

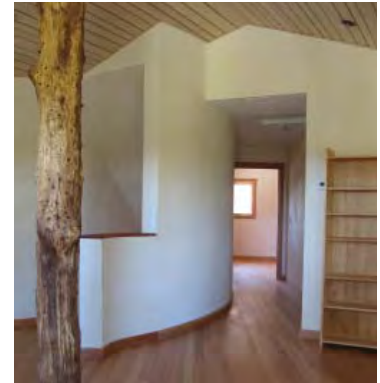


## Installing Solid Wood Flooring Over Warmboard

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The application of solid hardwood floors installed over a radiant heated floor is approved by many hardwood manufacturers and trade organizations. Warmboard installed with hardwood floors is a proven successful technology. If you would like to research this topic, please check out the following:

Radiant Panel Association	<a href="http://www.radiantpanelassociation.org">www.radiantpanelassociation.org</a>
The Hardwood Council	<a href="http://www.hardwoodcouncil.com">www.hardwoodcouncil.com</a>
National Wood Flooring Assoc.	<a href="http://www.woodfloors.org">www.woodfloors.org</a>
Launstein Floors	<a href="http://www.launstein.com">www.launstein.com</a>
Lumber Liquidators	<a href="http://www.lumberliquidators.com">www.lumberliquidators.com</a>
Carlisle Wide Plank Floors	<a href="http://www.wideplankflooring.com">www.wideplankflooring.com</a>



First and Always...

Follow the specifications and recommendations of the wood floor manufacturer.

Also follow all installation specifications and guidelines documented by the National Wood Flooring Association.

- The hygroscopic nature of wood is actually why wood moves.
- The changing atmosphere of humidity will cause **hardwood** to **expand** and **contract**.
- These changes that finish hardwood floors can experience from humidity swings are referred to as “**gapping**” and “**cupping**.”

### Avoiding Gapping and Cupping of Hardwood Floors

#### Type of Lumber

Use a wood species that is dimensionally stable. There are three types of cuts from the tree: Quartersawn, Riftsawn, and Plainsawn. Quartersawn is nearly all vertical grain lumber which is a better quality cut and dimensionally stable. Riftsawn is the next best choice. Anything wider than 3 1/4” is referred to as plank flooring. Anything narrower than this is called strip flooring. In general, strip flooring is more dimensionally stable. However, plank flooring has been installed over Warmboard successfully in many projects with widths of up to 12” on occasion.



## Acclimate Wood

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Low moisture content of the wood strips is an important condition for stability. It is crucial to acclimate the wood. Bring the wood strips to the job site and sticker them. This means pull them out of their boxes and set them up so air can circulate around them. Acclimation time can vary, but two weeks is recommended. The wood flooring should not be delivered on the job site until the interior plastering is completed and dry.

The radiant floor heating should be in good operation also before the hardwood arrives. It is best to operate the radiant floor system for a few weeks to help bring down the moisture content of the Warmboard Subfloor. This procedure should take place no matter what time of year the hardwood is being installed.

Humidity control on the job site is crucial in some areas of the country. It may be required to operate the air conditioner to control the indoor humidity a few days before the wood is delivered. Keeping the indoor humidity between 30%-50% will keep the wood stable.

The hardwood should not experience any large swings in humidity or temperature once it arrives on the job site. It is best to keep the ambient temperature in the house between 60° and 80° and keep the indoor humidity between 30%-50% range. To meet these specifications, it will be required to operate the radiant floor heating or the air conditioner during wood acclimation and after hardwood installation.

Hardwood floor installers will often test the moisture content of the subfloor and the wood finish floor prior to an installation. The moisture content of Warmboard should be at 12% or less. The moisture content of the finish hardwood should read within 4% of the Warmboard reading. The ideal reading of the hardwood would be between 6%-9%, however, this reading can vary in your climate zone.

It is difficult to get a proper moisture content reading from the Warmboard subfloor due to the aluminum skin. For an accurate moisture reading from the top side of the Warmboard panel, use a moisture meter with insulated contract pins that have hammer probes. An example of this meter is model J4 or J2000 which is available at [www.delmhorst.com](http://www.delmhorst.com).

Be aware of any moisture or humidity intrusion that may take place on a project. For example, a crawl space under Warmboard that is dry in the summer and experiences water intrusion in the winter months could cause large humidity swings and movement of the finished hardwood floor (gapping and cupping).



## Nailing Hardwood to Warmboard

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### Installing the Hardwood

Hardwood should be nailed directly to the Warmboard. The required moisture barrier is built into the panel itself: the aluminum. Installing the hardwood perpendicular to the tubing is the easier method. It is important to see the tubing as strips are nailed to avoid tubing damage. It is recommended to tongue nail at a 45 degree angle at 6" on centers and use 2" flooring nails. Occasionally, the strip flooring will run the same direction as the tubing. When this occurs, either glue with Bostik's Best ([bostik.com](http://bostik.com)) or face nail the strip.

### Operating the Radiant Heating System

We recommend circulating low water temperatures for the first few days of operation under newly installed wood floors. Then, gradually bring the water temperature up to the designed set point. For example, start with 90° water and after a few days, bring it up to 100°. Then, finalize a set point of 110°.

It is ideal for the heating system to be designed with a control strategy referred to as Outdoor Reset. This technology sets up a heating curve that will gradually change the delivered water temperature based on the current heat loss of the house. This is an excellent strategy for gradually heating hardwood floors.

**Important - Surface temperatures of the installed hardwood should not exceed 85°F.**

**Note:** Warmboard has a vapor barrier built into the panel, therefore no additional vapor barrier is required. Wood can be installed directly over Warmboard.