



## HELPFUL TIPS FOR INSTALLING YOUR HARDWOOD FLOOR

### PRE-INSTALLATION JOBSITE REQUIRMENTS

Carefully examine the flooring prior to installation for grade, color, finish and quality. Ensure adequate lighting for proper inspection. If flooring is not acceptable, contact your distributor immediately and arrange for replacement. Otter Creek cannot accept responsibility for flooring installed with visible defects. Prior to installation of any flooring, the installer must ensure that the jobsite and subfloor meet the requirements of these instructions. Otter Creek is not responsible for flooring failure resulting from unsatisfactory jobsite and/or subfloor conditions.

Hardwood flooring should be one of the last items installed for any new construction or remodel project. All work involving water or moisture should be completed before flooring installation. Warning - water and wood do not mix. Installing flooring onto a wet subfloor will likely cause cupping and subsequent gapping. Room temperature and humidity of installation area should be consistent with normal, year-round living conditions for at least a week before installation of wood flooring.

Room temperature of 65-75°F and a humidity range of 35-65% is recommended. Warning - humidity levels below 35% will likely cause movement in the flooring, including gapping between pieces and possible cupping and checking in the face.

Otter Creek cannot be held responsible for site conditions. Solid wood flooring (Unfinished and Pre-finished) MUST be equalized properly before installation. Please follow our instructions on equalizing your solid wood flooring. Engineered wood floors **DO NOT** need any moisture equalization prior to installation and should be installed from just opened boxes. **DO NOT OPEN** more than a few boxes in advance of installation and only the number of boxes which will be installed within the next few hours. Store Engineered wood flooring in the UNOPENED boxes at installation area for 24-72 hours before installation to allow flooring to adjust to room temperature. Do not store the boxes of flooring directly on concrete. **DO NOT OPEN THE BOXES PRIOR TO INSTALLATION.**



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## PRE-INSTALLATION SUBFLOOR REQUIREMENTS

All Subflooring must be: Structurally sound

**Clean:** Thoroughly swept and free of all debris (If being glued down, subfloor must be free from wax, grease, paint, sealers, & old adhesives etc., which can be removed by sanding)Level: Flat to 3/16" per 10-foot radiusDry and will remain dry: Subfloor must remain dry year-round. Moisture content of wood sub floors must not exceed 11%, concrete must not exceed 3.5 as measured with a Tramex Commercial Concrete Moisture Meter.

### Wood Sub floors:

Must be flat to within 3/16" of a straight edge in a 10' radius and without any abrupt height differences. "Hills" should be sanded down flat and valleys should be filled with a self-leveling cement compound developed for use with wood flooring such as Ardex K-15 Portland Leveling Compound or equal. Follow the manufacturer's instructions for use.

Must be structurally sound, with the recommended subfloor to be at least a 5/8" min. thick plywood installed onto joists, which are 16" on center and adequately sized for the length of the span. Prior to installing the wood floor, check to make sure the subfloor is well nailed to the joists. Re-nail any loose areas or sections with squeaks. Also check any areas where there is excessive up and down movement of the subfloor and joists and shore them up from below by adding blocking and/or additional support.The wood subfloor must be 10% M.C. or below. Take several moisture meter readings from different areas of the subfloor and save them as part of the permanent job record. Make sure, prior to installation of the wood flooring, that the space below the subfloor is not excessively damp as moisture from this area may later "wick" through the subfloor into the wood floor itself.Concrete Sub floors:

### Concrete Sub floors:

Must be flat to within 3/16" of a straight edge in a 10' radius and without any abrupt height differences. "Hills" should be ground down flat and valleys should be filled with a self-leveling cement compound such as Ardex K-15 Portland Leveling Compound OR EQUAL. Follow the manufacturer's instructions for use. Avoid leveling large areas of concrete with thin layers of leveling compound due to the inherent weakness of the bond.

Must be at least 60 days old and dry. Do not install on concrete unless YOU ARE SURE it stays dry year-round. All concrete should be tested for moisture and be below 3.5 moisture content as measured by a Tramex Commercial Concrete Moisture Meter. Other concrete testing methods may be used, see Other Concrete Testing Methods.Must have a density of at least 90 lbs./cu. in.

Must be free from excessive alkaline, as in gluedown installations you may risk bond failure with the mastic used. On all glue down installations first test for pH and if excessive, neutralize using an acid wash and recheck before installation. Follow the specific instructions of the mastic manufacturer in testing for and correcting high pH subfloors.

Old concrete subfloors should first be roughed up with a sander in order to improve the bond between the subfloor & the mastic - please follow the mastic manufacturer's specific instructions.It is highly recommended, that if gluing down on concrete, (even if you believe it is dry), which is on or below grade, to install Sheet Vinyl first and then glue the wood flooring on top of the vinyl, as this provides an effective permanent moisture barrier. Another alternative to sheet vinyl is to use the Bostik or Franklin Moisture Barrier Systems and they provide warranties to you.

**Remember**, a concrete slab on/below grade that measures dry today may become moist in the future due to rising groundwater. Installing a moisture barrier now may be viewed as an insurance policy against concrete becoming wet in the future. This will lead to subsequent floor failure. Otter Creek is not responsible for site related moisture issues.

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## EQUALIZING YOUR SOLID WOOD FLOORING

Solid Wood Floors, both unfinished and pre-finished, **MUST** be equalized properly before installation. Please follow these recommendations for equalizing:

### **Background to equalizing Solid Wood Flooring**

Wood is a natural porous material, which continues to breathe even after installation and finishing. Wood has a cellular structure, and much like a sponge, expands as it picks up moisture and shrinks when it gives moisture off. It is this movement which can cause cracks, separation, cupping, swelling and lifting of your wood floor. All wood will eventually acclimate itself to its surroundings. This is known as reaching the equilibrium point. The exact equilibrium point to be reached by all wood elements on a job site can be accurately predicted by taking relative humidity and temperature readings at the site to find the expected equilibrium moisture content. Wood flooring in service is usually exposed to both long-term (seasonal), and short-term (daily), changes in relative humidity and temperature. Thus, wood is virtually always undergoing slight changes in moisture content even after installation. Different parts of the country have varying equilibrium points. And each area may vary greatly season to season. So a given equilibrium point in June may be different from one in December on the same site. In addition, a wide range of equilibrium points can be experienced between job sites in the same locale, determined by individual heating/cooling systems and/or specific site variables such as being next to a lake, etc. The practical objective of equalizing your solid wood floor to the individual job site levels, prior to installation, is to minimize the amount of subsequent movement after installation. With no one equilibrium moisture content right for all situations, only your installer, with their critical knowledge of local conditions, used in conjunction with proper testing and planning, can establish the proper equilibrium point at which to install your solid wood flooring. As manufacturers, we produce our solid wood flooring to industry standards of 6 - 9% moisture content. However, this may not be low/high enough for your installation. Therefore, it is imperative your installer follows these recommendations for equalizing solid wood flooring. Otter Creek shall not be responsible for any shrinkage/swelling or other movement of the floor after installation as Otter Creek does not control any of the job-site variables - only the installer and end user do so.

**Recommendations for equalizing Solid Wood Flooring:** Proper method to equalize solid wood flooring - your installer should: Establish the job-site specific target equilibrium point the flooring should be installed at by taking into account all of the following variables: existing relative humidity and temperature planned or existing heating/cooling systems planned or existing dehumidifying or humidifying systems measure other existing wood elements to see what equilibrium point they have reached projected seasonal variations at the site and estimated average equilibrium point. Moisture meter the flooring upon job site arrival. If the flooring is too high in moisture content for the job-site, it must be allowed to dry out and shrink prior to installation. If it is too low, it must be allowed to pick up moisture. This can be accomplished by removing the flooring from its packaging and completely spreading out all of the individual pieces to allow good air circulation around them, until such time as they fully equalize to the moisture content desired.

**Tip** - To speed up the equalizing process you can build piles of flooring by criss-crossing the pieces in an open stack and using fans to force air over/through the stack. Periodically take reading of the moisture content of the flooring as you monitor its movement towards the desired equilibrium point. By using a two-pin type moisture meter with insulated pins you can take reading at both the surface and the core of the wood flooring. This will enable you to tell the direction the moisture content in the flooring is moving, how quickly it is moving and when it has reached the desired equilibrium point. Once the flooring has reached the target equilibrium point it is now ready to be installed.

**Otter Creek**

T 1-800-981-3590 E [rabbott@ottercreekforestproducts.com](mailto:rabbott@ottercreekforestproducts.com) W [www.ottercreekforestproducts.com](http://www.ottercreekforestproducts.com)



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## FINISHING RECOMMENDATIONS

### Choosing a Finish

**Your finish choices will fall into one of the two following types:** A penetrating oil with or without wax. This type of finish is used primarily in commercial settings, as it requires a regular maintenance program. As most of our woods are exceedingly hard they do not need a protective film finish, which under commercial use eventually scratches and then requires re-sanding and refinishing to renew. For commercial applications, especially on dark woods where scratches show up lighter and in great contrast, a penetrating oil allows any wear spots to be simply re-oiled and buffed as part of the regular maintenance program already in place in commercial locations. This finish imparts a deep, rich, if somewhat flat, look to the wood. To build up additional sheen, wax is sometimes used which in turn requires periodic buffing to maintain.

### A surface film finish

This is a finish coating that sits on top of the wood forming a protective film. A surface film finish is the treatment of choice for residential use, as it requires little maintenance in low traffic conditions. Film finishes are available in a variety of sheens from matte to satin to gloss. **There are three types of film finishes:** Water Based Urethanes - These are the latest finishes out, are quick drying and are being formulated with increasing durability. They tend to inhibit the color change certain woods undergo over time so they are a good choice should you wish to inhibit this change. Water based finishes tend to leave the woods lighter in color and looking somewhat washed out. For those who prefer the richer look an oil based finish provides, a penetrating oil/stain may be applied first and then the floor can be top coated with water based urethane. Please refer to your finish manufacturer for their specific recommendations. Here are several we recommend. Bona Kemi offers a system that allows for their oil based sealer to be used first and then top coated with water based finishes. Bona Kemi can be reached at 800-872-5515 - [www.bonakemi.com](http://www.bonakemi.com). Berger Seidel offers a system especially formulated for exotic woods. Berger Seidel can be reached at 800-979-9272. Basic Coatings offers several water based systems. They can be reached at 800-441-1934 - [www.basiccoatings.com](http://www.basiccoatings.com).

**Oil Based Urethanes** - These are the old standby type of floor finishes now being phased out due to environmental concerns. However, they have proven durability and impart a rich look to imported woods.

**Acid Cure and Moisture Cure Urethanes** - These are two part formulations which include the "Swedish" type finishes and moisture cure urethanes, and are among the most durable of all the finishes. They are, however, quite odiferous when applying. Once again, after having made your finish choice, please test your finish choice on actual samples of the wood to insure compatibility prior to use on the floor itself.

**Finish Compatibility Issues with Exotic Woods:** In general, water based finishes adhere well to all our woods while oil based finishes may experience drying and/or color change problems when used on some of our woods. To date, we have experienced some finish compatibility problems when using certain oil based finishes on the following woods: Ebonies (all types), Rosewoods (all types except Caribbean and Patagonian Rosewood), Teak Walnut, Brazilian and Patagonian Walnut, African (mansonia) Wenge. This was derived from feedback from several of our customers who, when using certain finishes, experienced compatibility problems in the past. However, Otter Creek shall not be held liable for any finish complications on any of our woods, as it is the installer's responsibility to adequately test the compatibility of the proposed finish they will be using on actual samples of the flooring prior to installation. There are simply too many different finishes (and changes being made to existing finishes), on the market today for Otter Creek to keep current with them all.

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## **Exotic Wood Finishing Tips:**

All the woods listed above have experienced some drying issues when finished with certain oil based finishes - use extreme caution and thoroughly test the intended finish on ANY unfinished product first! We list a few of our most popular species below and recount installer feedback on finish issues. But this information shall be considered incomplete as it is merely compiled from feedback received. Furthermore it is impossible for Otter Creek to know how every finish interacts with our wood. It is the installer's responsibility to always test first!

**Brazilian & Patagonian Walnut** - has caused more finish problems than all the other species combined. This species has a number of alkalines in its chemical makeup which interfere with drying, adhesion and staining. While some oil finishes will dry on this wood, most will not. Also, some neutral oil finishes have reacted with these alkalines and turned red when used with this wood. Water based finishes are the safest bet.

**Australian Cypress** - there are some finish adhesion issues on the knots. Please check the finish you are using first on some hand samples and, once dry, try scratching the finish off the knots. If the finish fails try another finish. Otter Creek has researched several finishes and offers specific recommendations in some species.

**Brazilian Cherry** - to date, all finishes seem to work on Brazilian Cherry. Of special note: occasionally, certain trees have a high content of a white silica/sap, which is almost imperceptible to the eye in the freshly milled flooring, before finishing. This silica/sap shows up as faint spots - almost as if drops of skim milk had dried on the wood, once the wood is finished and then, as Brazilian Cherry darkens over time, these white spots (which do not darken) become more prominent against the now darker wood. Also, when finished with some oil based finishes, the finish may not harden fully above these spots, while with water based finishes it does fully cure. There have been many instances when using Brazilian Cherry where several, (to dozens), of boards in a floor may contain these spots, which we stress are in wood itself and not in the finish, even though it may look that way at first. The only way to avoid them is to visually spot them before installing and not use boards with them. Once installed and then found objectionable, the individual pieces would have to be replaced. Many installers/ finishers, the first time they run into this issue, think that by resanding the floor and recoating, that these spots will disappear but this is not the case as the "white spots" are through the entire thickness of the wood and cannot be sanded out. As this is a natural feature of the wood and is not visible when the wood is freshly milled, it is not considered a defect in solid unfinished wood. In prefinished products, it is possible to spot at least the stronger in color white spots once the finish is applied and these are graded out at the mill. However, the installer should still look for those spots not graded out and not install pieces with these spots.

**Santos Mahogany** - to date, all finishes seem to work on Santos. However, we have had some recent reports that Santos adversely affects the way the flattening agents in some oil based Satin finishes settle - leaving a blotchy finish. Also, in the summer, when you open the packs of flooring, many times there will be spots of oil which have bled out of the flooring when it got heated. This oil, to date as far as we know, has not adversely affected any oil or water based finishes.

**Southern Chestnut** - to date all finishes seem to work on Southern Chestnut. Peculiar to this species, some trees have large silica spots which show up as circles or half circles of slightly lighter colored material. We attempt to cut most of these out of color clear grade but allow them in the lower grades. When finished, the lighter contrast remains. It is a feature of this wood and if objectionable, care should be taken when installing this wood to select out any pieces exhibiting these spots and cut them out prior to installing as they will not "sand" out.

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