SUBFLOORING: The Hidden Asset
The subfloor is as important to a floor’s longevity as is the actual finish, if not more so. Here’s what you need to know to do it right.

You can’t see the subfloor in a finished home, but that doesn’t diminish its importance. The subfloor is as responsible—if not more responsible—for the entire flooring project’s success as is the finish floor, so skimping on quality just isn’t worth the risk.

The fact is that today’s high-end finishes absolutely require a high-quality subfloor: large format ceramic tiles and thin engineered planks need a subfloor that’s stiff and consistent; wide-plank solid boards demand high moisture resistance and great nail holding ability. Builders who fail to meet these needs are risking costly warranty claims—from loose or cracked tiles to swollen and cupped hardwood.

Two obvious keys to a quality job are choosing a good subfloor material and using sound installation details.
GettinG the Subfloor riGht

The most common subfloor materials are plywood, conventional oriented strand board (OSB), and high performing engineered wood products like Huber Engineered Wood’s AdvanTech® flooring. Issues to consider when choosing between these products include moisture resistance, stiffness, and fastener holding power.

Moisture resistance. One of the most common causes of hardwood flooring problems is excessive moisture content in the subfloor at the time the finish floor is being installed. That moisture can be elevated by high relative humidity or exposure to rain or snow during construction. Possible consequences include swollen panel edges and degradation of the panels’ fastener holding ability. A finish floor that absorbs too much of this moisture can expand to the point of delamination.

While the overall performance of plywood is similar to OSB, there are some differences. For instance plywood tends to buckle, warp and delaminate when exposed to excess moisture, while OSB swells more around the perimeter. Manufacturers have tried to address perimeter swelling with edge seals, but site-cut edges lose that protection.

Fastener holding strength. How well a hardwood floor resists pulling away from the subfloor depends heavily on how well it’s fastened. The denser the subfloor, the more friction it places on the fastener, and the more force will be required to loosen the fastener. A good example is AdvanTech flooring, a high-density engineered wood panel with a 10% better calculated fastener holding power1 than plywood or OSB.

Stiffness. When comparing floor systems with the same structural framing, using a stiffer subfloor panel provides a more solid feeling floor system with a greatly reduced chance of squeaky wood planks and cracked ceramic tiles. Stiffness is a function of the panel thickness and type, as well as of the spacing between underlying joists or trusses. Lower spans and thicker panels make for stiffer floors. Stiffer floors make for more satisfied homeowners.

Choosing the right subfloor product could mean the difference between a successful job or one with some of the problems discussed above. A good insurance policy to help guard against failure is to choose a subfloor like AdvanTech flooring, which is engineered to exceed OSB and plywood standards for strength, stiffness, and moisture resistance, and has also been shown to absorb less water than plywood, reducing concerns about swelling and delamination. In fact, it’s guaranteed not to require sanding due to moisture exposure during construction for a full 500 days after installation, and has a lifetime warranty.2
A LOT IS RIDING ON YOUR SUBFLOOR.

Build with AdvanTech® flooring for award-winning performance you can rely on. Specifically engineered to combine industry-leading strength, superior moisture resistance and installation ease, AdvanTech floor panels are the FLAT OUT BEST™ for a quiet, stiff floor.

TOTAL PERFORMANCE IN ONE PANEL.
- High-density engineered wood for industry-leading strength and stiffness
- Advanced moisture-resistant resin technology applied throughout the panel
- Superb fastener-holding power helps keep floors flat and quiet
- Patented fastening guide for easier installation
- Precisely milled and extremely durable tongue and groove profile for easy installation
- Ranked #1 in quality every year for over a decade
- Backed by the reputation of Huber Engineered Woods

BACKED BY AN INDUSTRY-LEADING WARRANTY.

We support our AdvanTech products with a transferable limited lifetime warranty, along with a 500-day weather resistance guarantee.

ENGINEERED FOR LONG-LASTING PERFORMANCE.

CARPET
Fully sanded surface and high wood density help eliminate see-through subfloor seams and keep tack-strips firmly in place.

HARDWOODS
Fastener holding power and panel strength provide an exceptionally solid base for keeping hardwood flooring flat and quiet.

TILE & STONE
Industry-leading design stiffness and long-lasting durability help reduce the risk of cracked tile and stone.

References: 1. Limitations and restrictions apply. Visit advantechperforms.com for details. 2. ICC ES Evaluation Service Report ESR-1785. 3. 2012 edition of the AF&PA American Wood Council’s, Allowable Stress Design (ASD)/LRFD Manual for Engineered Wood Construction. 4. All testing was conducted by an independent IAS accredited testing facility in September 2008. This small sample testing was done in accordance with the applicable ASTM standards and test methods. OSB values are based on lowest, average and highest
INDUSTRY-LEADING DESIGN STRENGTH AND STIFFNESS.

AdvanTech® flooring brings together a superior combination of bending strength, stiffness and nail holding power, helping deliver exceptional structural performance for the flooring system and improving the integrity and quality of the entire home.

WITHSTANDS THE MOST EXTREME JOBSITE WEATHER.

AdvanTech flooring’s best-in-class water resistance defends against swelling, cupping and delamination. This helps improve cycle time by reducing costly rework, construction delays and homeowner callbacks.

PRECISION ENGINEERED TONGUE AND GROOVE.

The self-spacing tongue and groove profile is durable and consistent so that every panel of AdvanTech flooring installs quickly and easily.

AWARD WINNING QUALITY.

AdvanTech flooring has been rated #1 in quality every year for over a decade in Builder Magazine’s annual nationwide survey of builders.² No other subfloor panel matches the award-winning quality and performance of AdvanTech flooring.

water absorption levels of four competitors. Plywood value is based on the lowest, average and highest water absorption levels of three competitors. Competitor testing samples correspond to single manufacturing locations from one production date. 5. Builder Magazine’s 2011 Brand Use Study; 6,000 builders surveyed.
As mentioned above, Huber Engineered Woods has maintained an International Code Council Evaluation Service (ICC-ES) report for AdvanTech flooring for years. In addition to its ability to grab and hold fasteners (the technical term is "superior equivalent specific gravity"), the report also validates AdvanTech flooring's strength and stiffness compared to conventional plywood and OSB subflooring, which are only required to meet the industry minimum performance standard PS-2. The report documents that AdvanTech flooring's design properties lead to 62% better bending strength, and 28% better bending stiffness than PS-2 OSB panels, and 16% better bending stiffness than PS-2 plywood panels.\(^3\)

Huber Engineered Woods is the only manufacturer that maintains an Evaluation Service Report in this category, a testament to its confidence in the product.

Those results are more than just numbers. “To prove the strength and stiffness of AdvanTech panels, my sales representative asks potential homeowners to jump on the floor of homes they are considering,” says Glenview, IL. builder Joe Vargo. “You can actually feel the bounce in the other flooring, whereas AdvanTech flooring is very sturdy.”

**INSTALLATION TIPS**

A quality finished floor installation begins with the subfloor installation. When installing the subfloor, the preferred method is screws because they draw the flooring and joist together. Regardless of fastener choice, best practice is to apply a bead of subfloor adhesive to the top of the joists or trusses. Adhesives should conform to industry standard APA AFG-01 or ASTM D3498 for subfloor adhesives. Check the panel manufacturer’s instructions to ensure compatibility of the adhesive with the subfloor, but note that polyurethane or solvent-based adhesives often form stronger bonds with some types of panels.

It goes without saying that all fasteners need to engage the underlying framing, but in practice they often miss. For instance, if the subfloor is installed with a nail gun the installer may not know if the nail hit the joist. “Just because the subfloor looks like it’s nailed properly doesn’t mean it is,” one flooring installer told us. “If I go into the basement I often see rows of nails ¼ inch off the joist.” Using a product with a fastening guide can help minimize these problems. AdvanTech panels’ patented fastening guide helps builders get it right by showing the exact location of the joists or trusses below.

When it’s time to install the finish floor, check the subfloor’s moisture level. It's important to use a moisture meter made for wood\(^4\), not concrete, and to take enough readings: a minimum one reading per 100 square feet of subfloor, and more along walls and near windows and doors. With narrow strip flooring the moisture difference between the subfloor and the flooring should be no more than 4 percent; with wide plank flooring, the difference should be no more than 2 percent.\(^5\)

Moisture levels in the subfloor (and the rest of the framing) can be lowered by drying the interior of the structure with heat. Many builders use kerosene-fired torpedo heaters to dry interiors, but because one of the byproducts of combustion is moisture, the heated air needs to be vented to the outside. A better approach is to wait until the HVAC system is installed and running before installing the finish floor. If the home has a forced-air system, it can be used to dry the structure and vent the moisture. National Wood Flooring Association suggests running the system for at least five days before the flooring is installed.
Of course, choosing a subfloor with a lower rate of moisture absorption will greatly reduce the likelihood that the floor will need to be dried out.

Good installation practices also include prepping the subfloor to get industry recommended flatness. This includes sanding any swollen seams and installing appropriate underlayments—such as cement backer board for tile and a layer of 30 lb. felt for hardwood. Note, however, that while felt raises the coefficient of friction between the hardwood floor and subfloor it does not add moisture resistance. If you don’t get the moisture content right, the felt won’t help.

THE BOTTOM LINE

The point is that with today’s flooring products, out-of-sight is no longer out-of-mind. That’s why single- and multi-family builders have long relied on AdvanTech flooring for its recognized superior strength and stiffness, long-term moisture resistance, and superior fastener-holding ability. In fact, many hotels specify it for their building projects because they need a substrate that will withstand high traffic and high moisture. These pros understand that a high-quality subfloor will mean a better, more durable finish floor.

It should come as no surprise that AdvanTech flooring has been ranked number one in quality every year since 2002, according to BUILDER magazine’s annual Brand Use study. Those results are a reminder that builders who thrive in this economy understand that sacrificing quality isn’t worth the risk to their profit margins or reputation. And they know that quality is crucial not just where it can be seen—but more importantly, where it cannot.
AdvanTech® flooring is specifically engineered to outperform OSB and plywood panels. Featuring industry-leading strength and fastener holding power, AdvanTech panels deliver the quiet, solid feel of a quality-built home. And thanks to superior resin technology, AdvanTech panels resist the damaging effects of moisture such as edge swell, cupping and delamination so you can spend less time on costly rework and sanding. Voted #1 in quality for 12 straight years; AdvanTech flooring performs where you need it most.

See for yourself at AdvanTechPerforms.com