



ARBOR
WOOD CO

THERMALLY
MODIFIED
TIMBER





ARBOR WOOD Co. IS THE INNOVATIVE CHOICE IN MODIFIED WOOD APPLICATIONS.

Arbor Wood Co. (AWCo) offers thermally modified timber for a variety of outdoor and indoor applications. AWCo Thermally Modified Timber (TMT) is domestically-sourced and sustainably harvested wood which undergoes a value-added thermal modification process. The result is high-quality, performance-driven timber, which sustains the natural beauty and design element of wood.

Thermal Modification is a unique craft which alters the dimensional composition of timber to create a material which is functionally and visually successful in a range of residential and commercial markets. High heat and steam replace chemicals to fundamentally modify the cell structure of wood, making it one of the most natural, chemical-free ways to extend the service life of a wood product. The wood is less absorbent resulting in an increase of material stability with less warping/cupping and minimal expansion/contraction. Importantly, the organic compounds are cooked out of the wood removing the food source for rot and insects. The conversion of sugars to a nonfood source also turn the timber a darker, richer through-color, providing an appealing, refined aesthetic.

AWCo TMT is a sound choice in environments typically unforgiving to wood, such as exterior decking and siding or interior flooring, or where a low-maintenance wood product is desired.

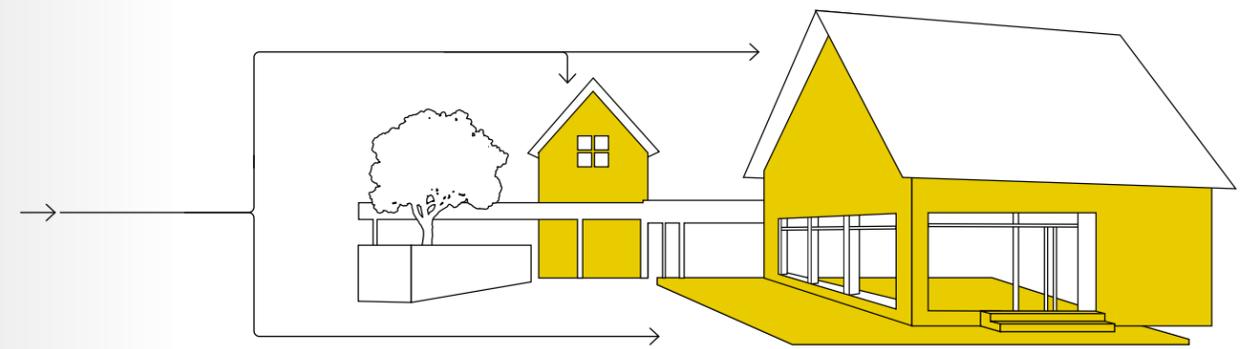
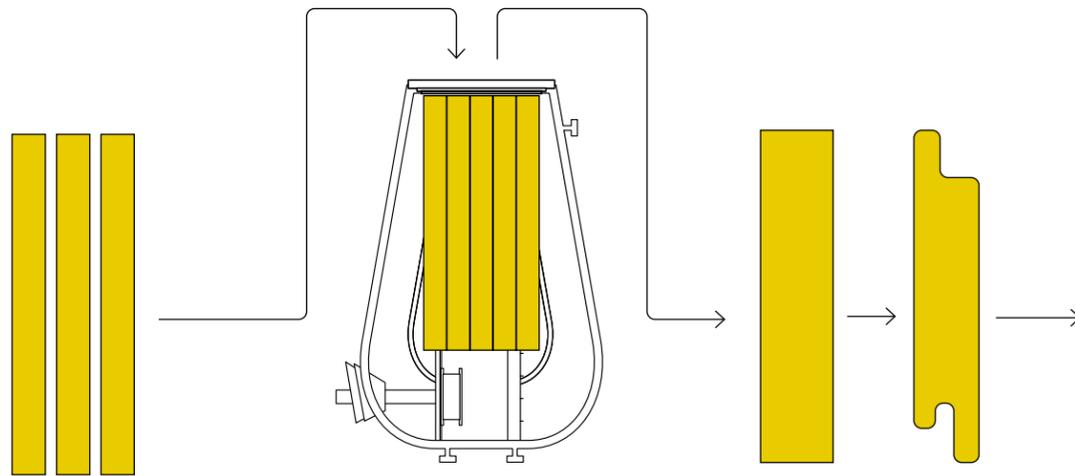


WE

Our process begins with procuring domestically-sourced and sustainably harvested wood. After the wood is kiln-dried to a consistent moisture content, the next step is to thermally modify the timber, which broadens its service life and gives the native species an exotic, darker look. Finally, the material is milled to profiles that work for exterior decking and siding, as well as interior flooring.

AWCo offers siding, decking and flooring in several species and aesthetics. Please call AWCo to discuss customizations to fit your project.

YOU



MODIFY

When the wood is introduced to the thermal modification process, it is subjected to high heat and steam in a controlled environment which then changes the dimensional composition and appearance of the timber. AWCo offers two temperature options: 190°C and 210°C.

MILL

The TMT (Thermally Modified Timber) raw stock is then processed regionally into siding, decking and flooring products.

DECKING

AWCo has an offering of decking profiles at exceptional exterior grade. Our clients can choose from our standard tested timber species as well as a lower 190°C or higher 210°C modification temperature to fit the project need.

SIDING

AWCo TMT siding uses domestically-sourced and sustainably harvested wood. A performance-driven and attractive material, TMT is a premium option to the exterior wood siding market.

FLOORING

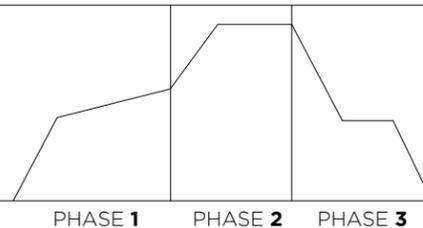
AWCo TMT is a unique choice for custom interior flooring applications. The modification brings a darker, richer through-color, combining an appealing aesthetic with high performance for residential and commercial flooring.



TMT

Thermally modified timber goes through a 3-stage kiln process which uses high temperature. It takes 24-72 hours to complete a full cycle. During the high temperature phase, the wood is protected from combustion by using steam. In that time, the moisture of the wood is almost completely removed and added back to a precise amount. The natural acids and sugars are modified from the extreme heat which changes the physical structure of the wood. The wood's ability to absorb moisture is declined making it less prone to rot and decay. The equilibrium moisture content (EMC) of the wood decreases. This means the swelling and shrinking of the wood material due to moisture variations can be reduced by up to 60% as compared to unmodified wood. The most apparent change is that the wood darkens throughout, giving domestic wood the look of desirable imported wood.

The 3-phase process uses only heat and water to change a wood species ability to withstand the elements, making it one of the most natural, chemical free ways to extend the life of wood products.



PHASE 1: TEMPERATURE INCREASE

The temperature in the kiln is raised rapidly to around 100°C (212°F), affecting the natural composition of the wood. Steam is introduced to prevent the wood from checking in the high heat. The moisture content of the wood is reduced from 15-20% down to nearly zero.

PHASE 2: THERMAL MODIFICATION

One peak temperature is resulting in a light cook, 190°C (374°F), and the other is the dark cook at 210°C (415°F). The higher and longer the heat, the darker the wood becomes throughout. At these high temperatures, the lack of oxygen within the chamber is what prevents the wood from burning.

PHASE 3: COOLING & RE-CONDITIONING

Temperature is reduced by introducing steam. The steam cools and conditions the wood to a moisture content of 4-6% improving dimensional stability.

LIGHT ASH OIL FINISH

LIGHT ASH RAW

LIGHT ASH AGED NO FINISH

COLOR CHANGE

The color of wood will darken in tone through the thermal modification process. It is important to understand that it is a natural product and the grain, original color variances and characteristics of the wood still are present. The wood is darkened throughout so any sanding or refinishing will bring the wood back to the original color without staining. In an exterior environment TMT products do move to gray when unfinished. Finishes with UV inhibitors help slow this process similar to non-modified products. The color change of the thermally modified wood is especially useful in the flooring industry since it can be used to emulate tropical wood species.

PROPERTIES

- Dimensional stability is increased, minimal expansion and contraction
- Enhanced appearance: darker, through-color and more even tone throughout
- Increased exterior performance: less water absorption and less susceptible to rot
- Able to be glued, painted, finished
- Milling and workability similar to standard wood
- Lightweight
- Process is chemical free, only heat and steam are used
- Is a value-added, new application for domestic wood



WHEN

AWCo products are an excellent natural option for interior and exterior wood applications. Thermally Modified Timber (TMT) is suited for siding, flooring, decking, window and door manufacturing and much more. TMT material has limited expansion/contraction and can have stains and paints applied like standard wood products.

- **MADE IN USA:** AWCo products are domestically sourced and harvested in the United States.
- **INTERIOR & EXTERIOR GRADE:** TMT is suitable for both interior and exterior applications.

WHERE

Thermally modified wood can be used in an array of commercial and residential applications. Popular applications are in external environments where moisture and humidity would compromise a lesser-grade material.

- **DECKING**
- **DOCKING**
- **BATHROOM INTERIORS**
- **SIDING**
- **WINDOWS**
- **SAUNAS**
- **INTERIOR FLOORING**
- **DOORS**

Improved aesthetics and durability are met with AWCo Thermally Modified Timber. Our material can be used in place of more expensive tropical wood species and is a domestic, environmentally conscious option.

SUSTAINABILITY

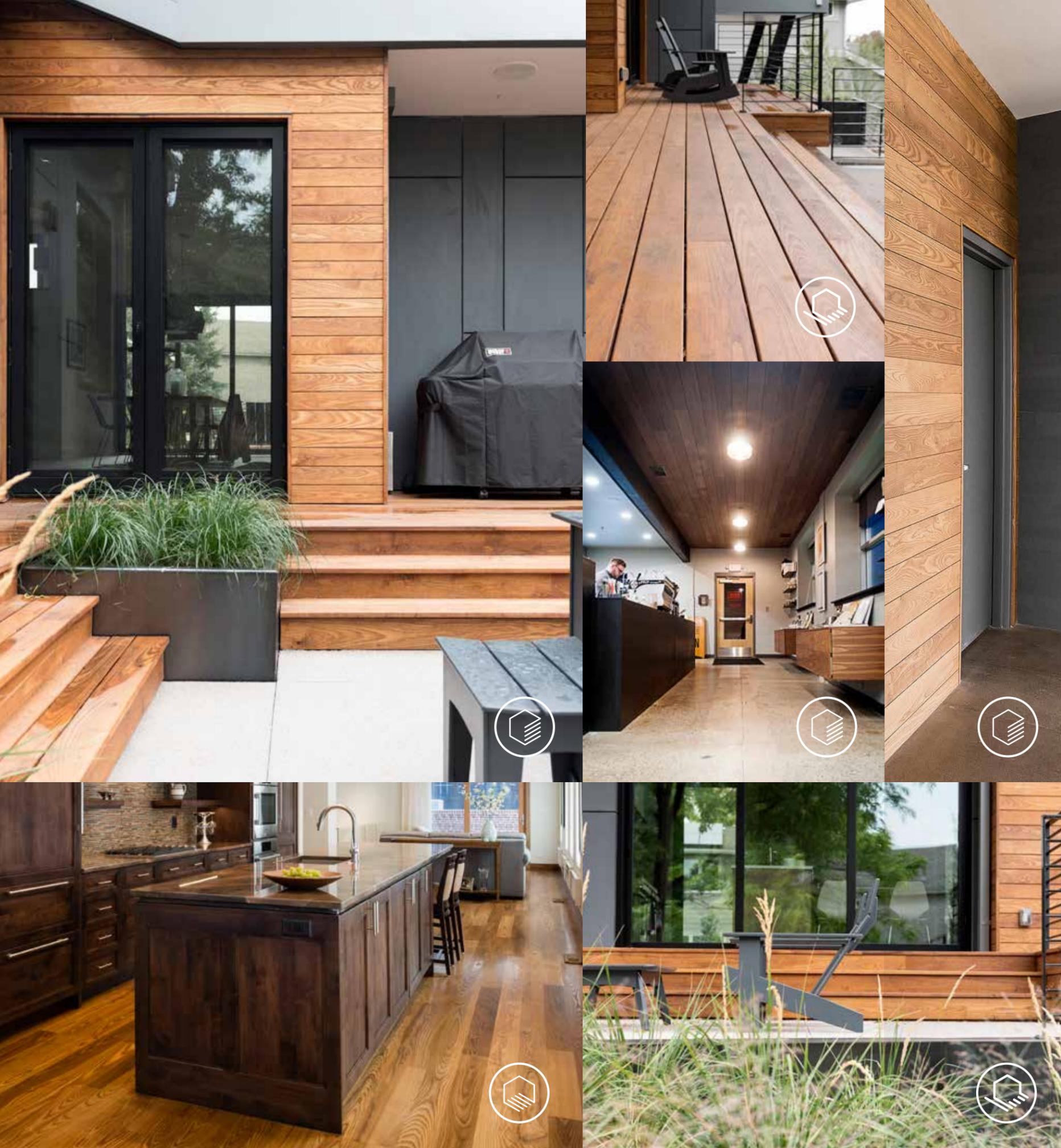
AWCo is a premier choice for sustainably harvested thermally modified timber.

- **DOMESTIC:** AWCo is based in Duluth, Minnesota. We work with our domestic partners to offer our clients uncompromised quality in harvest, modification and millwork.
- **CHEMICAL FREE:** Thermally modified wood is an alternative to exotic woods and standard-treated woods. It attains superior exterior qualities without the use of toxic chemicals.

STABILITY

After the wood has been thermally modified its properties are more stable than standard kiln dried wood. The swelling and shrinking of wood due to moisture variations can be reduced by up to 60%.

- **DECAY RESISTANT:** The risk of fungal attack is greatly reduced because thermally modified wood no longer contains sufficient nutrients.
- **INCREASED DIMENSIONAL STABILITY:** Thermally modified wood is less susceptible to cupping and warping with changes in relative humidity.
- **ENHANCED APPEARANCE:** Thermally modified wood will have darker through color tones. Color will vary with cook temperatures and species. Like standard wood, thermally modified wood, if left untreated, will turn a weathered gray color over time.



SIDING

AWCo TMT siding uses domestically-sourced and sustainably harvested wood. The TMT process allows wood typically not used in exterior applications to be successful because of its compositional change. A performance-driven and attractive material, TMT is a premium option to the exterior wood siding market. *Tongue & groove or hidden rainscreen clip profiles are available.



DECKING

AWCo has an offering of decking profiles at exceptional exterior grade. Because the Thermally Modified Timber is less prone to water absorption, expansion/contraction and rot, woods not typically seen in outdoor applications are able to perform with a long service life. *Profile offered is a hidden fastener with clip.



FLOORING

AWCo TMT brings the features and benefits of the Thermally Modified Timber (TMT) process indoors as a flooring. The darker, through-color look more typical of an exotic species is combined with the reduced expansion/contraction benefits of TMT. *Our standard, durable hardwood flooring T&G profile works with most flooring nailers. An unfinished sand-in-place profile and pre-finished micro bevel option is available as well.

FINISHES

It is recommended to finish TMT with an exterior UV protective surface finish. TMT products have minimal expansion/contraction properties and can be finished with standard products, such as paints and clear coats. Clients should expect slightly longer dry times because of the non-absorbing nature of the material.

Modified wood will turn a weathered grey color over time when exposed to exterior elements and left untreated.

All AWCo — With all AWCo products, whether the application is for interior or exterior use, please connect with the Arbor Wood Co. team directly for suggestions on finishes for your specific project.

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