

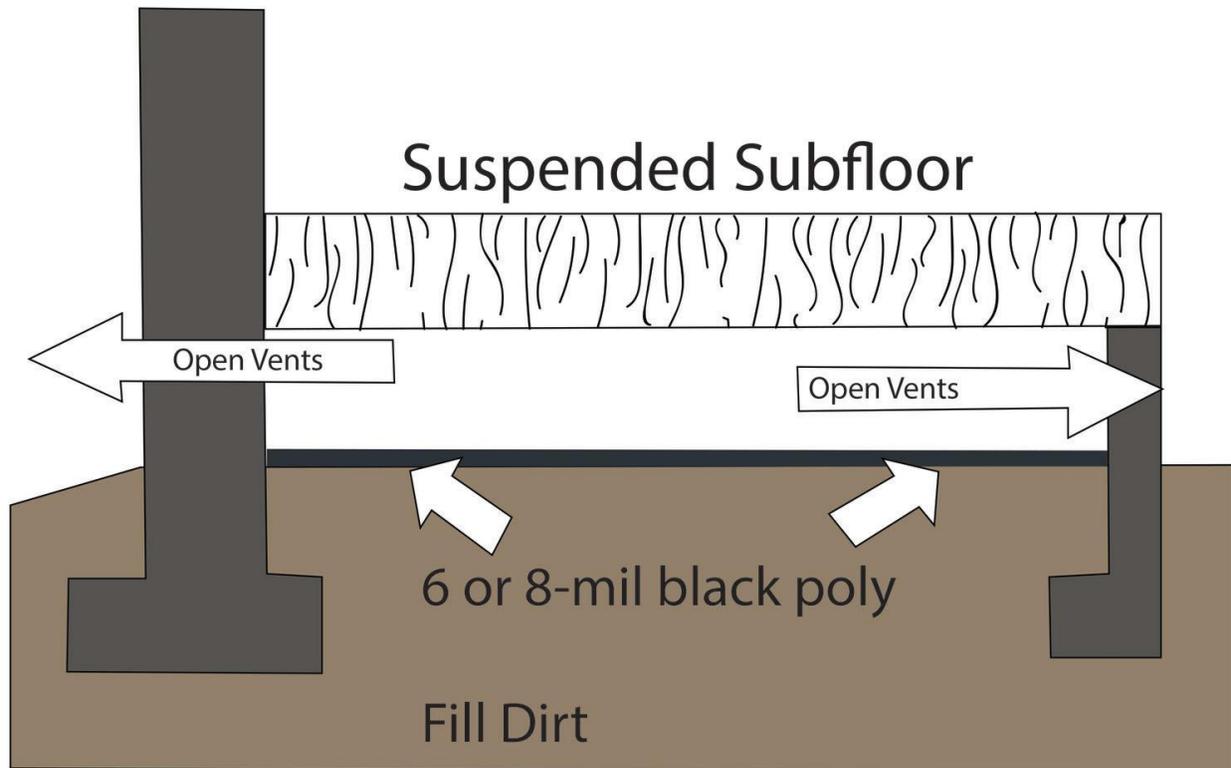


Solid hardwood installation instructions

Inspect the job site carefully before you begin the installation. Some conditions require specific installation methods. A level, flat, clean, dry, and firm subfloor is always necessary. All Aspen Spring Flooring products are manufactured in accordance with accepted industry standards, which permit grading deficiencies not to exceed 5%. If the material is not acceptable, do not install it and contact the seller immediately.

CLIMATE AND PRE-INSTALLATION PROCEDURES

- Material should be stored on the job site in rooms where installation is to occur.
- Garages and exterior patios are not suitable for storing wood flooring.
- Do not remove the product from the cartons.
- Do not open just the ends of the cartons.
- HVAC systems must be installed and operating before the flooring is delivered to the job site.
- All concrete, masonry, framing members, drywall, paint and other “wet” work should be thoroughly dry.
- Exterior Grading should be complete with surface drainage offering a minimum drop of 3’ in 10’.
- Crawl spaces must be a minimum of 24” from the ground to the underside of the joists. A ground cover of 6-8 mil black polyethylene film is essential as a vapor barrier with joints lapped six inches and taped. The crawl space should have perimeter venting equal to 1.5% of the crawl space square footage.



Make sure the room environment is set at a normal living range 55 – 80 degrees and 35 – 55% humidity. **Normal living conditions** should be achieved and maintained a minimum of fourteen days before flooring is brought into the living area for acclimation purposes. It should be maintained during and after the installation as well. **Proper acclimation is not a measurement of time; it is a measurement of moisture levels.** It requires taking moisture readings of the flooring and the sub-flooring. The flooring is acclimated and ready for installation when it has reached a moisture level consistent with the job site and **normal living conditions**. Using a moisture meter, test the subfloor and hardwood flooring for moisture content. Moisture content of the subfloor should be 6-12% depending on your area. When wood flooring is produced for the North American market, it has a moisture content of between 6-9%. For solid strip flooring (less than 3" wide), there should be no more than 4 percent moisture content difference between properly acclimated wood flooring and sub-flooring materials. For wide-width solid flooring (3" or wider), there should be no more than 2 percent difference in moisture content between properly acclimated wood flooring and sub-flooring materials.

The customer is responsible for maintaining normal humidity conditions (35-55%) within the home throughout the year. Aspen Spring Flooring. is not responsible for environmental conditions that cause excessive expansion and contraction.

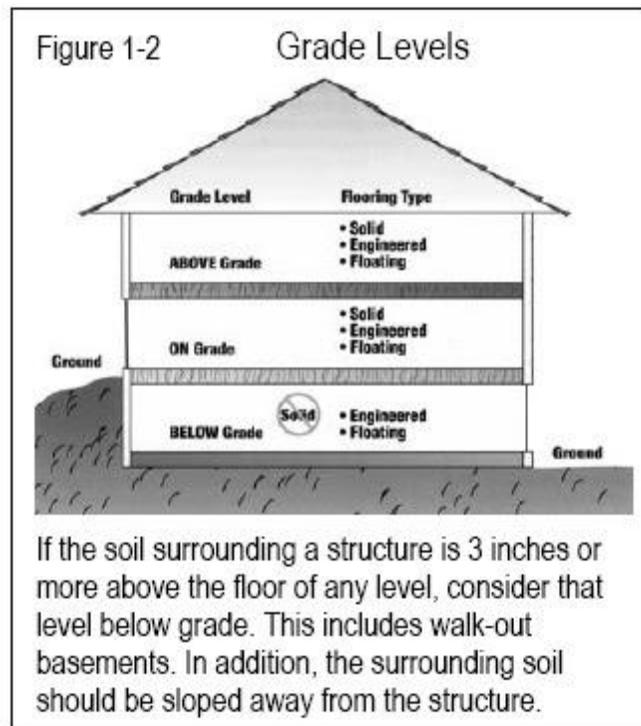
APPROPRIATE SUBFLOORS

1. Preferred Subfloor
 - 1) $\frac{3}{4}$ inch CDX plywood in 4 x 8-foot sheets
 - 2) $\frac{3}{4}$ inch OSB - PS2 rated in 4 x 8-foot sheets
2. Existing wood floors
3. Sheet vinyl or resilient tile as long as it is installed over one of the preferred subfloors.
4. Concrete slabs – Installation should be done by installer with substantial knowledge of N.W.F.A. (National Wood Flooring Association) recommended alternatives for installing over concrete slabs.

Radiant Heated Floors – Aspen Spring Flooring only recommends, and warranties certain engineered flooring be installed over in-floor radiant heated subfloors. Contact us for recommended floors. Our solid should never be installed over any kind of radiant heat system.

SUBFLOOR PREPARATION

1. Subfloors must be cleaned. This can be scraping or sanding the floor to remove all foreign materials.
2. Subfloors must be flat. $\frac{1}{4}$ inch in 10 feet. Sand all seams and high spots.
3. Subfloors must be free of loose areas and squeaks before installation can start. Renail or screw down sections that are loose or squeak. Replace any subfloor that is damaged.
4. The subfloor must be dry before you begin your installation.



Above Grade - Engineered and Solid floors can be installed.

On Grade - Engineered and Solid floors can be installed. Aspen Spring Flooring does not recommend gluing down solid wood on concrete slabs. Solid Bamboo can be glued with appropriate adhesives. *See Technical Letter*

Below Grade - Engineered floors can be installed. Solid wood and bamboo should not be installed below grade.

MECHANICAL FASTENER SELECTION

Aspen Spring Flooring only requires the use of flooring cleats with Strand Bamboo, Acacia, and Jatoba floors. Staples or cleats may be used for our other flooring, however, be aware that ALL cleats are made to install wood flooring, only certain staples are made exclusively for use with flooring. Using staples which are not directly intended for flooring can lead to loose and squeaking floors. This would be considered improper installation and void the warranty.

FASTENER LENGTH

For most installations of $\frac{3}{4}$ " Solid, Aspen requires fasteners to be a minimum $1\frac{3}{4}$ " length. If thicker sound deadening underlayment is used, longer fasteners will be needed.

TEST THE NAILER: Using one of the recommended type nail guns, test by fastening a sacrificial board to the floor. Check for surface damage in a **well-lighted area**, verify air pressure setting and tongue damage, make all adjustments and corrections before installation begins, remove the test board. **Tongue fracture** and **surface dimpling** during installation is common and can be minimized by (1) using the correct nail thickness, (2) using the recommended shoe adaptor, or (3) changing the angle of nail entry. Many installers will temporarily adjust the nailer angle by applying layers of duct tape to the bottom foot plate of the nailer. In addition, to reduce the occurrence of surface dimpling, the use of flooring nailers with a thinner **18-20 gage cleat nail** is recommended for bamboo especially the much harder **Strand Bamboo**. The use of the over-size base plate in order to distribute the driving force is encouraged. If, however, surface dimpling or tongue fracture still occurs, drilling pilot holes and hand nailing may be required. Pounding boards together during assembly with a rubber mallet may damage unprotected board edges.

Note: Only use flooring nailers that are fully adjustable and that engage the top profile over the tongue at the appropriate angle. Make sure that the flooring nailer is in good working condition and seats properly against the board to prevent top edge and surface dimple damage.

