

Installation - Best Practices

Iron Woods® hardwood decking products are naturally durable and truly Green By Nature each having their own unique appearance and time tested performance values. Whichever Iron Woods® product you choose, this guide is designed to outline current best practices and installation options. The use of Best Practices is an installer’s guide to superior results and satisfied customers.

Best Practices - To the best of our knowledge this information is accurate: however due to the variance of products grown in nature, it is the sole responsibility of the installer to select the appropriate product for any given installation and site condition, check and follow local building codes and apply Best Practices in handling and installing Iron Woods® brand products. Installers should follow manufacturers recommended application and maintenance instructions when using proprietary finish and fastening products. To maximize the performance and beauty of Iron Woods® products please read this installation guide before you begin.



Wood Selection - Not all wood is created equal. Species and grade selection will have a significant impact on both the appearance and performance of any project. Select a product that meets the definition of “Naturally Durable” and “Fire Resistant” under International Building Codes like Iron Woods® Ipe, Garapa or Red Balau. Verify the product has been tested, engineered and certified by a licensed engineer.

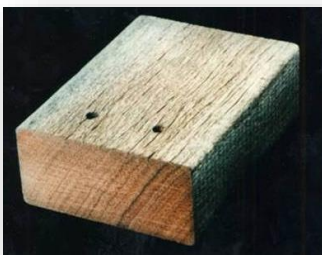
Grade Selection - At Timber Holdings we believe that an informed consumer is our best customer and an educated customer is good for business. It’s really very simple. We believe our customers have the right to select the quality of the products they order and that they are entitled to receive what they specify. Iron Woods grade options include Premium Select Architectural Grade and FEQ Commercial Grade. Grading Rules are available on our website. It is important to note that grade is directly related to structural performance.



Color and Grain Variation – Color and grain variation is typical of materials created by nature and recognized as part of the beauty that sets natural products apart from manufactured products. This is particularly true where wood products are concerned though some species have more or less color variation than others. This should always be considered when looking at wood samples as Iron Woods are supplied mixed grain and are not sorted for color. Some consistency in color can be achieved through either staining wood or allowing wood to weather or grey out naturally.

Handling and Storage - Iron Woods® are supplied as either Air Dried or Kiln Dried lumber depending on species selection and dimension and are typically used for decking and other exterior applications. Iron Woods® should be stored out of direct sunlight, kept clean, dry and off the ground prior to installation. Allow Iron Woods® decking to acclimate and stabilize to equilibrium humidity levels prior to installation to reduce post installation movement. Surface checking is a normal characteristic of all wood decking though much more limited in hardwood decking versus softwood decking as evidenced by these pictures of 25 year old Iron Woods versus 5 year old treated pine. Larger dimensional lumber sizes and timbers may show deeper checks during the acclimation process which typically reduce once the wood reaches equilibrium.

Wood Acclimation - Wood dries by movement of free water through fiber cavities, fiber walls and movement of water vapor through wood. Because wood is not homogeneous, it shrinks more along the growth rings (radial) than across the rings (tangential). Tangential dimensional change is often nearly twice that of radial movement for most wood species and (longitudinal) dimensional change is almost always negligible. These shrinkage variations cause drying defects like warping and checking. Shrinkage and swelling cease as the moisture content of wood approaches equilibrium to its environment. Species of wood vary in the rate and amount of shrinkage. To minimize shrinkage, warping, checking and splitting in the finished product, lumber must be acclimated to the middle of the range of expected in-use moisture content. This can occur by either air drying or kiln drying the lumber. The extent of drying defects depends on the species and the rate at which the lumber dries. For much of the United States, the point of equilibrium in an exterior environment is between 12% to 18%. For the seasonal EMC levels in your region consult the US Forest Products Laboratories website, www.fpl.fs.fed.us. Search for the document titled, "Equilibrium Moisture Content of Wood in Outdoor Locations".



Surface Checking – Surface Checking is a normal characteristic of all wood decking though much more limited in hardwood than softwood as evidenced by these pictures of 25 year old Iron Woods verses 5 year old pressure treated pine.



Kiln Dried 1x6 Ipe Decking at 14% Equilibrium



Air Dried 1x6 Ipe Decking at 14% Equilibrium

Iron Woods Ipe is dimensionally very stable green to dry, so warp, twist, and bow are not significantly impacted by selecting Air Dried vs Kiln Dried Ipe. Width consistency and reduced potential for cupping are the benefits to Kiln Dried or Pre-stabilized decking. The added benefit of KD decking is that it is free from the sticker marks, and dirt associated with Air Dried decking. Ipe accessories 2x, 3x, and 4x are only available Air Dried. IGarapa and Red Balau decking and accessories must always be kiln dried for dimensional stability.

Cutting, Drilling, Fastening - Use carbide tipped finish cut saw blades and course open bits. Seal all ends immediately after cutting with clear aqueous wax based end sealer in order to reduce end checking. Holes should be drilled as far from the board ends as allowable to reduce end splits from over torque of screw heads. The use of high speed drills that maintain consistent drilling speeds (corded) along with course open bits.



End Sealing - It is recommended that an aqueous wax end be applied immediately after cutting to reduce end checking on both air dried and kiln dried decking and lumber.

Preparation, Finishing, Maintenance, Cleaning and Restoration - When specifying wood products for exterior construction it is important to have realistic appearance expectations. When used outdoors wood products will not retain the appearance associated with their use in interior applications like furniture or flooring. Wood will not hold its original color over time without cleaning and reapplication of finishes. Wood by its nature will be subject to some limited amount of natural reaction as it cannot be predicted how a natural product like wood will behave in any given environment or conditions.



Natural Weathering

Left unfinished or over time without cleaning and refinishing, Iron Woods® will weather naturally to a silver grey patina. A first coat on all faces prior to installation with an oil or water based finish is not necessary but recommended even if you intend to let the deck weather.

New Deck Preparation

Always clean your deck using a Sodium Bicarbonate deck cleaner to remove dirt and debris from the wood surface. Follow the deck cleaning with an application of wood brightener to remove any stains or discolorations from weathering. Oxalic Acid based wood brighteners also improve finish penetration. Make sure you allow for wood to dry thoroughly before and between any and all cleaner, brightener or finish applications.



If you are sealing to maintain the color of your deck consider using cleaners from the same manufacturer as the sealer. Caution should be exercised when using Wood Brighteners containing Oxalic Acid, and only used if the deck will be refinished after brightening. Oxalic Acid converts lignin in natural wood species to sugar and can accelerate the mold process if left raw after cleaning.



Finishing -To maintain natural color use high quality oil based outdoor finishes with UV inhibitor, fungicide and pigmented tint. Test finishes on decking to determine their compatibility and appearance. Before application, brush and clean decking surfaces to remove dirt, dust and other airborne contaminants. Iron Woods® are dense, so apply thin coats allowing each coat to dry thoroughly or a sticky surface may result. Decking, pre-finished with a First Coat, may or may not, be available in your market. Check with your local dealer for availability of this service.



Finished Deck Maintenance - Mold and Mildew will grow on any surface on which a food source has accumulated. This includes plastic and glass surfaces. Mold or Mildew can be cleaned with deck cleaner containing Sodium Bicarbonate. Periodic cleaning and reapplication of finish (as needed), will enhance the appearance of your deck. The lowest maintenance approach we have found for maintaining finished decks is to treat them like you would a piece of furniture in your home. Simply clean your deck when it's dirty and wipe-on/wipe-off a fresh coat of finish. That's the beauty of wood. It can always be restored to its original appearance.



Spotting, Staining, Discoloration and Weathering - From time to time we get calls asking about black spots that appear on wood decking. These spots are caused either by mold or by a reaction of iron with the natural tannic acid found in all wood. This type of black staining on the deck can be removed with wood brighteners. Generally they are supplied in a powder or a concentrated solution form and are mixed with water. Unlike PVC or Composite decking, even under the worst possible condition, a hardwood deck can simply be sanded just like a solid wood floor and restored to just like new condition by prepping them like you would a new deck.

Painting –

Iron Woods® are difficult to paint. Painting is not recommended as natural woods need to breath. Paint is defined as, “Film Forming”, and locks in trapped moisture which can result in peeling and poor performance.

Stains are defined as, “Vapor Permeable”, and allow for natural equalization, and are less effected by seasonal changes in temperature and moisture.



Gluing

Iron Woods® are somewhat difficult to glue. It has been reported that marine grade epoxy. Polyurethane, PVA type III, and 2 part resorcinol glues have been successfully used with success in non-structural applications. Typically, in any gluing the wood should be dry and wiped with a solvent such as alcohol or acetone to remove surface oils, dirt or other conditions that may interfere with adhesion.

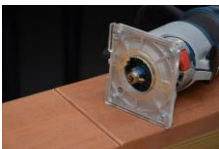


Deck Spans and Stringer Spacing

For residential applications, the live load requirement by most building codes is between 50 and 100 pounds per square ft. Based on this criteria Iron Woods® decking achieves minimal deflection at 16 to 24 inch stringer centers for nominal 1 inch (net .75 inch) and nominal 5/4 inch (net1 inch) thick decking. For new deck construction we recommend double stringers at 24” on center to facilitate superior connections at butt joints and minimized trim waste.



Ledger Joist and Stringer Flashing - Apply ledger joist and stringer flashing/membrane tape to eliminate the harboring of moisture at wood contact points and corrosive reaction between treated stringers and joist hangars. Follow manufacturer’s instructions for product selection and application techniques.



End Matching and Butt Joints

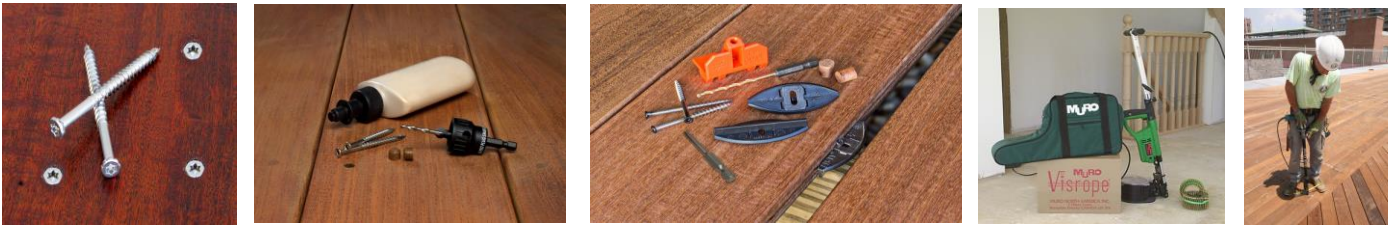
For the best appearance we recommend routing the board ends with a 1/8” radius. This prevents a hard edge from developing where the boards butt together.



Bow Removal – Bow is a natural characteristic of wood and can be easily removed during installation with the use of a deck wrench.



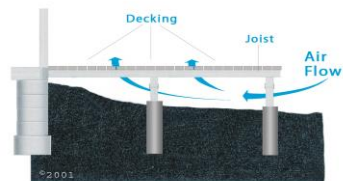
Sanding – Removing natural characteristics like reversed, raised or torn grain, scratches, sticker stain, water spots, finishes or other discolorations can typically be removed using orbital belt sanders with 80 to 100 grit sand paper. You may have to try a few different grits to determine what will work best



Fastening

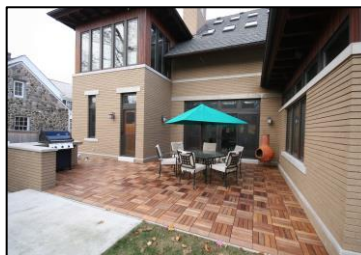
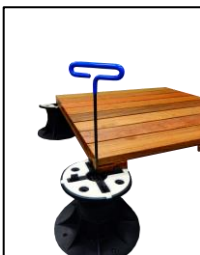
Not all fasteners are created equal. There are many fastening options and systems available in the market today. Whatever system you chose it is important to remember that once selected liability for fastening performance shifts to the fastener company, so consider your options carefully and follow the manufacturer's instructions. We leave it up to the installers to determine the methods on which they will stake their reputations.

DECK VENTILATION



Deck Ventilation

The importance of ventilation and air flow under and around wood decking in improving product stability and performance has been well understood. Adequate ventilation of the deck is essential for long term stability, durability and to minimize cupping. Air should always be allowed to flow freely from outside and under the deck. Roof Decks, At Grade Decks or Off Grade Decks which are completely closed off from air flow are by the nature poorly ventilated decks.



Poorly Ventilated Deck Solutions - To reduce the risk of cupping when air flow is restricted use 5/4x4 deck boards or Deck Tiles.

Roof Deck Solutions - Iron Woods Roof Deck, Deck Tile and Pedestal Systems are the ideal solution for Roof or At Grade Decks



Code compliance officials have a responsibility to make sure building products and construction methods will meet specific minimum design standards as outlined by Local and International Building Codes. It's the builder's responsibility to provide them with the documentation that verifies compliance.

Iron Woods products are tested, structurally engineered, certified and documented to meet International Building Code Standards for Durability, Grade, Load Ratings, Fire Resistance and Environmental Compliance. We don't claim it, we document it. Learning that your decking supplier is unable to document code compliance at time of inspection is an experience Iron Woods assure you avoid. Submittal documents are available at time of purchase, Make Sure you ask for them.

Timber Holdings USA does not assume any liability other than those outlined in Iron Woods® product warranties. Finishing, cutting, drilling, gluing, painting or installation of the product always confirms acceptability of material quality on the part of the installer at time of installation.

For a more comprehensive version of our Iron Woods Best Practices Guide and Technical Bulletins visit our PDF Library at

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