



ARBOR  
WOOD<sup>co</sup>

THERMALLY MODIFIED WOOD





# Responsibly produced thermally modified wood.

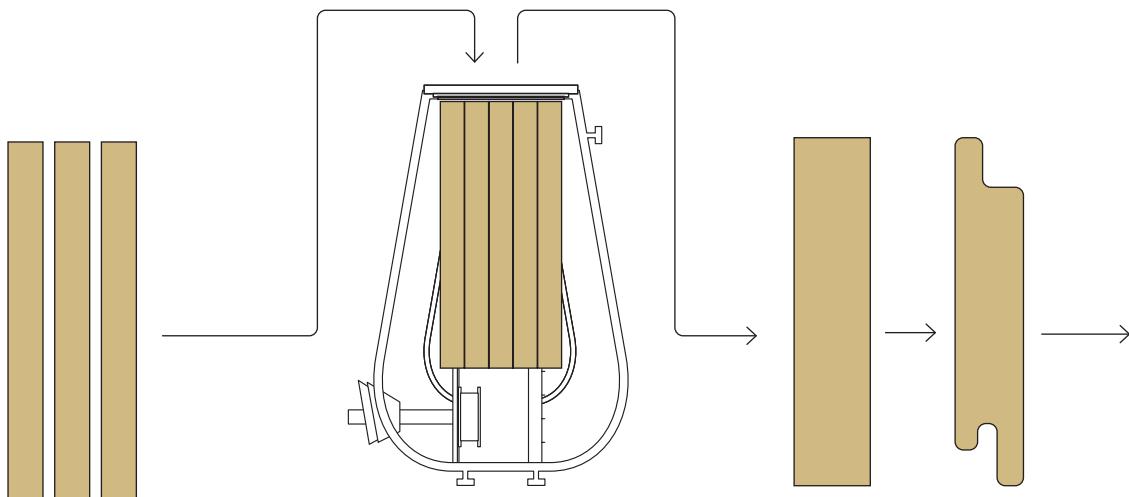
WHERE INNOVATION MEETS BEAUTY.

Arbor Wood Co. produces **thermally modified wood** for a variety of outdoor and indoor applications including siding, decking and architectural millwork. Our process begins with a select grade of domestically grown and responsibly harvested timber which undergoes a thermal modification process using heat and steam. The result is a high quality, performance driven material which sustains the natural beauty and design element of wood all without the use of harsh chemicals.

Thermal modification is a unique craft which alters wood at the cellular level to create a material that is functionally and visually successful in a range of residential and commercial applications. High heat and steam replace chemicals to fundamentally modify Arbor Wood's hemicellulose, 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 increased material stability with less warping/cupping and minimal expansion/contraction. Importantly, certain organic compounds are eliminated during modification thus removing the food source for rot and insects. The conversion of sugars to a nonfood source also turns the timber a darker, richer through-color, providing an appealing and refined aesthetic.

# Our process begins with a select grade of domestically grown and responsibly harvested wood.

Prior to modification, our rough-sawn timber is hand selected, graded for quality, and kiln dried to a consistent moisture content. The wood then enters our modification process where high heat and steam improve the dimensional stability, durability and visual tone of the material. Once modified, these timbers are milled into finished profiles where any undesired characteristics such as checking or end-cracking are also removed. The result is a beautiful board which is straight, true and ready for use.



## MODIFY

When the wood is introduced to the thermal modification process, it is subjected to high heat and steam in a controlled environment which changes the dimensional composition and appearance of the timber.

## MILL

Once modified, the timbers are milled into finished siding, decking and dimensional lumber profiles. Milling after modification ensures that any stress marks resulting from the process are removed for beauty and consistency.

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



## DECKING

Arbor Wood decking is available in a range of species and profile options. Our modified hardwoods prove an eco-conscious alternative to exotic hardwoods, and our softwoods a more natural and durable alternative to chemically-preserved lumber.



## SIDING

Arbor Wood siding is produced from domestically sourced and responsibly harvested wood. We produce a range of wood species, profile and finish options, including our take on traditional Japanese charred cladding.



## TRIM & MILLWORK

From windows and doors to interior flooring and even landscape furnishings, Arbor Wood is available in a range of dimensional lumber profiles to allow for a higher performance natural wood alternative.

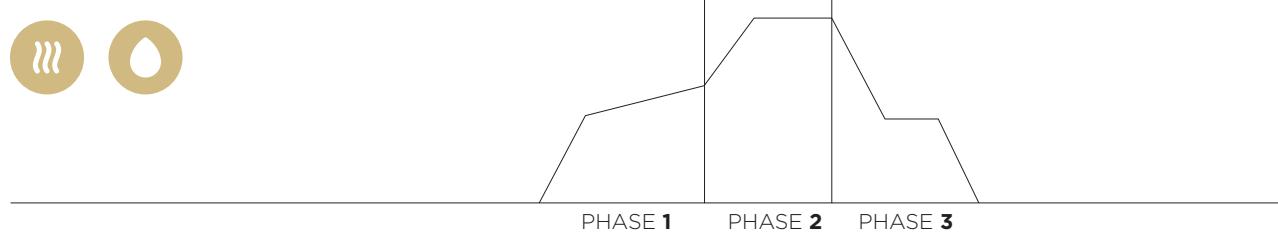
# Thermally Modified Wood

Thermally modified wood is produced using heat and steam in a 3-stage kiln process to improve the durability, stability and aesthetics of many wood species.

The thermal modification process affects the hydroxyl groups within the hemicellulose of the wood, and impacts the material's relationship with water. Bound water stored within the cell walls contains naturally occurring sugars which serve as a food source for decay. Breaking the hydroxyl groups eliminates this bound water and makes Arbor Wood less prone to mold, rot and fungal decay. The wood is also less likely to absorb new moisture and has a reduced equilibrium moisture content. This means that swelling and shrinking due to fluctuations in temperature and humidity can be reduced by up to 60%. The lower moisture content reduces the overall weight of the wood and helps support the general workability of Arbor Wood.



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



## PHASE 1: TEMPERATURE INCREASE

Kiln temperature is raised rapidly to reduce moisture content down to nearly zero and eliminate bound water from the hemicellulose in the wood. With this, the food sources for mold, rot, fungal decay and insects are also removed.

## PHASE 2: THERMAL MODIFICATION

The second phase is where peak temperature is hit and thermal modification occurs. The hydroxyl groups within the hemicellulose are broken, thus rendering the wood resistant to water absorption. Naturally occurring sugars are converted and give the wood a slightly darker, richer appearance.

## PHASE 3: COOLING &

**RE-CONDITIONING**  
Temperature is reduced and steam introduced to complete the process. The steam cools and conditions the wood to a final moisture content of 4-6% improving dimensional stability.



ARBOR WOOD ASH : RAW



ARBOR WOOD ASH : RAW  
AGED 6-12 MONTHS



ARBOR WOOD ASH : RAW  
FULLY WEATHERED

## COLOR CHANGE

Thermal modification changes the naturally occurring sugars in the wood resulting in beautiful, rich tones that extend through the full thickness of the material. Since Arbor Wood is still a natural product, the grain and unique characteristics of the wood remain. In an exterior environment, Arbor Wood will move to gray when unfinished and the application of UV inhibitors help slow this process similar to non-modified products.

## SPECIES

Arbor Wood siding, decking and dimensional lumber is produced in several species, profiles and finishes. Please contact us to discuss customizations to fit your project.



ASH, NO FINISH



PINE, CLEAR OIL FINISH

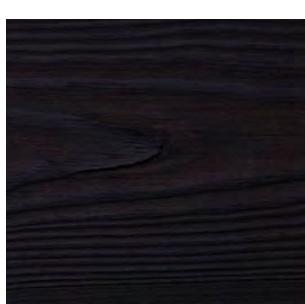


BURNED, BLACK OIL FINISH

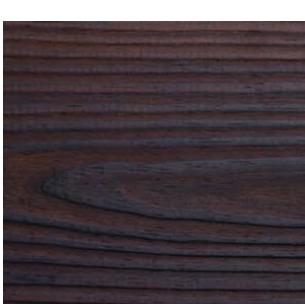


*Product of the Year, 2021  
Editors' Choice, 2021  
Best in Category, 2021  
- Architectural Record*

*ADEX (Award for Design Excellence) Platinum Award, 2022*



BURNED, BRUSHED,  
BLACK OIL FINISH



BURNED, BRUSHED,  
CLEAR OIL FINISH



BRUSHED, GREY OIL FINISH



BRUSHED, WHITE OIL FINISH



## Sustainability

Arbor Wood is a premier choice for sustainably harvested thermally modified wood. Improved aesthetics and durability are met with Arbor Wood Co. Thermally Modified Wood. Our material can be used in place of more expensive tropical wood species and is a domestic, environmentally conscious option.

*Thermally modified wood is an alternative to both exotic and chemically treated woods. It achieves superior exterior performance without the use of toxic chemicals.*



### MADE IN USA

Arbor Wood products are manufactured domestically from trees sourced and harvested in the United States.



Arbor Wood Co. is based in Duluth, Minnesota.

## AT A GLANCE

- Dimensional stability is increased
- Enhanced appearance
- Increased exterior performance
- 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 process which can be applied to many domestic wood species



## 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%.

**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 richer tones that extend throughout the entire thickness of each board.*



Thermally modified wood can be used in an array of commercial and residential applications.

#### POPULAR USES

- *Decking*
- *Siding*
- *Interior Flooring*
- *Docks*
- *Architectural Millwork*
- *Windows & Doors*
- *Bathroom Interiors*
- *Saunas*



#### SIDING

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#### TRIM & MILLWORK

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#### FINISHES

It is recommended to finish Arbor Wood with an exterior UV protective surface finish. Our 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.

*With all Arbor Wood 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.*



ARBOR  
WOOD CO.

**Arbor Wood Co.**

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