

PRODUCT SPEC SHEET

Thermal Oak

Exceptional strength and decay resistance for demanding exterior applications.

Carbon Smart Wood's Thermal Oak is made from salvaged red oak that would have otherwise been wasted or underutilized. Red Oak (*Quercus rubra*) is a mainstay of American hardwood forests, but has lost its public demand significantly over the past 40 years. Through thermal modification, we give this underutilized species a second life that competes with tropical hardwoods and plastic outdoor materials.



Technical Specifications

Application	Lumber & Trim, Decking, Fencing, Siding
Use	Exterior
Expected Service Life	20 year warranty
Durability Class (Rot Resistance)*	Class 1 (Very Durable)
Termite Resistance	✓
Sustainability (Estimated Carbon Impact)**	1096.0kg CO ₂ e /cubic meter
Janka (lbf)	1,220 lbf
Average dried weight (lbs/cubic ft)	~43.8 lbs/cubic-ft (pre-modification)
Fire Rating	Class B (26–75) moderate
Modulus of Rupture (MOR)	~11,500 psi

*following TRADA standard scale

**Derived from the Global Wood Density Database ([GWDD v2](#)) using species-level basic density, converted to CO₂e using standard carbon fraction and molecular weight ratios. Total biogenic carbon stored, expressed in kg CO₂e/m³ (kilograms of carbon dioxide equivalent per cubic meter), represents the amount of CO₂ removed from the atmosphere by a tree during its growth and locked into its woody biomass, calculated per unit of volume. In the context of tree species and wood products, this metric measures the "carbon sink" potential of the timber—essentially, how much carbon is stored rather than emitted. ([USDA](#))

Application Specifications

Thermally Modified Oak (Quercus rubra)	Lumber & Trim 	Decking 	Fencing 	Siding 
Use	Exterior	Exterior	Exterior	Exterior
Thermally Modified Treatment	• Chemical Free • Increased Stability • Decay Resistant • Enhanced Appearance	• Chemical Free • Increased Stability • Decay Resistant • Enhanced Appearance	• Chemical Free • Increased Stability • Decay Resistant • Enhanced Appearance	• Chemical Free • Increased Stability • Decay Resistant • Enhanced Appearance
Finish	Unfinished	Unfinished or Clear	Unfinished or Clear	Unfinished or Clear
Grain	Mixed Grain	Mixed Grain	Mixed Grain	Mixed Grain
Texture	Rough	Smooth	Smooth	Smooth
Profile	Lumber: Rough Trim:  S4S	 E4E  HF	 E4E  S4S	 T&G  T&G-G
Lengths (ft)	Standard material is sold RL with a random mix of lengths from 8-12'. Please inquire for specific lengths if necessary.*	RL	RL	RL
Nominal Width (in)	RW	4", 6"	4", 6"	4", 6"
Nominal Thickness (Quarters)	4/4, 5/4, 6/4, 8/4	5/4, 8/4	4/4	4/4

*RL and RW are used to denote 'random length' and 'random width' respectively.

Dimensional Stability & Thermal Modification Process

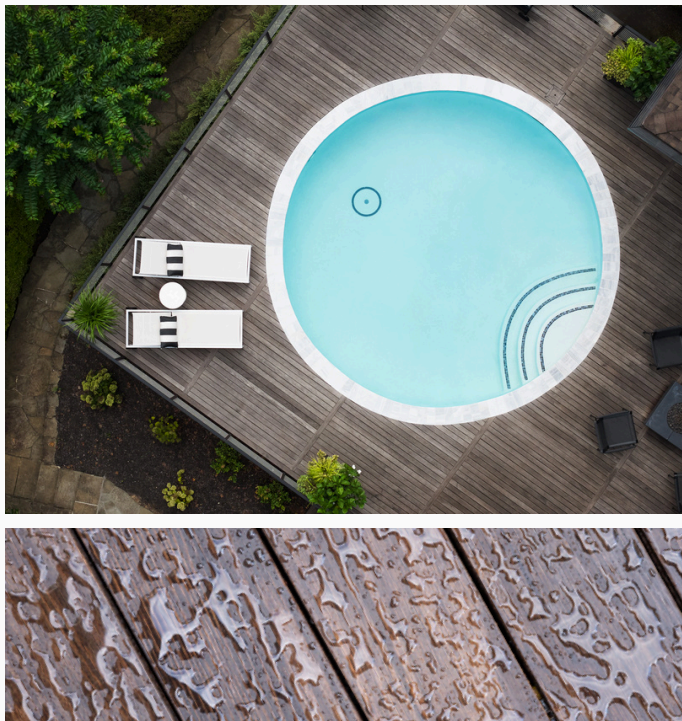
Thermal Oak is heat-treated to remove moisture, sugars, and starches from the wood, significantly reducing its susceptibility to rot, decay, and insect activity. This process enhances long-term weather resistance, durability, and dimensional stability without the use of chemical preservatives – making it suitable for exterior applications where strength, longevity, and performance are critical. ([BioResources](#))

Other Species Available

Application	Lumber & Trim 	Decking 	Fencing 	Siding 
Species	Thermal Poplar Silky Cedar Fallen Douglas Fir	Silky Cedar	Thermal Poplar Silky Cedar Fallen Douglas Fir	Thermal Poplar Silky Cedar Fallen Douglas Fir

Variation and Color Change

Thermal modification deepens the wood’s color and increases dimensional stability, allowing Thermal Oak to perform reliably in exterior environments for decades. Natural variation in tone, from lighter to darker browns, is inherent to the thermal modification process and is influenced by wood density and kiln conditions.



How We Stack up Against Other Brands

Brand	# Species Offered	Sourcing	Thermal Treatment Method
CARBON SMART™ WOOD Carbon Smart Wood	10	Domestic U.S.	Natural (heat & steam)
THERMORY® Thermory ¹	8	Northern U.S. & Canada and Northern Europe	Natural (heat & steam)
accoya  Accoya ²	1	New Zealand & Tennessee (U.S.)	Chemical ☠️
ke bon y  Kebony ³	2	New Zealand	Chemical ☠️

1. [Thermory website](#) 2. [Accoya website](#) 3. [Kebony website](#)



About Us

Cambium is connecting and modernizing the wood economy. We provide high-performance, sustainably sourced wood products – including our flagship Carbon Smart Wood™ – all sourced and manufactured in the U.S.

Samples and spec support are available.

[Contact us here](#) for current availability, pricing, and lead times.