

Cooking Wood for an Exotic Look

By Bill Esler Added: August 03, 2010

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Keystone Wood Specialties offers thermally treated ash, poplar and red oak (shown unfinished). It darkens during thermal treatment.

Several suppliers at the IWF 2010 International Woodworking Fair will be exhibiting products related to thermally treated wood. Basically the systems use specialized kilns to treat either hardwoods or softwoods, making them insect- and water-resistant and weatherproof without the use of chemicals. In the process, wood darkens, allowing certain lighter wood colors to substitute for darker and sometimes more expensive species.

Unlike pressure treated woods, the thermal modification process doesn't impregnate the wood with chemical preservatives.

Jartek, based in Lahti, Finland, offers its ThermoWood kiln to thermally modify woods at high temperatures (approximately 200C). Thermal modification can be started from pre-dried or green timber. A software controller enables tailored recipes for different species of wood. Jartek will be at IWF 2010 in Booth #6056.

Arnold, PA-based Westwood (IWF Booth #7036), says woods treated in its process, designed specifically for hardwoods, can be used in extreme conditions — outdoor rooms, boat interiors, heavily trafficked wooden staircases, saunas and even sinks. The intense heat used in the kiln converts the molecular structure of the wood fibers, says Westwood President Igor Dachenko.

Kreamer, PA-based Bingaman Lumber, which will be at IWF Booth 4546, says the woods it offers that have been converted through the Westwood Thermo-treatment process provide 25-year outdoor durability.

This allows the use of softer, less expensive, more readily available hardwoods in applications to which they were not previously suited, says Bingaman. Treated poplar, ash, red oak and soft maple varieties used outdoors will resist decay or insect infestation. Bingaman says Thermo-treated hardwood can be used for decks, siding, stairs, mouldings, parquet, cabinets, furniture, wall panels, floor, windows and doors.

"With Thermo-treated lumber, furniture makers, cabinetmakers, manufacturers and others who use hardwood, now have new options for aesthetics and outdoor applications," says Chris Bingaman, president of Bingaman, one of a few U.S. lumber providers with the Westwood Thermo-treatment kiln onsite to produce the treated hardwoods. "This product offers cost, availability, and ecological advantages versus kiln-dried hardwoods and exotic species," he says. "It also stacks up very well against pressure-treated softwood lumber."



FROM LEFT: Bingaman Lumber photos show the color transformation as unfinished poplar, maple and pine darken during the thermal treatment process.

Steam Treated to Last

The chemical-free process involves thermally modifying lumber at about 400F for 14 to 16 hours in an oxygen-free environment. Replacing oxygen inside the kiln is steam, which keeps the wood from burning. When the heat treatment process is complete, the hardwood is transformed. Among the changes:

- Increased water resistance
- High degree of dimensional stability
- Lighter in weight
- Heat conductivity reduction
- Highly rot-resistant

Another characteristic is a rich brown color thermo-treating imparts through the wood. Unlike stain, Thermo-treated wood won't reveal lighter color underneath if it is worn down, chipped or scratched. Whenever it's machined, turned or otherwise worked, that same color is always visible. In heavy usage areas (hotels, resorts, government buildings), continual wear will not expose color variations.

In some ways, Thermo-treated wood can be marketed as a green product, says Bingaman, since no chemical additives go into the process, making it an attractive alternative to pressure-treated lumber. According to Danchenko whose Westwood Corp. provides the process used by Bingaman Lumber, Thermo-wood is more durable than pressure-treated wood. Danchenko says it features dimensional stability and a lifecycle for hardwoods treated with it 15 to 25 years.

Thermo-treated hardwood can also replace rare, exotic hardwoods with more plentiful American hardwoods, says Bingaman.

From a manufacturing standpoint, Thermo-treated wood can be machined, cut and worked using existing tooling and processes. Indoor furniture could be used outdoors. "The process helps a lot of people in the business," says Bingaman. "Furniture craftsmen, cabinetmakers and so on can improve existing products and expand into new markets."

Keystone Wood Specialties, Lancaster, PA, (IWF Booth #4244) offers three thermally modified species — poplar, red oak and ash — though it offers thermally modified versions of any species (even FSC certified). Lewis Lumber Products (IWF Booth 4834) carries thermally modified FSC-certified poplar lumber and moulding. Lewis Lumber says thermal processes remove organics that contribute to decay.