

# Your Ultimate Guide to Installing Engineered Hardwood Floors

One of the hottest design trends for residential architecture in 2018 includes the generous use of hardwood flooring throughout the home. Interior designers as well as homebuyers have re-discovered the warmth hardwood flooring brings to the interior of a home. It creates a sense of balance and synergy.

Residential builders have found that newer products such as engineered hardwood flooring, can be simpler and more cost-efficient to install than traditional hardwood flooring.

Engineered wood floors provide amazing alternatives to other types of flooring material, but they are not free from potential challenges.

We are going to discuss some best practices for installing engineered hardwood floors.

**Before we do that...**

**Warning!** Don't get caught up in the *"Dirty Three R's"* of construction...**Repair, Revise, & Redo!**

**You need to answer some key questions, to ensure that your flooring project will be successfully completed...right from the get-go.**

**Answer these simple questions first...**

- **Is an engineered hardwood floor the right choice for your project?** If the answer is no, then do not install it at all. Choose a better option.
- **Engineered hardwood products vary in size. They typically range from 3/8" - 1/2" thick.** For your project, decide which thickness is better...or does it really matter? Thinner material can be more cost effective. Thinner material can be advantageous if overall floor height becomes an issue. What are the best hardwood floors for a concrete slab? Premium grades have a thicker surface layer...can be sanded and re-finished.
- **Over what type of subfloor surface are you installing engineered hardwood?** You need to understand how to prepare the subfloor surface. All surfaces should be scraped and cleaned...free of all debris. Subfloor surfaces must be dry, solid, and structurally intact.

Concrete floors should be as level as possible in accordance with the manufacturer's tolerances (1/8" in 10' is a good industry standard).\* Concrete floors need to be at the manufacturer's specified relative humidity (RH) level according to the flooring you're

installing. This can be officially confirmed and documented in accordance with the ASTM F2170 standard for determining in situ relative humidity in concrete slabs.

If you are installing over a wood subfloor, it should be tested for moisture content or the relative humidity (RH) level. The subfloor surface should be firmly secured...no loose material. If necessary, you should replace or overlay the existing subfloor surface.

If you are installing over tile or linoleum, make sure that the surfaces are free from grease, oil or any product that could inhibit proper installation of wood flooring. Tile may need to be abraded (it's got to be prepped). And yes...the carpet must be removed. Please please...don't install this beautiful new floor over old carpet!

- **Should you float, nail or glue your engineered hardwood?** There are different factors that come into play. It depends on the type of surface over which you are installing the floor. It also depends on the environment where you live. Is this a retrofit or new construction?

You should install a floating engineered hardwood when you need the most flexibility. This type of installation works well at any grade level and over most types of subfloor surfaces. It is a great option if you choose to incorporate a radiant heat system.\* A floating engineered wood flooring installation on concrete can be an excellent choice if your subfloor is below grade. Think flexible solutions! (Don't forget the vapor barrier!)

Keep it simple...plan to nail down the engineered hardwood flooring when you have a wood subfloor. Makes sense, right? As long as you use the correct pneumatic nail gun, this technique provides the installer with a simple and controlled approach to installation.

Consider gluing the floor, when you are installing engineered hardwood over a concrete subfloor. Gluing provides a natural vapor barrier. Bear in mind that gluing hardwood to concrete provides you with a "very permanent" solution. Be sure you clearly understand the manufacturer's application instructions before you glue that floor.

- **Is there a "best glue for engineered wood flooring"?** Yes, the best glue is the product that is recommended by the manufacturer. Different types of glue work best with different types of flooring. Environmental factors also play their part. Avoid adhesives that are water-based, as their presence can promote expansion and contraction of wood products. A good adhesive will form a powerful bond yet remain flexible over the long haul.
- **Are you wanting to incorporate a radiant heat system into the hardwood flooring?** Engineered flooring might be a strong consideration. The manufacturing process creates a stable core that resists expansion and contraction from changes within the environment. Verify that the radiant heat system you are considering is compatible with wood flooring. Have you planned for installing your hardwood flooring in a way

that is compatible with a radiant heat system? (FYI...It is not advisable to nail down the floor if you are installing a radiant heat system).

- **Do you need to moisture test before you install?** It is important to properly test the moisture levels or the relative humidity (RH) of the subfloor surface (it does not matter whether the subfloor surface is wood or concrete). Test the wood flooring products you intend to install. Moisture is the enemy!
- **Do you have the appropriate space, time, and conditions to acclimate the engineered flooring?** After your flooring products have been delivered, it is recommended that serviceable conditions be maintained within the building for approximately five days...allowing the wood to acclimate. This means maintaining the ambient temperature between 60'-80' Fahrenheit...and the humidity levels between 30%-50%.\* The cartons of wood should be opened and placed as near the center of the room to promote adequate air circulation, while avoiding direct sunlight exposure. This helps to minimize expansion and contraction, reducing the opportunity for moisture-related warpage.
- **How much time, effort, and money will it take?** Engineered hardwood installation costs vary. Materials may range from around \$3.00-\$13.00/sq. ft (depending on the grade of product). Additionally, the cost of installation may vary between \$3.00-\$10.00/sq. ft (depending on the complexity of the design). If you are a homeowner, can you save money by doing your own installation? Perhaps, a better question you should answer...“Is my *“sweat equity”* worth the time or should I engage the services of a flooring professional?” Drill down and know your costs. This is where a flooring expert can become extremely valuable. Get 2-3 bids, then analyze the costs of labor and materials.

## **It is a lot of information to process. So...don't make assumptions!**

To optimize success during installation of your engineered hardwood flooring...adhere to the manufacturer's guidelines! Ok...you are thinking, duh! I get it! But think about this...how many times have you struggled because you chose to not read the directions? I know I have...too many times.

So, what is the best way to install engineered hardwood flooring? The answer is surprisingly simple. It depends on how closely you follow the guidelines in this next paragraph...

When installing engineered hardwood, it is critical that you understand and follow the manufacturer's instructions. ***Different products have different tolerance levels.*** Don't make this dangerous assumption...that all manufacturer's guidelines for preparing the surface and installing the product are alike. Be proactive...ask questions. **You know what you need and**

**you know when to raise that caution flag.** If you are weekend warrior...new to this process, it just might be a good idea to engage the assistance of a flooring expert. Your call.

**I have included a simple checklist of a few of the more popular ways to install engineered hardwood flooring. I am also including some best practices for each type of installation.\***

**Your very first step...know your costs! (this applies to any type of installation over any subfloor surface)**

**Glue it. The most permanent solution...are you ready for this?**

- Assess and prep the subfloor surface. Scrape and clean the surface...removing all debris.
- Unpack and acclimate...super important!
- Check to make sure that floor is level within a minimum of 1/8" over a 10' span.\* If needed, apply a floor leveling compound to mitigate variances.
- Conduct (RH) Moisture Testing of the subfloor as well as the engineered wood flooring, according to the ASTM F2170 standard.
- Carefully select a starter wall, taking into consideration the grain of the wood as well as how light may affect the perspective.
- Snap a line or use some sort of straight edge to ensure that boards are lined up straight. Allow spacing (typically a minimum of 1/2") for expansion on all perimeters, per manufacturer specifications.\* Consider using 1/2" spacers to maintain consistency.
- Trowel spread the glue in a pre-determined area. Avoid spreading wider than 36", as it may dry faster than you can install...(a potential messy situation)
- Be careful when laying out the flooring material. Ensure that joints have appropriate offsets. Avoid discernable patterns.
- Don't use a rubber mallet as it can damage the flooring. Do use a tapping block to fit the planks snugly.
- Secure the planks in place during installation to keep them from shifting out of alignment. Some installers will roll the flooring using a 150lb. wheel roller, while others choose to use a more simplified technique...five gallon buckets filled with water. The bottom line is that you want good contact between the flooring material and the adhesive.
- Avoid any heavy foot traffic for at least 24 hours.
- Always clean excess adhesive before it has a chance to dry.
- **Very important!** Every few rows, I advise doing what I call a "flooring install check". Are your rows straight and square? It is much easier to fix a couple errant rows than an entire room.

- Finish by installing baseboard and trim products.

## **Nail it. A fast & simple option...as long as you have a wood subfloor, and the right tools!**

- Assess and prep the subfloor surface. If the subfloor is damaged, then repair and replace as necessary to ensure that installation of the wood flooring will be successful. Subfloor surfaces must be clean and free of grease, drywall mud, and debris.
- Don't forget...Unpack and acclimate. Super important!
- Conduct (RH) Moisture Testing of the subfloor as well as the engineered wood flooring, according to the ASTM F2170 standard. Another must do!
- Choose the correct pneumatic stapler or "brad" nailer to install your flooring product.\*
- Install a vapor barrier - underlayment per the manufacturer's guidelines.\*
- Snap a line or use some sort of straight edge to ensure that boards are lined up straight. Allow spacing (typically a minimum of 1/2") for expansion on all perimeters, per manufacturer specifications.\* Consider using 1/2" spacers to maintain consistence.
- Follow the flooring manufacturer's guidelines for best practices on securing (nailing or stapling) the wood to the subfloor.\* Tighten using a mallet and wood tapping blocks.
- Be careful when laying out the flooring material. Ensure that joints have appropriate offsets. Avoid discernable patterns.
- **Very important!** Every few rows, I advise doing what I call a "flooring install check". Are your rows straight and square? It is much easier to fix a couple errant rows than an entire room.
- Finish by installing baseboard and trim products.

## **Float it. Can you say maximum flexibility?**

- Assess and prep the subfloor surface. By now, you should have a good idea what to do for either a wood or concrete subfloor surface.
- Reminder...Unpack and acclimate. Super important!
- Conduct (RH) Moisture Testing of the subfloor as well as the engineered wood flooring, according to the ASTM F2170 standard. Always, always do moisture testing!
- Install an appropriate underlayment according to the manufacturer's guidelines.\* (Don't try to re-invent the wheel here)
- Install your space blocks. Remember that 1/2" is typical...but again, check with the manufacturer.\*
- Set your chalk line mark, apply the adhesive, and lay the first board in place. When installing a floating floor, it can be tricky to snug up the tongue and groove joints. You might wish to use five gallon buckets of water to act as weights in order to keep the flooring in place (a word of caution...you already completed the moisture testing process, so don't spill)! As you add more rows, use blue painter's tape to keep the joints

tight. Using a hammer and block, you can gently tap the joints tight. Always bear in mind to keep the first row straight and square with the room.\*

- Wipe any excess adhesive with a damp, clean cloth before it has a chance to dry.
- As you move through the room...it is pretty much “rinse and repeat” the process.
- **Very important!** Every few rows, I advise doing what I call a “flooring install check”. Are your rows straight and square? It is much easier to fix a couple errant rows than an entire room.
- Finish by installing baseboard and trim products.

## **Don't forget Moisture Control! A key to ensuring that your wood flooring project does not become your worst nightmare!**

It is important to properly test the moisture levels of the sub-surface, as well as the wood flooring products you intend to install. It does not matter whether this sub-surface is wood or concrete. According to the American Society for Testing and Materials, “excessive moisture permeating from floor slabs after installation can cause floor covering system failures such as debonding and deterioration of finish flooring and coating and microbial growth.”<sup>1</sup>

## **What testing method provides the most accurate picture of moisture levels within the concrete slab?**

The ASTM F2170 standard is quite clear on the definitive choice for moisture testing of concrete slabs. “The *in-situ* method of testing (ASTM F2170) provides “relative humidity (RH) measurements at 40% of the slab’s depth,\* a position proven to more accurately portray the final RH levels of the slab if it were to be sealed at that point in time and the slab moisture allowed to fully equilibrate. In this way, in situ measurement provides a composite picture of overall slab moisture levels and provides the data necessary to make business decisions regarding flooring installations”.<sup>1</sup>

## **Maintaining moisture control is very important, but so is proper acclimation of the flooring products...**

After your flooring products have been delivered, it is highly advisable to maintain serviceable conditions within the building for up to five days. This means maintaining the ambient temperature between 60'-80' Fahrenheit...and the humidity levels between 30%-50%.\* Prior to installation, wood flooring needs to acclimate. The wood acclimates by being allowed to breathe within this controlled environment. This helps to minimize moisture-related warping as well as expansion and contraction.

## **Perhaps you are a seasoned flooring professional, or a Weekend Warrior looking to tackle a new project. No matter which you are...when in doubt cover yourself!**

I love Benjamin Franklin's axiom..."An ounce of prevention is worth a pound of cure". According to [USHistory.org](http://USHistory.org), Franklin crafted this axiom for fire prevention. I think that following what old Ben said might just prevent a *few fires from developing* during your flooring installation.

**Consult the manufacturer's specifications regarding moisture level tolerances of the flooring products as well as the subsurface!** These specifications can provide you with guidelines to help ensure that you have long-term hardwood flooring success.

Hardwood flooring manufacturers have a variety of installation protocols and suggestions for their products. Following their best practices will provide the best roadmap for your flooring project.

Happy flooring!

***\*Always check with the manufacturer and a flooring professional!***

### **References:**

- 1 - <http://www.hardwoodinfo.com/specifying-professionals/project-support/flooring-guides/installing-hardwood-floor-concrete-slab-2/>
  - 2 - <http://www.f2170.org/>
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