

By Chris Parkinson and Lauren Fleer

# GREEN CABINETRY 101

When your customers demand green cabinets, how do you determine which ones are actually good sustainable options? **Here's how.**

As a cabinet manufacturer located in Chicago, it seems that every time I turn the corner, I'm looking at another billboard for a new eco-friendly condominium project. Green construction is booming, as is the rest of the LOHAS (lifestyles of health and sustainability) domestic market segment.



According to Andrew Zolli of Brooklyn, N.Y.-based Z+ Partners, "There are 63 million consumers eating organics, driving hybrids, and buying fair trade morning lattes, making up 30 percent of the American market. They are not necessarily wealthier than other Americans, but have proven themselves willing to spend up to an astounding 20 percent premium on clean and green products over non-sustainable alternatives."

There are also an increasing number of manufacturers and developers trying to capitalize on this growing market, and many are getting away with an old trick: cosmetically modifying unsustainable products to market them as green.

"Manufacturers are making green claims we would question," says Tom Kelly, CEO of Neil Kelly, a \$27 million remodeling firm in Portland, Ore. The company, the nation's first green certified cabinetmaker (having built green since 1988), uses Agraboard and PureBond by Columbia Forest Products, along with FSC-certified hardwood in its cabinets.

But Kelly admits that builders may find it tough to analyze what is and isn't green. He uses cabinet hardware as an example, noting that he's not sure he's ever seen an alternative to the good old metal hinge. "It's the strength of

the overall story," he reminds. "It's [the components of] the product [compared] against the downsides. What is it made of? How far did it have to travel?"

The following is a primer on what green cabinetry is and how you can ensure what you are offering your buyers is a sustainable product. Consumers interested in indoor air quality and resource management should know the origin of all cabinet materials, understand the finishes used, and know where the cabinets are manufactured. Obviously, local manufacturers should be chosen whenever possible to minimize fossil fuel emissions, not to mention freight costs.

## The Box

The number-one distinguishing feature of a green cabinet is that the box material is free of urea-formaldehyde. Urea-formaldehyde resins are used in conventional plywood and particleboard adhesives and can off-gas formaldehyde gas, a carcinogen, into homes. Formaldehyde gas can affect people in various ways, but when present in the air at levels at or above 0.1 ppm, acute health effects can include watery eyes, nausea, coughing, chest tightness, wheezing, skin rashes, and burning sensations in the eyes, nose, and throat.

Manufacturers have been quick to address the formaldehyde issue, with many, such as Columbia Forest Products, a manufacturer of hardwood plywood and hardwood veneer, replacing formaldehyde with a soy-based protein binder—and at no upcharge, notes John McIsaac,

Left Photo: Fabienne Augustine Right Photo: Photo Design



Neil Kelly designer Therese DuBravac reworked the kitchen of this 1970s Portland, Ore., ranch home, adopting a contemporary Northwest style touched by Asian influences. Neil Kelly Cabinets' Skyline Vertical cabinets feature natural alder, Agraboard structure, mica inserts and a low-VOC finish. As for the rest of the kitchen, the countertops are Cambria, and the backsplash is locally made tile with recycled glass insets.



a spokesperson for the Portland, Ore.-based company. “We’re moving away from formaldehyde [in plywood] and decided not to pass the cost to customers, and it’s not been that difficult. We are forcing the industry into a new way of thinking,” he says. According to McIsaac, Columbia Forest Products has extensively researched the cost of using formaldehyde-free products and found that in a \$25,000 remodel of an average-sized kitchen, 15 panels of formaldehyde-free plywood would be used with an added cost of only \$100. “So who wouldn’t do it?” he asks.

But not all wood products have made the shift that quickly or cost-effectively. “Because there are more adhesives in particleboard and MDF, it is more expensive [to go formaldehyde-free], so manufacturers offer them at a premium,” explains McIsaac, which in turn makes it more difficult for green builders to offer such cabinets at comparable prices to cabinets that use regular formaldehyde.

Formaldehyde-free box material is the minimum you should expect in a green cabinet, and there are two categories of formaldehyde-free box material available, each with its own advantages and disadvantages.

> **Particleboard and medium density fiberboard (MDF).** Particleboard and MDF cabinets cost less than plywood. Most particleboards also incorporate some recycled content, but the quantity varies. The biggest drawback to these materials is that they are heavier and more fragile. They crumble once exposed to water and are much less durable overall.

> **Veneered plywood or Forest Stewardship Council (FSC)-certified veneered plywood.** The FSC is the primary accrediting agency for sustainably managed forestry operations. Plywood boxes require a greater initial investment but will perform better and for a longer time. FSC-certified plywood can be more expensive than non-certified wood, but it is assured to be from a sustainably harvested source.

## BONUS POINTS

Green cabinetry can earn credit under the NAHB Model Green Home Building Guidelines in the areas of resource efficiency, and occupancy comfort and indoor environmental quality.

Green cabinetry and millwork can contribute to LEED certification in the following categories: materials and resources; regional materials; extracted, processed and manufactured regionally; rapidly renewable materials; FSC-certified wood; recycled content; indoor environmental air quality; low-emitting materials; paints, coatings, composite wood products.

## Doors

Cabinet doors should either be built entirely from hardwood or have a hardwood frame with a veneered, formaldehyde-free center panel. We’ve already addressed the sheet material component. Let’s take a look at our hardwood options.

> **FSC-certified North American hardwoods.** FSC certifies sustainable loggers and tracks the timber through the supply chain. Every sawmill, plant and distributor must be an FSC-certified organization for the end product to carry the FSC eco-label. FSC-certified hardwoods and sheet materials are possibly the “greenest” solution because they are guaranteed to have come from sustainably harvested forest products.

Be warned: Most green cabinet builders offer FSC products, but it is not the default selection. If you want FSC trees in your kitchen, you must specify that. There is usually an upcharge on FSC materials for cabinet manufacturers that is passed on to the consumer.

> **Uncertified North American hardwoods.** Only 3 percent of domestic timber carries the FSC label. It would be inaccurate to assume, however, that the remaining 97 percent is old-growth clear-cutting. As the Hardwood Council points out, “The volume of hardwood in American



forests is 352 billion cubic feet, and they are adding growth of 10.2 billion cubic feet a year. This compares to annual removal of 6 billion cubic feet. We are not running out of trees.”

Traditionally sourced American hardwoods tend to be less expensive than their certified counterparts. Sourcing American hardwoods, especially those species native to your region, minimizes the gas and oil needed to get these materials to the manufacturer near you. However, the trade-off is that there is no guarantee the hardwood you are getting came from a source that practices sustainable harvesting techniques.

If you choose to go this route, do some homework. Ask your supplier about where the wood comes from and whether those companies use sustainable practices. The information should be available to you.

> **Alternative non-native hardwood species.** There are many materials not native to North America that are rapidly renewable and sustainable. German beech, a light hardwood native to Europe, with qualities similar to maple, is extremely sustainable due to practices implemented 200 years ago by European forests.

## The Finish

Finishes are the component of the green kitchen package where most green cabinetry companies fall down. Low-VOC finishes often take quite a bit of extra work to apply, require a skill set that is very different



At left is a custom kitchen by Whitney Wood Works with all wood hickory doors and an all natural oil finish. Boxes are of Columbia PureBond plywood and drawer boxes of highly sustainable German beech.

from the application of conventional finishes, and many manufacturers aren’t set up for the process.

But it’s important to understand VOCs are chemicals that readily volatilize under ambient conditions and react with sunlight to produce smog. The EPA cautions that exposure to VOCs can produce the following health effects: eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to liver, kidney, and the central nervous system.

“Understanding the effects of HAPS and VOCs on human health is important because we spend about 90 percent of our time inside increasingly tight structures where accumulations of interactive chemicals can cause concentrations of pollutants that can be as much as 50 to 100 times greater than outdoor air,” says Andy Pace of Waukesha, Wis.-based Safe Building Solutions.

Many manufacturers will try to sidestep this issue by telling customers they use water-based finishes. Water based does not necessarily mean low-VOC. There are many water based finishes that are not low-VOC. Be sure to ask.

In addition, you need to take adhesives into consideration. “Adhesives are often overlooked in cabinets,” says Kelly. “They, too, should be low- or no-VOC.”

## Moving Ahead

Where’s the green cabinet industry headed? By all accounts, toward more national market share—and quickly.

“With the whole deal with toxic chemicals in toys and the FEMA trailer debacle, people are realizing that there are chemicals in their homes that they weren’t aware of,” explains McIsaac. “They need to demand healthy products; it can’t just come from specifiers and manufacturers.”

But according to Kelly, the consumer tipping point has just about been reached. “You’ve had people interested in [green cabinets] who are chemically sensitive and you have those

who have environmental philosophy—and sometimes both,” he says. “The last couple of years have seen dramatic market transformation due to Al Gore and scientific consensus on global warming. And those things won’t go away.”

In fact, green’s popularity has propelled Neil Kelly’s cabinets clear across the country to the East Coast, when for years the company was only serving Oregon. Kelly is hoping to find partners in the East to license and build there to fill the surging demand. He also doesn’t want to counter his green products’ attributes by burning fuel shipping them.

“We do very little marketing of our cabinets,” Kelly says. “Today, the reality is people are coming to find us.” <sup>GB</sup>

The authors have gleaned their knowledge of green cabinetry from their work as cabinetmakers at Chicago-based Whitney Wood Works. Cati O’Keefe, *Green Builder’s* editor-in-chief, also contributed research to this piece.

## Resources

> Berkeley Mills (Berkeley, Calif.)  
[www.berkeleymills.com/181/product.htm](http://www.berkeleymills.com/181/product.htm)

> Breathe Easy (New York)  
[www.breatheeasycabinetry.com](http://www.breatheeasycabinetry.com)

> Neil Kelly Cabinets (Oregon)  
[www.neilkellycabinets.com](http://www.neilkellycabinets.com)

> Whitney Wood Works (Chicago)  
[www.whitneywoodworks.com](http://www.whitneywoodworks.com)

> Woodharbor Doors & Cabinetry (Mason City, Iowa)  
[www.woodharbor.com](http://www.woodharbor.com)

Opposite page, upper left: Whitney Wood Works used sustainably harvested white oak hardwood and low-VOC Safecoat finishes for the doors. Boxes are made of Columbia PureBond formaldehyde-free maple veneered plywood. Drawer boxes are from sustainable German beech hardwood

Opposite page, center: Whitney Wood Works cabinet doors made from certified Lyptus hardwood. The center panels (left) are 3-form eco-resin, a nontoxic recycled resin product with natural materials pressed in the center. The doors are finished with an all natural oil wax finish.