**

**All fiberboard core and particleboard core panels will expand and contract approximately 1/6" in 48" between the extremes of 25% and 55% relative humidity. When humidity increases from 55% to 90%, an additional expansion of 1/8" in 48" may occur. Similar movement occurs with lumber and other wood products.**

**All wood products must be maintained in an environment that approximates 25% to 55% relative humidity as closely as possible. This environmental condition must be met prior to delivery, during installation and throughout the life of the building. The architectural woodworker and his suppliers should not be held responsible for defects of expansion or shrinkage mentioned above if controlled humidity conditions are not provided and maintained.**