

INSTALLATION INSTRUCTION FOR OUTDOORS

APPLICATION OF THERMO-TREATED WOOD

Thermo-Treated Wood – is Real Wood

- Cut it, sand it, nail it, drill it, paint or stain it as you would practically any standard-grade lumber

- Avoid OVER-EXPECTATIONS

A unique thermal-modification process applied to lumber turns wood into a durable and beautifully looking product without any chemicals. The changes happen on the molecular level, but physically it is the same specie of wood. You can use Thermo-Treated Wood (TTW) like you would regular, non-treated wood. Cut it, sand it, nail it, drill it, paint or stain it as you would practically any standard-grade lumber, using the same standard tools. TTW is all natural wood, only drier (4% EMC) and slightly more brittle than un-treated wood. Unlike other exterior products, TTW is evenly modified throughout so you are assured of the same performance and look from board center to outside edge. No extraordinary care is needed after sawing and machining TTW - its characteristics and color are consistent throughout the product.

IMPORTANT: Avoid OVER-EXPECTATIONS related with TTW:

- ✓ The thermo-modification increases durability of the wood 25 times on molecular level, **BUT** to keep TTW “in shape” it still needs the care and maintenance as other natural wood products.
- ✓ We decreased shrinkage and swelling of TTW 5-15 times, **BUT** not have turned the wood into the stone – it still move slightly with relative humidity changes and can crack if not maintained properly.
- ✓ We turn the color of TTW into a beautiful brown exotic-like tint, **BUT** the brown color silver under the direct sunlight, as the color of any natural material will fade, therefore it needs UV protection.

Structural Applications of Thermo-Treated Wood

- TTW is NOT intended to be used for structural applications

TTW is NOT intended to be used for structural applications, such as joists, stringers, beams, support posts, columns or other load-bearing applications. Decking made with TTW must be supported by use of a code-compliant substructure.

Generally, the strength of wood has strong correlation with density. TTW has 10-25% lower density than un-treated wood of the same specie, and correlated lower strength values. The strength factor is decreased additionally in darker colors of TTW.

Ground contact and termite resistance

- The direct ground contact is not recommend for TTW

- The termite resistance of TTW is not improved significantly

Direct ground contact is not recommend for TTW. However, the usage of highest temperature treated material (darkest color) in ground contact, where structural performance is not critical and periodic drying of the surfaces is allowed, does not cause any significant deterioration to the material. This is especially apparent when the ground has good drainage and is made up of sand. Also, due to bacteria in the air or dirt carried in the rain, when TTW positioned near the ground, fungi can grow on the surface, as they grow on any surface (even on stone). However, this is on the surface only and can be removed by wiping or scraping. We recommend keeping thermo-treated products at least 12-18" above grade.

The termite resistance of TTW is not improved significantly. Although we remove the poly-sugars in the wood during the thermo-treatment process, termites will attack any wood and concrete based materials in their quest for a strong food base.

Cutting and Drilling

- Saws

- Drill Bits

Give special attention to saw and tool coarseness/fineness to better improve the end results. Saw speed will have an effect on the cut quality; generally, the higher the saw power, the better the cut quality.

Radial and Table Chop saws – Use blades (10") with greater than 30-tooth carbide tipped for optimal results.

Circular saws – For 7-1/4" circular saws, use a 36–40 tooth carbide tipped blade for optimal results – fewer teeth will result in a coarse cut, especially at board ends. Also, as with most wood products, be sure to use sharpened blades to ensure clean cuts.

Hand saws – Standard wood handsaws also work well with TTW. Pay careful attention to the saw tooth count and blade type for optimal cutting performance. Fine tooth crosscut saws work best.

Drill Bits – Use standard wood-working bits; however, extra attention should be taken when drilling near edges to avoid wood splitting. Using sharp bits and attention to tool pressure will help improve end results. Coarse, flathead borer bits will tear and split the wood; we recommend standard, round drill bits.

Installation



Correct



Incorrect

Use standard residential deck code to determine on-center space for decks and stair treads. Deck boards shall extend across a minimum of three joist bays and terminating board ends shall lie on joist centers. A 1/4" gap between adjacent deck boards is recommended as TTW will install dry (~4% MC) so minimal shrinkage will present. All installations should follow all local municipality code regulations.

Boards orientation - orient all deck or siding boards for application to what is commonly referred to as "bark-side up". The growth rings curve should be pointing downward. Improper orientation will not be covered by the warranty.

Fastening

- Pre-drill holes

Standard exterior grade coarse-thread screws work well with TTW. Keep in mind the following tips:

- ✓ Pre-drill holes to avoid splitting at edges.
- ✓ Fasteners should be applied a minimum of 5/8" from board edge and a minimum of 1" from the board ends.
- ✓ Face-fastening with screws provides the optimum holding conditions; however, hidden fastening systems can be used. Hidden systems that screw into the deck board and joist edges work well.

Nailing

For deck surface nailing 16D common is the maximum nail size allowed and a 10D common is the minimum. Spiral-shank nails may provide additional holding power. Nails must be exterior-grade (e.g., stainless steel or hot-dipped galvanized). Use hammers gently due to the increased brittleness of TTW products.

Coating

- Seal all cut ends

- Apply coating to ALL surfaces

Coatings are not necessary with TTW products to protect the wood from **decay**; however, to protect TTW from the natural weathering process, cracking and the silvering of product due to direct sunlight and weather exposure, a high-quality sealant with UV protection should be used. We recommend a semi-transparent or clear oil - or solvent-based finish, which will allow the beautiful wood grain of TTW to show and protects TTW products against checking.

TTW accepts a variety of wood finishes well; however, due to molecular modification which varies from specie to specie and depending on the treatment degree, we recommend checking the results of coating applications to be sure that it created a protective screen on the surface of product. Usually a second coating leads to the best results.

For optimal results against checking:

- ✓ All cut ends need to be either wax sealed (Anchorseal is one example of this) or in the event that you are staining TTW, apply that same oil-based, deep penetrating stain to all cut or exposed ends. All board ends should be tightly butted to reduce end checking and water from moving rapidly in/out of the end-grain.
- ✓ Apply coating to ALL surfaces of the wood BEFORE installation.



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Maintenance

- Cleaning

- Coating

- Maintenance intervals

Cleaning - Specific cleaning requirements for TTW may vary with climate, use, and traffic. However, because TTW is real wood, we advise against the use of harsh chemicals or power-washing as they can damage the finish of any wood product.

Coating - Treatment process gives wood a rich, exotic wood-like color, which will silver over time if not treated with a UV-resistant sealant or stain. Because of the wood's natural state, some boards may check, or crack, more than others. This checking has no effect on the long term durability of the product, nor does it affect TTW resistance to rot and decay. To enhance the product's performance against fading and checking, we recommend a semi-transparent or clear treatment.

Maintenance intervals - Because of the increased dimension stability of TTW, the finish works better on the surface of TTW (the finish on non-treated wood cracks due to the movement of wood and allows water to penetrate). However, the maintenance intervals may vary with climate, use, and traffic, and also depends on the maintenance recommendations of the coating manufacturer. Periodic inspection of the surface is recommended for optimal product performance and beauty.



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