

HELPFUL INSTALLATION TIPS

ACCLIMATION OF SOLID WOOD

As stated in the National Wood Flooring Association technical publication #A100, water and wood, page 11, industry proven guidelines as set forth by the National Oak Flooring Manufacturers Association and the National Wood Flooring Association, and most wood manufacturers, state that before solid wood flooring is delivered, the job site must be checked to determine if it is ready. Wood should not be delivered if job site moisture conditions are excessive. Otherwise, one will absorb moisture from the other. The structure should be closed, with doors and windows in place, and interior climate controls should be operating for at least 48 hours to stabilize the moisture conditions of the interior.

Once at the job site, the wood should be set indoors and spread over the sub floor. About four days should pass before an installation is started. The moisture content of 2 1/4" strip flooring should be no less than 4% of the sub floor. For planks that are 3" or wider, the moisture content must be within 2% of the moisture in the sub floor. If the moisture content varies more than the measurements discussed above, the installer should not start the installation until the wood flooring and sub floor achieve equilibrium and 'come into those moisture ranges.' Moisture contents of both the flooring and the sub floor must be checked and recorded before any work begins. If the flooring is delivered on a damp day or during rain, the boards will absorb moisture. If installed in this condition, the flooring will shrink a few months later and show gaps.

Wood flooring should not be delivered to the job site until plastering, ceramic tile work, plumbing work, and painting are completed and dried. Moisture evaporates from damp walls into the air within the house, and some of it will be absorbed by the flooring. Another condition that causes flooring to pick up moisture during construction is less obvious, but more common: If the heating or air conditioning is not operating from the time the floor is installed until the house is occupied, the humidity may be higher than it would be if the house were occupied. The point of acclimating wood flooring before installing it is to adjust to 'normal living conditions' at the site - that is, the temperature and humidity conditions that will typically be experienced once the structure is occupied.

Thus, it does no good at all - in fact, it is likely harmful - to store wood flooring at the job site under conditions that don't reflect those normal environmental conditions. If the wood is delivered in cartons and stacked, then the ends of the boxes should be opened up. If there is plastic wrapping around the boards, the ends must be cut open to expose them to the room's air. The wood flooring should *never* be acclimated on a concrete substrate, as the boards may absorb moisture and be cupped when taken out of the carton. Wood flooring is a dynamic material subject to changes in dimension as a result of changes in humidity in the surrounding environment.

Furthermore, the rooms that have wood installed in them must be climate controlled with temperatures of 50° to 80°F but preferably 68° to 72°F. humidity of 35% to 55% maintained, and the HVAC 'fan' set in the 'continuously on' position. In addition, the rooms should not be closed off from a normal flow of air. If *any* portion of this standard is altered or omitted, very objectionable conditions can occur such as: gaps between boards, cupping, stress fracture splits, face checks, board delamination, splinters, raised grain, and finish problems.

Installers need to understand the dynamics of water and wood and make educated judgments about when and how much acclimation is required. To do so requires knowing what the moisture content of the flooring is at the time of delivery and what its expected moisture content will be 'in use'. The installer should know the industry guidelines, and be aware of the repercussions if they fail to follow them.

MOISTURE TEST MUST BE TAKEN PRIOR TO INSTALLATION

The National Wood Flooring Association installation guidelines states, in Section 1, Chapter 1, Page 2, 'Acceptable Job Site Conditions', that moisture testing must be performed on all sub flooring/substrates and the wood *prior to the installation*. This is to determine if the areas to receive new wood floor coverings are within the industry's maximum moisture tolerances. In addition, the wood's moisture content must be within 2% for plank flooring 3 inch or wider (or 4% for 2 1/4 inch wide strip flooring) of any wood sub floor or concrete on which it's to be installed. These tests should be documented in writing, signed by the end user, then placed in the job folder for future reference. These guidelines *must be met* or the job is not ready to receive an installation.

FASTENER SCHEDULE TEST

Use of professional grade magnet tools confirmed that the installer used the following fastener schedule: 8" - 19" apart and 2" - 6" from ends. According to the fastener schedule as found in chapter 5, Appendix CA, pages CA-1 and CA-2 of the National Wood Flooring Association installation guidelines, the installer failed to follow the National Wood Flooring Association's fastener schedule guidelines for installing wood flooring.

FASTENER SCHEDULE

The National Wood Flooring Association installation guidelines for wood flooring states, in Appendix "F", page 17, "Fastener Schedule" that all wood flooring with:

- A width of 3" or wider should have fasteners placed 6" - 8" apart.
- A minimum of two fasteners must be placed within 1" to 3" from the ends of boards. The National Wood Flooring Association publication, "Water and Wood" states on page 4 that:
- Wider boards tend to move more than narrower boards. Movement in a 5" plank is more dramatic than a 2-1/4" strip.
- For that reason, many wood flooring manufacturers recommend nailing schedules of 4" - 6" for their wider planks.
- Installers should always check the manufacturer's instructions, as they supersede all others.
- If the installers' fastener schedule is less/tighter than recommended, the flooring may make crackling sounds or a noise like cracked glass or ice when walked on.
- If the installer's fastener schedule is more/looser than recommended, or the installer failed to use at least two fasteners within 1" to 3" from the ends, the flooring may exhibit over-wood, gaps between boards, accelerated cupping, flexing, noise or board movement.

INSTALLER MUST LEAVE EXPANSION GAP

As with any wood flooring, because it is a hydroscopic material that will absorb moisture and expand or release moisture and shrink, the installer must allow the floor to move. The National Wood Flooring Association states, in their installation guidelines (section X, page 16), that expansion space, the thickness of the board, must be left along walls and all vertical obstructions (ceramic, sliding glass doors, fireplace, etc.). For example: 3/4" thick, solid wood flooring, leave a 3/4" space. For 3/8" engineered wood flooring, leave a 3/8" space. At no time should the installer set the wall base tight against the new wood floor, seal, or lock the wall base to the flooring by caulking the gap or nailing the quarter round or shoe molding into the floor. If the installer fails to follow any one of these installation guidelines, the wood flooring may: buckle, cup, or make a rubbing together-like creaking or popping sound when walked on. This issue is due to installer error.

INSTALLER MUST INSPECT AND CULL

With the exception of "clear" grade every grade of wood will have varying degrees of marks or characteristics. No two boards are alike. Both the National Oak Flooring Manufacturer's Association and the National Wood Flooring Association states that the wood manufacturers are allowed to include a maximum of 5% of total shipment in product that is not usable (or defective). It should be noted that it is the installer's responsibility to closely examine the wood flooring product for visual defects. Furthermore, all wood flooring is manufactured and intended to be installed in random lengths. If the end of a board has a nick, splinter, or flaw, etc., then the problem area should be cut off and the rest of the board installed. If the area of concern is in the middle face of a board, then the affected portion of the board should be cut out and the two shorter boards installed. If a board is EXTREMELY lighter or darker and would give an undesirable appearance to the end user, the boards should be set aside. However, this is NOT considered a manufacturing defect, as the installer should discuss this with their customer and have a full understanding BEFORE installing any wood flooring. In the hardwood flooring industry most manufacturers and distributors agree that **100 square feet** should be enough before stopping the installation. Once they install the flooring they are assuring all of the parties that the material is free of visual manufacturing problems and bad boards. The end result will be a beautiful wood floor that the end user will be happy with and proud of.

THE CUSTOMER'S PRESENCE DURING THE INSTALLATION IS CRUCIAL

The wood Manufacturer states in their installation and warranty guidelines, that they control all of the steps involved in its production of prefinished wood floors from kiln drying to finishing. As hardwood is a product of nature, it is not perfect. Industry standards allow a tolerance in quality variation not exceeding 5% of the total quantity purchased. The Manufacturer strongly recommends that the customer interview several prospective wood flooring installers for their qualifications. Ask them for references and make telephone calls to check them out. Approximately 40% of the reasons for installation failure and/or customer dissatisfaction are due to installer error. There must be the professional installer on the job. However, the customer's presence during the installation is crucial. If the customer decides to hire an installer who will install the hardwood (or bamboo) floor without the customer's supervision it is THE CUSTOMER'S responsibility to ensure the good judgment of the installer. The installer must inspect and cull those boards which are defective or undesirable. The installer should be selective when assessing the quality of the wood, grading, and lengths of boards, and when arranging floor boards according to the natural variations, such as color and grain of the species selected. During installation of the floor, the customer can ask the installer to place boards in areas that are less visible and according to the customer's taste, rather than in the center of the room or near the focal point of the room, such as the fireplace. The wood Manufacturer cannot be held responsible for any unpleasant surprise resulting from the installer's lack of qualifications or poor judgment.