INSTALLATION INSTRUCTION FOR OUTDOOR APPLICATIONS OF THERMO-TREATED HARDWOOD

Thermo-Treated Wood – is a Real Wood

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

- Enjoy a beautiful color and grater workability of TTW

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 drier (4% EMC), lighter in weight and a little more brittle than non-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.

Main features of TTW:

- ✓ The thermo-modification increases durability of the wood 25 times on molecular level, but it still needs the care and maintenance as other natural wood products to keep its original performance.
- ✓ We decreased shrinkage and swelling of TTW 5-15 times - it is still might be moving slightly with relative humidity changes, but proper oiling is eliminating this.
- ✓ The color of TTW has a beautiful brown exotic-like tint. As any natural material TTW will fade under the direct sunlight, but proper oiling with UV protection will keep its original color. Color changing is not reflecting on durability of TTW.

Structural Applications of Thermo-Treated Wood

- Not necessary to use TTW

Usually TTW is not necessary to use in applications, when you don't see the beauty of TTW. Also, due to decreased strength, the TTW is not used 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 (16" span for ¾" and 1" thick products, especially with JEM).

Generally, the strength of wood has strong correlation with density. TTW has 10-25% lower weight and density compared to non-treated wood of the same specie, and correlated lower strength values. The strength factor is decreased additionally in darkest colors of TTW.

Ground contact and termite resistance

- Allowed direct ground contact in non-structural applications

- The termite resistance of TTW is improved significantly

Direct ground contact is allowed for highest temperature treated material (darkest colors), where structural performance is not critical and periodic drying of the surfaces is allowed. 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 2" above grade.

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Cutting and Drilling

- Saws

- Drill Bits

Pay 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

Use 16” on-center span for decks, 12” for stairs treads and 12” for decks and stairs in commercial applications. 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. In addition, all installations should follow all local municipality code regulations.

Fastening

- Pre-drill holes

Stainless steel coarse-thread screws work well with TTW. Keep in mind the following tips:

- ✓ Usage of self-tapping screws providing the best result, otherwise pre-drill holes if use nails and screws.
- ✓ Fasteners should be applied a minimum of 5/8" from board edge and a minimum of 5/8" 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

- Pre-drill holes

Pre-drill holes if use nails. 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 (stainless steel is the best). Use hammers gently due to the increased brittleness of TTW products.

Coating

- Seal all cut ends with oil

- Apply coating to ALL four surfaces

www.hempshield.net

www.protegowoodcare.com

Coating is not necessary with TTW products to protect the wood from **decay**; however, to protect the TTW beautiful performance (silvering and surface checking 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 be shown.

TTW accepts a variety of wood finishes well; however, due to molecular modification which varies from species to species and depending on the treatment degree, we recommend monitoring 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.

Shown brands are tested with TTW and not darkening the wood. Usually water-based solvents are darkening and hiding a grain structure of TTW.

For optimal results:

- ✓ All cut ends need to be either wax sealed (Anchorseal is one example of this) or apply the same oil to the exposed ends.
- ✓ Applying coating to ALL surfaces of the products BEFORE installation leading to the best results.

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. 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 oil 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.