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WOOD MARKETING BULLETIN

The Wisconsin DNR publishes the "Wisconsin Wood" marketing bulletin every three months. It serves the timber producing and wood using industries of Wisconsin by listing items: For sale - forest products, equipment and services, wanted - forest products, equipment and services; employment opportunities. There is no charge for the Bulletin or inserting items in it. Only items deemed appropriate to the timber producing and wood processing industries will be listed. Also the Bulletin will feature forest products utilization and marketing news, safety notes, coming events, new literature, tips to the industry, and listing or employment wanted or positions that are available.

If you know of someone who would like to be on the Bulletin mailing list, please ask them to send their name, address and zip code to the return address on the back page. Also, if you have items to list, send in the form or write a letter to the return address on the back page. Repeat listing of items requires a written request each time the item is to be repeated.

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NEW STUDY PROVIDES LIFE CYCLE ASSESSMENT ANSWERS FOR U.S. HARDWOOD LUMBER

The U.S. hardwood industry has a new scientific resource to tell its story when it comes to assessing the environmental impact of wood products. Based on a study conducted by sustainability experts Anonymous OSHA safety tools identify workplace hazards. Pg. XXPE International, the American Hardwood Export Council (AHEC) has developed a Life Cycle Assessment (LCA) of rough-sawn kiln-dried hardwood lumber.

This study fills in all of the blanks. It covers the environmental impact of extracting wood from the forest, manufacturing it into lumber, and

delivering it to a foreign port. We also are going to come out with similar figures for veneer later this year. Various users of hardwood lumber can then take this information to produce full cradle to grave LCAs on finished goods. A key aim of the study is to enable manufacturers of joinery, flooring and furniture products that rely on American hardwoods to prepare formal Environmental Product Declarations (EPDs) in line with international standards.

EPDs are widely recognized as the most effective method of communicating the full environmental profile of any given product or material. Green building initiatives like BREEAM (UK and International), LEED (U.S. and International), DGNB (Germany), HQE (France), and CASBEE (Japan) are becoming coming more dependent on EPDs to provide credible and comparative information on the environmental performance of materials used in the building sector.

Also, policy experts, architects, designers and others can use the scientific information to make ecologically smart decisions about the environmental impact of buildings and products constructed of American hardwoods. Depending on which materials and which impacts you are comparing, wood compares very favorably to pretty much any other material that has ever been studied.

The AHEC report provides quantitative data on Global Warming Potential, Acidification Potential, Eutrophication Potential, Photochemical Ozone Creation Potential, and Ozone Depletion Potential. It also provides a qualitative assessment of toxicity, biodiversity, land use and land use change, and water resource impacts. The report includes a sensitivity analysis to show how environmental impacts vary according to key factors such as species, lumber thickness, and transport distance and mode.

The report is an essential requirement

for use of AHEC's LCA data is science-based assessments of the sustainability of U.S. hardwood lumber compared to other wood and non-wood materials. It has been peer reviewed by a group of international experts and found to be solid in adhering to ISO 14040 and ISO 14044 standards. It also underpins on-going collaborative work by AHEC and PE-International to develop innovative computer-based systems for modeling environmental impacts of wood material choices in product design.

The peer review panel commented on the study, "One of the outstanding features of the study is the broad coverage of American hardwood species. The 19 different species addressed represent more than 95% of the hardwood species harvested in the United States by volume and more than 95% of the wood volume exported by AHEC members. Another positive feature of the study is the substantial share of primary data collected to reach representative results for American hardwood lumber. Primary data were collected from 46 AHEC companies, representing approximately 20% of AHEC members and approximately 12% of the hardwood lumber production volume. Due to the substantial share and relevance of the primary data, the data quality is considered to be high".

By 2015 in Europe, all building materials will need to have EPDs. And by 2017, all consumer products will need to have EPDs. The AHEC - sponsored research will help companies using American hardwoods to comply with these requirements. Just as EPDs are in the process of being required in the EU, I have to believe they will be required in the United States as well in the not too distant future.

The two major factors that impact the LCA of American hardwoods are the energy used to kiln dry lumber and the energy used for transportation. This is because kiln drying is the most energy intensive part of the hardwood lumber

process. Also the mode of travel and the distance required to go from harvest to processing to the end user impacts the total environmental footprint.

Key variables in the kiln drying process include the efficiency of the kiln, the thickness of the lumber, the use of wood waste versus pulling energy off the grid, etc.

Beyond preparing American hardwood users to meet international requirements, the AHEC LCA may impact domestic markets as green building standards in the United States rush to catch up with Europe. This research is adding fuel to the fire if LEED is going to look to change its point system to incorporate LCAs. Right now you only get the benefit in LEED for wood if you bring it from less than 500 miles or it is FSC certified. You don't get benefit from the environmental credentials of the wood itself. This type of scientific data is going to be harder and harder for LEED to ignore.

LCAs and EPDs are pushing LEED and the green building standards to use more science-based analysis and to compare apples to apples. Currently, LEED has placed stricter analysis requirements on wood compared to other products when it comes to tracing the extraction and environmental impacts of raw materials.

Let's be clear. This is not a measure of sustainability as far as the forest products are concerned. There are other tools to measure those factors including certification standards, government data, etc. This is a measure of the environmental impacts of the processes themselves. Our conclusions are equally true even if the wood was illegally harvested.

Although this report doesn't really cover the issue of carbon sequestration, another major factor that favors wood products. Different countries are classifying carbon sequestration in different ways. It all comes down to the life expectancy of the product. If you have wood in flooring or in a chair, that is around than it takes for regeneration of that tree. Let's say a 50 year cycle. Then that product would be carbon negative for life. If you have something from IKEA that is storing carbon for a year or two and is disposed of because it was used in a dorm room, then the long-term life expectancy is different. How you calculate carbon storage depends a lot on the finished product and how long it is in use.

The big picture benefit of wood is that there is no other material that has that

carbon stored in there and gives you that option to deliver a product to market in a carbon negative way. No other material starts with a carbon negative capability. Where you take it from there depends on the manufacturers, the designers and architects. If you design with wood, you are starting off with a carbon negative product or material. If you find a more efficient way to do it or a way to make it last longer, then you are minimizing the impact. When you compare wood to any other material, there is a night and day difference.

By Michael Snow, executive director of the American Hardwood Export Council, Source: *Pallet Enterprise*, November 2012.

TISSUE OUTLOOK; ANOTHER CHINESE RIDDLE?

Growth in population and income may mean fall in export pressure on Chinese overcapacity.

While the digital world slowly absorbs all senses and skills, from communication to reading and writing, certain human habits and functions cannot be converted to digital mode. This is where the tissue industry comes into its own, with the ever-growing papermaking business a bright spot in the time of crises.

Two world powers in the tissue industry, USA and China, are in very different states of this business. The current leader, USA, mostly operates aging paper making assets and uses minimum capital for equipment upgrades. China is leading the way in a new state-of-the-art paper machine installations. In the U.S. the story about-reopening an old 200-people paper mill in Gorham, New Hampshire for tissue operation makes big news. In China, the recent startup of a brand new high capacity tissue machine by the industry leader Hengan Group at the Rizhao downtown paper mill with the highest smokestack in the world seems like an obscure event.

Indeed, while the modest growth of tissue consumption in the developed world can be explained mostly by population increase, the developing world shows substantial advances in tissue business rapidly accommodating the customs and conveniences of modern day life.

Benchmarking Tissue Consumption

One of the major indicators of consumerism is a usage of disposable goods, from household products to surgical supplies, and tissue consumption should be somewhere on the top of the list, varying

from country to country. There is no clear method to establish realistic numbers for annual tissue consumption per capita which satisfies both environmentalists and manufacturers.

The range of tissue product usage is wide. The USA stands out with 23 kg per capita per year. This number may reflect high spending for disposable household products like kitchen towels and napkins, and passion for premium soft toilet tissue made of long virgin fibers. Excessive tissue use is embedded in the mind of an average American making him or her the darling for tissue makers and helping to create the world leading country tissue production and consumption. Ironically, combined amounts of unrolled bands of toilet tissue hanging from trees on Halloween across the country may possibly exceed an annual take of toilet paper in some African countries.

I remember visiting the canteen at the German paper mill a few years ago with American colleagues. It was a self-service place with mill employees picking up food meals and reaching a stack of folded napkins just before a cash register. I noticed local employees taking exactly one napkin, and Americans including myself grabbing a few instead.

On the opposite end of the consumption range is Russia with 2kg, and with growth over 50% for the last eight years. While the country does not show consumption growth at the scale of Brazil, another member of the BRIC group, tissue products gradually gain recognition as well as other disposables.

Considering western Europe and Japan are somewhere in the middle, where level of per capita annual usage is noted from 11 to 16kg, it's reasonable to establish this amount as a point of developed market reference. For emerging economies of South America, eastern Europe, Asia and Africa, the balance of rising convenience and health standards may bring regional tissue markets to this level in a 10-to 15-year period. A reverse development for the North American market, however, meaning gradual drop in per capita consumption, seems to be practically unlikely and any such signals may indicate very serious economic downturn.

Is the Chinese excess volume an export threat?

According to project surveys on new tissue capacity by *Tissue World* magazine for 2011 and 2012, the Chinese tissue industry takes a lion's share with over thirty new installations bringing almost 1.3 million

tonnes to the market. China currently takes the world's second place in tissue production and consumption after the United States. Based on the reports from China National Household Industry Association (CNHIA) the estimated tissue production output in 2011 was nearly 5.7 million tonnes while the country's consumption reached 5.1 million tonnes (or about 3.8 kg per year per capita). This makes up about 600,000 tonnes annual surplus tissue output, which can satisfy the markets of a few European countries.

While attempting to analyze the dynamics of an annual tissue surplus for years to come, we should assume reduction of a production volume from current 8-10% to 4-6% due to continuing industrial slowdown in China. According to CNHIA, tissue consumption grew 10% in 2011 if compared with the previous year, or by about 460,000 tonnes. The safe guess for tissue consumption growth in the next five years might be around 5-6%.

This development may gradually reduce an excess amount available for export. The share of the tissue consumption increase related to population growth seems to be less significant than the income progress. A fertility rate in China now is 1.6 (lower than that of western Europe), which translates to population growth stabilized at about 0.5% in recent years or seven million people (at the current average rate of 3.8 kg an additional volume will be 26,600 tons).

Shipping Tissue

While the cost structure of tissue products manufactured on modern paper machines and automated converting lines remained consistent across the world, the shipping portion of it is quite noteworthy. Indeed, a chance to buy Chinese tissue exports in Australia, New Zealand or Philippines is much higher than in Europe, the United States, Canada or Mexico.

An advantage of domestically made tissue products is that, unlike other paper, it's not economical to ship tissue paper from overseas because of its bulk.

Shipping cost from China is the global economy enigma. How else can someone bring a weightless 3-ply virgin pocket hanky pack to a major supermarket chain in New Jersey and sell it for profit three times cheaper than similar 2-ply Kleenex? The multi-store grocery discounter Jack's World in New York City offers similar 99-cent deals on toilet tissue and kitchen rolls imported from China. In the United States the current pattern of growth for Chinese imports shows slow spreading from major

metropolitan area discount stores to key supermarket chains.

Prognosis

Different sources list the current size of the Chinese so-called middle class from 250 to 300 million people with, according to the World Bank, annual per capita income of between \$1,006 and \$12,275. Such a group's tissue annual consumption might be estimated around 6-10kg per capita with the higher limit reaching reported level of consumption in three dozen Chinese cities with population over two million, including megapolises of Shanghai and Beijing.

At this rate the total tissue volume consumed by well-to-do Chinese comes to three million tonnes. Out of the current total of five million tonnes, the balance of about two million tonnes is spread among almost one billion people with very low income. Still, the per capita number comes to 2kg – the level in the range of such countries as Russia – and high potential to grow further.

Combining effects of population growth and income improvement might reduce the export pressure coming from the growing capacity of Chinese tissue industry.

Tissue market development seems to be quite predictable based on such obvious factors as population dynamics and modern habit influence, but only the future will show the genuine market growth. By Greg Grishchenko an independent market and technology consultant. . Source: *Paper Age*, November/December 2012. This article was originally published in *Tissue World* magazine, June/July 2012. For further information, please visit www.tissueworld.com.

INCREDIBLE INDIAN FORESTRY

International Paper India has just supplied its one-billionth sapling to be planted by local farmers

Sometime in October 2012, a farmer in the northeastern corner of Andhra Pradesh state in India will plan a very special sapling. From the farmer's point of view there may be nothing unique about this sapling, which will look like thousands of other casuarina trees he has planted in order to supplement his income. However, this sapling is special, because according to Andhra Pradesh Paper Mills (APPM) it will be the one-billionth sapling produced for farmers by the company as part of its long-running farm forestry program. APPM, which was acquired by International Paper in 2011, has been providing saplings for farmers since 1989,

and estimates that cumulative plantings of its saplings has covered more than 150,000 hectares and has provided more than 75 million man-days of employment. All this planting, along with work by other companies, has created a wood basket belt along the northern coast of Andhra Pradesh that has not only provided wood for APPM's pulp mill in Rajahmundry but has also drawn in pulp producers from Maharashtra, Orissa, Gujarat, Karnataka and even other north Indian states seeking wood supplies.

Why the need for this type of farm forestry program? Simply put, India has a serious deficit in wood supply. Attend any gathering of paper companies or wood panel producers in India, and the topic quickly turns to the serious shortage of raw materials. Companies are not permitted to own land in any significant amount, so cannot develop their own company plantations, as in Brazil and other countries. The designated forests in India, managed by the government, are primarily focused on conservation and production of non-timber values, and an estimated 85-90% of the country's industrial wood supply is now coming from private lands (in India's forest survey, these are classified as "Trees Outside of Forests"). And India's demand for pulp and paper is growing rapidly. RISI forecasts that production of graphic papers in India will increase by 3.8 million tonnes between 2011 and 2025, while production of packaging grades will increase by 6.5 million tonnes over the same time period. While a significant portion of this increase will be fueled by recovered paper, demand for virgin pulp and hence for wood will also be rising quickly. Whether India meets this need with greater imports of pulp and paper, or through more domestic production, will depend on the success of farm forestry programs like those of APPM.

Prior to 1975, APPM primarily relied on bamboo from state-owned forests as its raw material. When a shortage of this fiber became evident in the early 1980s, the government sold additional volumes of mixed hardwoods to supplement supplies, but even this was not enough, so the company initiated its farm forestry program in 1989.

The samplings are not given away to the farmers, but are provided by APPM at a highly subsidized cost. "Companies learned very early that if they simply gave trees to farmers, then these had no value, the farmers didn't take care and survival

was not good,” says J. K. Jain, APPM’s Senior VP of Purchasing and Forestry in India. “But once we started charging even a very small amount, tree care improved and survival greatly increased.”

Companies have tried various strategies in designing farm forestry programs around the world, from paying annual land rent, to sharing harvest volumes, using different types of contracts, etc. APPM opted for a simpler approach. “We supply the saplings to the farmer,” says Jain. “We provide advice on how to prepare the site, how many saplings to plant per hectare, and other practices. But the trees belong to the farmer, 100%. We hope he sells the wood to us, but of course we have no control over who they sell the wood to.” And, at the risk of sounding like a cheerleader for the free market system, this is a simple structure that by all appearances is working quite well, as both sides have a vested interest in helping the other succeed. To date, some 45,000 farmers have participated in this program, which operates without any type of government subsidy.

From the farmer’s point of view, why should he plant casuarina trees? This species grows well in very sandy soils along the coast, soils which are often non-productive for food crops. In addition, farmers have found that the income from growing casuarina is greater than what they were earning on other marginal or degraded farm lands. This species is also a nitrogen fixer, another plus. And the rotations are short enough (typically four years) that they fit the farmer’s objectives for cash flow. Larger stems are sold as construction poles, smaller stems for pulpwood, the branches for local fuelwood and even the stumps are dug up and used as high-calorific fuel for making bricks.

From the company’s point of view, developing this farm forestry program seemed like the only sustainable way of building its business. APPM’s pulp and paper facility in Rajahmundry and Kadiam have an annual capacity of about 240,000 tonnes, and currently is consuming about 700,000 green tonnes of wood per annum. The mill is only about 60 km from Kakinada port, and could theoretically import woodchips, although the company judged that this would be expensive and unreliable. Helping the farmers develop tree plantations not only ensures a more stable wood supply, but helps to create jobs and improve livelihoods in the region. While APPM would of course like to buy

wood for the lowest price possible, if the company tries to push down prices too far, the farmers will simply sell the wood to others and/or will stop replanting and supplies will dry up.

Driving around the country outside of Visakhapatnam, one is struck by the large number of casuarina plantings, typically in small lots of one hectare or less, often in clumps behind houses or along the edge of crop fields. I was also impressed by the large number of new homes being built in the villages where casuarina planting was most common, which seemed to be a pretty concrete indication of improving incomes.

But could APPM’s farm forestry program perhaps become too successful? Rampraveen Swaminathan, International Paper’s managing director and CEO in India, says the company is aware that it is trying to increase the wood supply, but without turning the region into one vast casuarina plantation. There is the social/environmental perception of perhaps having too much planted to a single crop, but also the danger that wood supply could grow much faster than industrial demand, leading to a drop in prices and subsequent disenchantment by farmers. “This is why we are rolling out the clonal propagation program as rapidly as possible,” says Swaminathan. “Our clones will allow farmers to grow more wood, on a small area.” APPM only produced 1.0 million clones in 2011, but will have produced 12 million clones in 2012 by year end, and by 2014 will be producing 40 million clones per year.

J. K. Jain says that the clonal program is just the natural progression in improving yields for farmers that has been going on for more than 20 years. “We started with conventional bare roots trees that produced about 50 tonnes/ha in a four year rotation. Through our tree breeding program and use of bagged seedlings in the nursery, we increased yields to 75 tonnes/ha, but more recently have shifted to a transplant treated bare root program that has greatly reduced costs and improved yields to 80 tonnes per hectare. But the clonal program is where we will really see the gains take off. Conservatively, we are estimating an average of 165 tonnes/ha in a four-year rotation, which is equivalent to average yields for eucalyptus in Brazil.” Jain says that APPM only charges 1/50th of a rupee per tree for bare root stock, which is less than the company’s costs, but plans to cover its costs on clones by charging R1/tree. “We’ve actually been able to

reduce costs of clone production by about 60% since we started,” says Jain, “And we hope to continue making improvements.” To produce its 135 million bare root seedlings in 2012, APPM uses a clever system of about 40 small nurseries scattered throughout its wood sourcing area. Clones are produced at four propagation centers.

Even though the clones are much more expensive for the farmers than the bare root seedlings, Jain is convinced that farmers will quickly grasp the economic benefits of the much higher growth rates, and concentrating the growth on larger, straighter, more valuable stems. His calculations clearly show the benefits, but I was more impressed by an unrehearsed incident one stop we made at my request, to photograph two tractors preparing ground for replanting. The farmer quickly came over to our vehicle, and the first words out of his mouth were (as translated for me) “When can I get some of your clones? I saw them planted over by the (local) wood depot,” Jain says that even if wood supply growth outstrips industry demand at some periods, and prices decline, the greater yields from clones will mean higher income per hectare, which is the farmer’s benchmark. APPM is also encouraging the use of intercropping in casuarina plantations with crops like ground nuts, sweet potatoea, gram, tomatoes, chilis, and lady fingers, (what I call okra). “Some farmers can recover their full planting costs in the first year with intercropping,” says Jain, “and of course our hope is that by helping the farmers to increase their income it will generate even more interest in tree planting.”

APPM’s contributions to the local society are not limited to improving incomes through developing faster growing trees and improving forestry practices. The company has provided assistance to local schools (furniture, school bags, fans, etc.). In addition, it has donated mobile medical vans and installed hand pumps for water in numerous villages. I also had a chance to see the new check dam that the company constructed in Mamidilova village and dedicated in August of this year. The dam ensures more even distribution of water through the year for the villagers, and according to the company experts should help to recharge the water table. “There are a lot of seasonal rivers in Andhra Pradesh,” says CEO Swaminathan, “and a lot of opportunities to develop similar

projects.” This project was not simply a CSR effort, says Jain. “We estimate that this project will allow fuller utilization of the area for casuarina planting, and we expect yields to increase from 20,000 tonnes per rotation before the check dam to 70,000 tonnes per rotation with the improved water supply and deployment of genetically superior planting materials.” Rather than seeing social responsibility efforts as just another “cost of doing business” in emerging economies, APPM seems to full understand that what is good for the farmers is also good for the company, and vice-versa. And the company hopes to work with others to spread this view of true economic sustainability. “This wood supply issue is not just a company problem,” says Swaminathan, “It is an industry problem, a national problem. We think India’s capability to increase self-sufficiency in wood supply has a great potential, and we hope to be an active part of that effort.” To read more articles on Environment, visit our Environment Technology Channel at www.risi.com/technologychannels/environment

By Bob Flynn, RISI

Source: *Pulp & Paper International*, November 2012

MINNESOTA LOGGERS FEELING PAIN DUE TO CUTS IN DEMAND FOR WOOD

Nashwauk, Minnesota – Scott Pittack grew up in a logging family and has made his living in the woods.

But as he climbed down from a timber harvester at the end of a winding road in the hills, the forest behind him aflame with October color, he admitted he has his doubts about the business.

Nowadays, the industry that’s hiring on the west end of the Mesabi Iron Range, where Pittack has been cutting down trees for more than two decades, is taconite, not logging.

In the past 18 months, Pittack’s six-man operation has lost two truck drivers to mineral companies.

I don’t blame them guys for going to the mines,” Pittack said. “There’s some days it looks pretty appealing to me.”

Lumberjacks are the foot soldiers of the forest industries, and in recent years they’ve been pounded on two sides. Not only have more than a hundred U.S. paper mills shut down in little more than a decade, as demand for paper declines in the Western world, but the collapse of the

American housing market eliminated demand for building products made from trees.

As of July, the tree harvest in Minnesota had plummeted 40 percent in six years, mostly because of the departure of companies that make oriented strand board by fusing pieces of wood with glue under high pressure.

In August, two more mills announced closures, erasing a tenth of the demand that remained. Verso Paper closed its mill in Saratell two months after an explosion and fire that killed a man, saying the tepid market for its brand of magazine paper didn’t justify the expense of repairs. A few days later, privately held Georgia-Pacific announced it would shutter a plant in Duluth that made a thin, hard product called Superwood.

Over the past 10 years, 22,500 jobs in logging have disappeared in the United States, a 32 percent decline, according to the Bureau of Labor Statistics.

The economics of logging are regional. Minnesota mills mostly use Minnesota trees cut by Minnesota loggers, because shipping lumber from a distance is expensive.

As mills have closed, loggers from Baudette to Bigfork to Bemidji have found themselves in a dogfight to find customers and turn a profit. Loggers in Minnesota haven’t harvested less than 2.5 million cords of timber for 30 years, but this year they might.

“The mill closures are a tough blow no matter where your at in the state, because it all has a ripple effect,” said Dale Erickson, 57, a second-generation logger based east of Baudette. “It’s tough right now.”

Modern Techniques

Modern logging involves large machines that look like tractors, with climate-controlled cabs. The roughly 3,000 loggers in the state use joysticks and computer monitors to cut down, de-branch and in some models immediately chop the logs to length.

Pittack, 44, swung his \$550,000 cut-to-length harvester into action one day this fall. It’s a John Deere tractor with tracks and what looks like a giant steel fist on the end of an arm.

The fist seized the base of an aspen tree and gave it a quick shake. A chainsaw whipped out and hacked the tree off at the base. The fist tipped the tree over and traveled the length of the trunk, shaving off branches with fixed steel blades. Then it cut three logs to length and dropped

them in a pile on the ground. It all took about 20 seconds.

Pitack keeps a handheld chainsaw inside the harvester in case a tree’s branches are too big for the machine, but he rarely uses it.

His niche is harvesting diverse sections of the forest and sorting the logs for different customers. What had been a stand of 60-foot tall trees – much of it aspen – had become a debris-strewn meadow.

The elm and red pine were spared for the sake of birds, the other trees were cut and stacked by type and quality, next to a road Pittack built, ready to go when there was enough to justify a trip to a mill. Pittack’s drivers hauled timber from the stand to UPM Blandin in Grand Rapids, Sappi Fine Paper in Cloquet, Hawkins Sawmill in Isle and Savanna Pallet in McGregor.

“You have to do it because you can’t market everything to one mill,” he said. “This day and age, that’s the name of the game.”

Few Opportunities

In the past few years, the fortunes of timber and taconite have moved in opposite directions.

One growing company on the western range is Magnetation, an upstart based in Grand Rapids that transforms waste ore into a higher concentrate with the help of magnets.

The company opened its first plant in Keewatin in early 2009 and has grown quickly, attracting investment from Cargill. It now has 218 employees, a second plant in nearby Coleraine and a joint venture with Steel Dynamics near Chisholm.

The mining workforce is aging and retiring, part of the reason companies are hiring, said Joe Broking, the company’s chief financial officer.

“All these plants are turning over their workforce,” he said.

The logging workforce is not turning over as quickly. The market for timber is too weak.

Before the housing crash, mills would pay \$60 for a cord of aspen – a stack of wood 4 feet high, 4 feet wide and 8 feet long. Today, the same amount of wood fetches \$20.

Prices are so low, private landowners aren’t selling logging rights on their land. Over the past decade, logging on private land has fallen by more than half, from 2.3 million cords in 2001 to an estimated 990,000 in 2011.

Much of this is due to the exit of Vancouver-based Ainsworth Lumber Company which closed in Cook, Grand Rapids, and Bemidji that made strand board for roofing, siding and concrete forms. Weyerhaeuser closed a strand lumber plant in Deerwood in 2007.

The strand board industry has moved to other states.

"It might come back, but the production is not going to be probably in Minnesota," said Steve Vongroven, a forester for the Minnesota Department of Natural Resources based in Willow River.

The reason, Vongroven said, is that the biggest, newest and most efficient strand board plants are in the Southeastern United States. Minnesota mills may be pioneered the concept of using high-pressure and glue to turn scraps of wood into boards, but other parts of the country copied the idea and did it better. When the housing market improves, strand board production will ramp up elsewhere.

Lost Tradition

Commercial logging in Minnesota started in 1839 when settlers from Illinois opened a sawmill at Marine on St. Croix. After the spring thaw, white pine logs floating down the river to the sawmills were so thick that logjams in the narrows below St. Croix Falls could back up for miles.

By 1900, Minnesota sawmills produced 2.3 billion feet of lumber – enough to build a 9-foot-wide boardwalk around the Earth along the equator, according to the Minnesota Historical Society. The growing nation demanded wood for homes, schools, factories and railroads, and by the mid-1920s loggers had pretty much wiped out the state's majestic white pine forests.

But the forest came back, and continues to come back, in a mix that includes red and white pine, maple, spruce, balsam, birch and aspen.

Erickson, the logger from Baudette, grew up on a farm where the prairie meets the woods just below the Canadian border, about 30 miles west of International Falls.

It was a thriving Scandinavian cooperative where three large families raised wheat and grass seed in the summer. In the winter, when they weren't milking cows, the men drove into the snowy forest to cut down trees for the paper mill in International Falls.

The mill is still there today, a steel blue collection of warehouses and towers that looks across the Rainy River toward Canada. The mill is still the Erickson family's biggest customer.

"I've made my living and my wife and I have raised our family off the lands," Erickson said. "I'm actually to point now that I could go back and start cutting some of the areas that I can remember were some of the first areas I ever helped cut when I was back in school."

But loggers like him are becoming rare. Startup costs for the business today easily surpass \$1 million – the harvesters, tracks for the machines so they don't get stuck, \$50,000 steel trailers that haul timber and only last a few years, semi trucks that pull the trailers, and \$4 per gallon diesel fuel that powers it all.

Erickson's dad founded his business in the 1930s, and Erickson started working for him full time when he graduated from high school in 1974.

That's what the boys up here did, for the most part," Erickson said. "Back in them days it was easy to do. But now, for somebody to start a business, if you are not in a logging family or a line of succession somehow – whether you're family or a valued employee – you're not getting in the business."

By Adam Betz; Source: *Minnesota StarTribune*, November 2012

A TIP OF THE HAT TO ASHLEY FURNITURE'S FOUNDER

While Las Vegas vies with High Point, North Carolina, as the U.S. furniture showroom capital, tiny Arcadia, Wisconsin has taken firm hold to the title of home to the nation's largest furniture maker and retailer.

It's from Arcadia, population 3,000, that Ashley Furniture Industries, a privately held company with more than \$3 billion in annual sales and more than 18,000 employees, runs its global operation.

Ashley's rise to the top versus publicly-traded titans like Furniture Brands International, La-Z-Boy and Stanley Furniture is nothing short of amazing and largely due to the vision of its founder Ronald Wanek.

Wanek was inducted into the Furniture Hall of Fame in 2006. Among his many highlighted achievements:

- . In the 1970s, Ashley became one of the first U.S. furniture producers to use European flatline construction;
- . In the 1980s, Ashley introduced the "industry's most successful polyester finishes, bringing color to wood furniture;" and
- . Developing Ashley Furniture HomeStores, which now number more

than 400 and account for more than \$2.2 billion of the company's annual sales.

"Wanek never lost sight of investing and growing Ashley Furniture's domestic manufacturing capabilities."

Brief Encounters with a Furniture Icon
I have crossed paths with Wanek on numerous occasions.

Our first encounter was at the 1990 International Woodworking Fair, where the Woodworking Machinery Importers Association (now Woodworking Machinery Industry Association) presented Wanek and Ashley with its annual innovator of the Year Award. It was a very fitting honor. Under Wanek's watch, Ashley was one of the first major U.S. furniture companies to successfully import product from Asia. But while procuring product from low-wage counties was profitable, he never lost sight of investing and growing Ashley Furniture's domestic manufacturing capabilities.

Perhaps one of Ashley's biggest advantages was that it remained privately controlled when so many of the biggest names like Thomasville, Broyhill and Bassett were bought up by publicly traded conglomerates controlled by decision makers who put short-term returns for investors ahead of long-term potential. In other words, most found it easier to shut down plants and shuttle manufacturing to China than to build new, more efficient plants here.

I got a taste of Wanek's commitment to domestic manufacturing when I visited Ashley's Arcadia plant in 1993 to about a double-sided continuous laminating press that had just been installed. Wanek was gracious in receiving me and stressed the importance of staying abreast of technology because it had a habit of becoming obsolete every five years or so.

Wanek's interest in keeping up with technology has apparently not come to an end. Even after having handed the helm of running Ashley to his son, Todd, I ran into him and a cadre of Ashley plant executives at Ligna Hanover last year.

Ashley Furniture's commitment to "Made in America," has been duly noted in recent reports on Woodworking Network. Last month, Ashley announced plans for a \$6 million expansion of its motion furniture plant in Whitehall, Wisconsin. And in April, Ashley said it would develop at 3.3-million-square-foot manufacturing and distribution campus in Advance, North Carolina.

When the North Carolina operation reaches completion, Ashley will lay claim

to more than 10 million square feet of manufacturing, warehouse and office space in seven locations nationwide.

Now there's a great "Made in America" success story.

By Rich Christianson, Source: *Wood & Wood Products*, June 2012

WISCONSIN AND MICHIGAN MASTER LOGGER COMPLAINT SYSTEM

Although Master Loggers must demonstrate professionalism and meet and/or exceed the performance standards of the forest industry to earn their titles, these performance standards are not always upheld. Issues may be found in the following areas: silvicultural, water quality, safety, legal/regulation violation, and/or business practices. If you feel a Master Logger is not complying with the program performance standards, please file an anonymous complaint.

To file a complaint on a certified Wisconsin or Michigan Master Logger, a person can call the toll free line at (877) 284-3882 or go to www.wimlc.com to fill out a complaint form that can be faxed to (906) 875-3724 or mailed to 1353 West Highway U.S. 2, Suite 2, Crystal Falls, Michigan 49920. The calls are either answered or forwarded to a messaging service that is checked daily by the Wisconsin or Michigan Master Logger Certification (MLC) Coordinator of the Sustainable Resources Institute, Inc. The MLC Coordinator will take action regarding each phone call within 24 hours of receiving it.

When filing a complaint, be prepared to provide your name (in case follow-up information is needed or if the complainant would like an update on the resolution of the complaint), the name of the Wisconsin or Michigan Master Logger (to ensure the person is indeed certified), the location, the name of the property owner, and when the event in question occurred. Be prepared to describe the nature of the complaint.

For complaints, the Wisconsin and Michigan Master Logger Certification programs have three levels of response:

1. Questions and complaints can frequently be resolved through communication with the Master Logger, who can clarify the situation that the complainant is referring to.
2. If the outcome of initial communication does not resolve the complaint, the Director of the Wisconsin and Michigan MLC Program authorizes a site audit by a Wisconsin and Michigan MLC verifier(s).

3. If the conditions observed by the verifier(s) are serious infractions of MLC standards and/or represent illegal activity, the complaint and verifier's report are brought to the attention of the Wisconsin or Michigan MLC Certification Board for deliberation and action.

A certified Master Logger may be de-certified at any time by the Certifying Board based upon failure to comply with the mandatory performance standards. Individuals who have been de-certified may apply for re-certification after one year from the date of their de-certification. The Certifying Board may also terminate certification when a non-compliance complaint warrants de-certification, or, at a minimum, place the company on a conditional status.

By Don Peterson, Source: *Great Lakes Timber Association Professional*, June 2012

MEASURING UP TO YOUR EXPECTATIONS

In the first in a two-part, we take a look at how hardwood is measured, sized, dried and sold to consumers.

There aren't a lot of specific terms in the hardwoods industry, but even a short new vocabulary can be confusing (like that first day on the golf course when somebody mentions an eagle and you look up). There are basically just two sets of words to know: those dealing with measurement and those describing character. Once learned, understanding hardwoods is relatively easy.

Measurement

There are really only two types of measurements in regards to hardwoods. The first is thickness and the other is volume.

The hardwoods industry describes the thickness of boards in "quarters." A board that is 1" thick is referred to as "four quarter," and everything else takes its cue from this. Boards that are 1-1/2" thick are termed "six quarter," while a 3"-thick slab would be "twelve quarter." Visually, the written versions of these are what one would expect: 4/4, 6/4 and 12/4. The numbers run anywhere from one quarter to a maximum of about 12 or 14 at most suppliers, although thicker boards are certainly available.

The key here is that the measurement describes rough boards. A 4/4 board was a little more than 1" thick when it emerged from the saw at the mill. It may only be 3/4" thick when a customer sees it in a kitchen. Or it may be 15/16" thick (7/8" at

some yards) if it has just been passed quickly through a planer to remove some of the thin, seasoned outside layer. This is done to reveal a hint of its color and grain and the process is called "hit or miss." Woodworkers like this because they can see whether a board has a lot of defects (more on these in a minute) or whether they are getting sapwood or heartwood. Lumberyards like it because the boards are a little lighter (a consideration in shipping large loads) and because their customers are not as easily surprised or disappointed when they start planing the stock back at their shops. So the quarter system means that the thickness of lumber is consistently measured in units of 1/4" when rough. According to the National Hardwood Lumber Association, "the finished thickness for lumber of 1-1/2" and less can be determined by subtracting 3/16" from the nominal thickness. For lumber 1-3/4" and thicker, subtract 1/4"."

The second part of measuring is volume (also called cubic area). This is calculated using a unit called a board foot. The easiest way to visualize this is to imagine a rough board that is 1' wide and 1' long, but only 1" thick. Stretch that board (hey, we're still imagining here) and it can become 6" wide and 2' long, and still only contain the same amount of wood. Stretch it some more to 3" wide and 4' long, and the volume is still the same.

If it's 8/4 material that is 3" wide and 4' long, there will be twice the volume of a 4/4 board (that is, two board feet). If you're buying from a mill or kiln operator, "net tally" is the board feet of lumber measured after kiln drying, while "gross" or green tally is the board feet measured before kiln drying. There's a difference of about 7 percent because boards shrink across their width during the kiln-drying process.

Calculating the board feet in a piece of lumber is less complicated than one might suppose. Simply multiply the number of inches in the width, length and thickness by each other and divide the result by 144. For example, let's calculate the board feet in a board that was 1" thick, 6" wide and 8' long before planing. Multiply 1x6x6 and then multiply the result by 96 (the number of inches in eight feet). The result is 576 cubic inches. To reduce that to board feet, simply divide it by the number of cubic inches in a board foot (144). The result is four and this is usually written as 4 bf.

Random sizing

The cookie-cutter boards available in home stores are all uniform in size. That

is, they come in standard widths and lengths. They are nominal 1x2s (3/4" x 1-1/2"), 1x4s (3/4 x 3-1/2") and so on. They also come in standard lengths, which are usually in two-foot increments from 4' to 12' long. They also come in standard lengths, which are usually in two-foot increments from 4' to 12' long, although many stores only carry 8' long boards.

Lumber sold like this is called "dimensional lumber," and outside the hardwood racks at the big-box store, the industry reserved this terminology and sizing for construction lumber (softwoods such as spruce, pine and fir). Its predictability is comforting, but it is wasteful and always expensive. The sawmill, or more likely the wholesaler, had to throw away a lot of material to reduce those boards to standard dimensions.

Hardwoods, on the other hand, are most often sold in random widths and lengths. The boards in a specific bundle (called a "bunk" in the trade) will all be of the same nominal thickness, such as 4/4 or 8/4. Unless ordered in specific widths, they will of varying ("random") widths, which can be anywhere from 2" to 20" or more, depending on the species. Popular and mahogany boards, for example, are sometimes close to 2' wide, while quartersawn white oak will usually be in the 4" to 8" range.

Random lengths can run from 3' to 16' or more. Whenever lengths are specified, the price goes up. As with widths, it's less expensive to specify a range than to demand specific lengths. However, there are times when specific widths actually save money. For example, if a shop is going to make lots of 4" wide molding, the buyer won't want to buy a lot of 6"- and 7" wide stock because of the amount of waste (called "drop").

Rough sawn hardwood boards are often 2" or 3" longer than their nominal length. For example, an eight-footer may be 99" long. This is because the logs go into the mill at that length and, unlike softwoods, the ends are not usually trimmed. When calculating the board feet to charge you, most yards will include those three inches as long as the end isn't split or otherwise damaged.

When figuring out how much lumber to buy or use, keep in mind that narrow strips can often be edge-glued to make wider boards, but it's virtually impossible to turn short boards into long ones. There are a few router bits that create end joints, but the results usually aren't very pleasing to the eye. A rule of thumb is to buy 15-20

percent more stock than the project requires in order to allow for waste.

Kiln-and air-dried lumber

All wood contains some moisture. When buying hardwoods, it pays to know a little about moisture levels. The industry measures this in terms of the weight of the water expressed as a percentage of the weight of the wood. For example, imagine an oak board that weighs 42 pounds without any water in it at all. The same board in a lumberyard in the middle of the country will have a moisture level of about 6 percent after it has been kiln-dried (humidity varies with location and time of year: think Seattle and Death Valley, California). At 6 percent, there will be 2.52 pounds of water in the board, for a total of 44.52 pounds. The water weighs 6 percent of the net total that the lumber weighs.

This number is important to wholesalers who transport lumber because fresh logs can have upwards of 30 percent moisture levels, which means that the trucker can only load about two-thirds of the weight he could legally carry if the load was completely dry.

This number is also important to the woodworker because lumber above about 9 percent tends to misbehave. It splits near the ends, warps, bends and generally has a mind of its own. The moisture isn't evenly distributed – the center of a board is generally wetter than the surfaces – and this can play havoc with the wood when the water expands as it heats up during the day and then contracts as it cools at night.

For comfort, people like to control the indoor ambient humidity (the amount of water in the air in a room). We like our air to be around 30 to 50 percent relative humidity and, fortunately lumber likes the same range. Relative humidity below 20 and above 75 percent can cause problems with wood. Lumberyards that keep dried hardwoods stored inside are a much better option than mills and yards that store them outdoors.

Lumber is dried in two ways. It can be kiln-dried in a gas, wood, electric or solar oven, or it is seasoned. Seasoning means that the lumber is stickered outdoors, usually under a shed roof or some plastic, and allowed to air-dry. Typically, seasoning takes about one year for every inch of thickness, while the average kiln run is just 20 to 40 days, depending on species, kiln size, moisture content and thickness. Stickered means that the boards are stacked with 1/4"-thick sticks between them to allow air to flow around

all six surfaces. If the sticks are not of the same species as the boards, they can often leave shadow marks every few feet across the boards, where chemicals in the two species react with each other, and this is something to be aware of and look for when selecting boards.

Boards being kiln-dried are usually sealed on the ends because the open cells of end-grain will lost moisture more quickly than those of side grain. The seal slows the process and can be used as a color code to quickly identify species or cuts.

Color and grain

Boards of the same species can diversity widely when it comes to overall color and general appearance. Oak growing in northern Minnesota has a much shorter growing season than oak grown in the southern Appalachians. The minerals in the soil, the angle and intensity of the sun, rainfall levels, pollution in the air and quality of the groundwater all affect the way a tree grows and the color of its heartwood. Whether or not the tree has neighbors can play a big role, too. A tree growing alone in a field spreads out to catch as many rays as it can, while one living in a forest needs to grow straight and tall so that it can poke its head out above its neighbors.

Hardwoods are by nature dendritic, which means they divide into branches and then twigs. (In biology, it also describes the way that cells divide and crystals grow.) Curtailing this tendency by planting trees close together is one way to make them grow straight, a deliberate practice that is often associated with mahogany and teak farms in tropical climates.

In America, northern hardwoods tend to have more even color from tree to tree than those growing in the South or across the Appalachians. There also is less of a contrast between the sapwood and heartwood within each tree. Therefore, slow-growing Northern hardwoods tend to fetch a better price than logs from other parts of the country. So it's a good practice to ask a supplier where his stock originated.

Hardwood grades

To avoid confusion, the hardwoods industry never talks about the "sides" of a board. Instead, they refer to edges, ends and faces. For many woodworkers, one of the most startling things they learn about hardwoods is that only one face of a board is graded. The theory is that this takes less time (and is therefore less expense) and

most boards are fairly similar on both faces anyway. That's probably true from a seller's point of view, but not always so from the buyer's. And just to confuse the heck out of us, some mills grade the best face, while others grade the worst.

The other thing to keep in mind when buying a board is that the woodworker is looking at it in terms of his/her project and is primarily concerned with appearance, while the mill has graded it according to the number of cuttings it will yield. Cuttings are usable pieces, so the mill grader will decide that a board could be ripped right up to both sides of a large knot and then crosscut so the knot is eliminated, but there is no other waste. In his eyes, the board had perhaps 1 percent defect. If that knot is right where a decorative ogee is going to be milled to create a table edge molding, the woodworker has a completely different set of values.

The lesson here is that it really pays (if one has time) to go to the yard and pick through the stock rather than having, say, 500 bf delivered to the shop. This is especially true if the woodworker doesn't place regular orders because the supplier will quickly get to know regular customers and learn their specific needs and grading preferences.

How hardwoods make the grade

Grading is theoretically a very precise practice that could be replicated anywhere on the continent. In practice, small mills and even some retailers have their own systems and terminology that can be very confusing.

The following grades were developed by the National Hardwood Lumber Association, and are adopted by most industry groups and producers across the country.

- . FAS/1F (Firsts and Seconds/Furniture): 6" and wider, 8' and longer, 83.3 percent clear on its best face.
- . Select: 4" and wider, 6' and longer, 83.3 percent clear on its best face.
- . Number 1 Common: 3" and wider, 4' and longer, 66.6 percent clear on its worst face.
- . Number 2A Common: 3" and wider, 4' and longer, 50 percent clear on its worst face.
- . Number 2B Common: 3" and wider, 4' and longer, 50 percent sound on its worst face.
- . Number 3A Common: 3" and wider, 4' and longer, 33.3 percent clear on its worst face.

. Number 3B Common: 3" and wider, 4' and longer, 25 percent clear on its worst face.

A woodworker should be aware that these basic grading requirements are often relaxed a bit when it comes to less widely available species.

Color grades are quite subjective and can change from mill to mill. Number 1 and Number 2 White, and the term "Saps" are all grades for maple and birch that describe the amount of sapwood present. A few species are more valued for sap than heartwood, but oak, cherry, walnut, hickory and birch are more valued for brown (heart) color. Your salesperson can help with questions about specific species. This article originally appeared in the March 2012 issue.

By John English, Source:

<http://woodshopnews.com>, June 2012

GETTING IT JUST RIGHT

In the second in a two-part series, we look at common defects and flaws in hardwoods that can alter the price and quality.

There are a few terms that come into play when boards are being milled and these refer to the amount of planing and/or sawing that the supplier does. The more work they are asked to do, the more they charge.

Boards begin this journey as RGH (rough grade hardwood). Most suppliers will prep boards by planing the wide faces. S1S means that a board has been surfaced (planed) on one surface (face), but not flattened first by a jointer. S2S means that the board has been planed on both of its wide faces.

Most suppliers will also offer straight-line ripping. This means that they will make either one or both edges relatively straight by ripping a thin piece from the edge(s). R1E is the trade terminology for "ripped one edge". Sometimes a client wants R2E (ripped on two edges), although usually this is only done if the stock will be fed to a commercial molding machine. Ripping makes the board safer to run against a table saw fence. Sometimes, the stamp will read SLR1E (straight-line ripped one edge).

Some suppliers will go a little farther for their customers and offer to joint the ripped edge. That means that they pass it across a jointer. The way that this is described is J1S or J2S, but a buyer should be aware that it isn't always done well, especially at small yards and mills. Boards can be held at an angle, fences can be off a little, etc. It's generally not an

option worth paying for unless there is a commercial reason for doing it (for example, if the boards will be used as lap siding). If the process is done on a four-head molder (S4S), then it is far more reliable.

A very few mills will do custom resawing. This means standing a board on edge, band-sawing it into two thinner boards and then surfacing the cut faces. This is a practice that is far more likely to be done in the woodshop after the boards are delivered.

The big three

The most obvious defects in hardwoods are bows, crooks and twists.

A bow is a curve along the length of a board. If the board is placed on a flat surface, it will either rock with the bow down or create a bridge with the bow up. A bow can often be corrected on a jointer. It's a good idea to cut it into shorter lengths first, if the job will allow that. When run on the jointer, the bow should be up, so the ends meet the blade first. Otherwise, it will rock from end to end and never get straight. Sometimes a bow is so pronounced that the amount of material that needs to be removed will leave the board too thin to use. One mistake that new woodworkers sometimes make is to push down on the bow (middle of the board) when passing it across the jointer. This prevents the cutters from removing just the high spots at the ends. After jointing, the board must be run through the planer to make its second face parallel to the first, flat, jointed one.

A crook is a curve along the edges of a board, even though the wide faces might be relatively flat. This needs to be fixed before the edge can be run against a fence. Turning a curved edge into a straight one is called straight-lining, and it can be done with a jib on the table saw or by making repeated passes over a jointer. Hand planing or even band-sawing most of the waste before going to the jointer really speeds up the process. A board with a crook will probably have uneven tension in it (tight grain along one edge and loose grain along the other), so it may never remain straight.

Twists occur when one end of a board slopes to the right while the other slopes to the left (or vice versa). These boards should be avoided.

Other defects

Blue tints are generally the result of a fungal activity and occasionally a mineral deposit in the soil, although in softwood it might well be the result of an attack by the

pine bark beetle. This can usually be disguised with stain, but it's a good idea to try a test piece before committing to such lumber.

Split ends, known in the trade as checking, can be a problem. Look carefully along the grain on both sides of a board that has checks to see just how far they extend into the wood. Think about whether the project calls for narrow pieces that can be harvested from either side of the checks or whether the split area renders the board too short to work. If the checks disappear after a few inches, they are probably the result of drying. If they extend more than a foot, the board might have endured some other trauma (perhaps it was dropped) and the split either has or will run along the grain.

If a board is relatively straight along its length, but both edges curl in the same direction, this is known as cupping. Almost invariably, this occurs with plain sawn boards rather than rift or quartersawn one. It is the result of one face drying more quickly than the other, usually when the board was a pile that hadn't been stickered. Cupped boards are difficult to salvage and should normally be avoided.

Knots and bugs

Beyond their size, there are two types of knots: tight and loose. Tight knots are usually not a problem unless they occur in a part of the board that will be milled (for example, where a decorative edge will be routed). The main issue they occur in a part of the board that will be milled (for example, where a decorative edge will be routed). The main use with them is aesthetics: how will they look? Loose knots, on the other hand, need to be discarded and the number of small parts to be cut for a project will affect the decision as to whether the rest of the board is usable.

Sap or gum residue in the form of a hardening resin is generally an indication that the tree suffered an injury and the cambium layer has attempted to seal off the wound. One needs to check that the resin doesn't extend too far into the board and then allow for cutting away the affected area.

Insect damage, usually presents itself as wormholes in the sapwood. Depending on the species and the board's geographical origin, these can be anything from minute pinholes to large, long, powdery tracks. If the board has been kiln-dried, the residents are most likely cooked. If it was air-dried, they may not yet be, and some insect species can actually migrate into the

workshop walls and the woodworker's lumber pile. Sometimes insect damage adds to the beauty of a project, but it is usually not a desirable trait.

Not all impurities in a board are undesirable. Sometimes a little rot or mineral damage can be used as an artistic embellishment, such as spalting (thin black lines, often erratic and sometimes spider-webbed), or white patches and other evidence of fungus. Wood turners and art furniture builders often prize such wood as an accent material. But when buying hardwoods for most furniture or casework projects, it's probably a good idea to stay away from any type of fungus (especially brown versions) until one is well-versed in their nature.

If it splits, split

There are other defects to be avoided. Boards can have sticker stain (thin lines left by the wooden spacers used in a kiln), excess wane (natural bark along one edge), or case hardening. This latter occurs when a board that is dried too quickly shrinks on its surface and compresses the still-wet interior. As the wet area expands because of daily or seasonal heat cycles, it causes cracks in the surrounding dry cells. When shopping for hardwoods, look for evidence of case hardening that will show up as either numerous small splits along the grain or a honeycomb effect close to the middle of a board.

One man-made defect to watch for is mill marks. These are parallel lines stretching across the board (from edge to edge). If these can be ascribed to a planer, they will most probably be eradicated as the board passes through the shop. If, however, they are the result of a band blade, they can sometimes be so deep that to remove them means the board must be planed to a less than usable thickness.

Boards sometimes have defects from more than one cause, but they are so attractive that they can be worked into a project as a showpiece. The book-matched cherry board has mineral streaks, a wound (perhaps from wind or lightning), and some insect damage. Many art furniture builders prize such boards and sometimes they fill the voids with clear or colored epoxy, turquoise, or other contrasting materials.

The difference between a hardwood and softwood is not found in their specific gravity or density or even their physical hardness. For example, balsa is a physically soft hardwood, while yew is a rather hard softwood. The difference is as simple as this: softwoods are coniferous.

They have cones and hardwoods don't. Most softwoods also have needles instead of leaves, which they usually don't shed, although there are exceptions such as the tamarack larch. Hardwoods in North America almost all have leaves, which they generally lose in the winter. Most tropical hardwoods don't shed, making them technically evergreen. Again, if it doesn't have cones, it's a hardwood.

Physical hardness can be both a blessing and a curse because very hard species are often difficult with which to work. For example, the hardest native species is hickory, which is used for stressful situations such as hammer handles and flooring. Unfortunately, the wood is brittle and it tends to shatter along the edges when machined on router tables and even table saws. Next in line for hardness is pecan and then hard maple, white oak, beech, red oak, birch, ash, walnut, soft maple and cherry in that order. Beyond these, the softer hardwoods include alder, poplar and aspen (about 20 percent as hard as hickory), and none of these have notable grain patterns.

In most cases, heartwood is preferable to sapwood. Heartwood is closer to the center of the tree and is, essentially, dead. It forms around the pith, the small core at the center of a long, and grows a new layer each year that can be seen as the familiar rings in a cross-section. The layers closer to the bark are called sapwood because they contain sap in the form of water and minerals. They lie directly below the much thinner cambium and phloem layers that, respectively, heal wounds and move sugars to the leaves from the roots.

Three paths to a milled log

How a log is rendered into boards can have a huge impact on the price, appearance and behavior of hardwoods. There are three ways in which a log is milled and each allows the wood to shrink or expand differently.

The first of these, plain sawing, is by far the most common and that's because it is both quick and economical for the mill. The most familiar example is pine dimensional lumber (1x and 2x material) at a home store. It has a few tight lines of grain along each edge, and the grain in the center describes an acute arc (called a cathedral pattern because of its resemblance to the vaulted roofs of medieval churches). The grain across the cut end of such a board looks like several gentle arcs stretching from one edge to the other. Plain sawn lumber moves a lot across its grain (lumber moves very little

along its length) and it is more susceptible to cupping and warping than other cuts. It is, however, relatively inexpensive.

The second cut, quartersawing, is usually reserved for furniture-grade lumber. Its tight, straight-grain patterns area ideal for components such as stiles, rails and legs because there is very little movement across the grain, which means that parts are very stable. The grain across the cut end of a quartersawing board is a series of short, vertical, straight lines stretching from one wide face to the other. This is an expensive cut because it is a two-step process, which requires extra setup and milling time. Logs that are best suited to quartersawing (that is, very straight-grained) area fairly limited and that also contributes to the cost. One dramatic characteristic of quartersawing in some species is the appearance of flake, a ribbon-like highlight that dances across the board and reflects light differently than the background cells. Slicing through medullary raps, which are channels through which nutrients and water were passed horizontally from the sapwood to the pith, causes this effect.

The third cut, rift sawing, is the most expensive. It lies between the other two, leaning more toward quartersawing. The cuts run from the pith to the bark, like the spokes of a wheel. The grain across the cut end of the rift sawn board is diagonal, and the boards are relatively stable and can

almost always be substituted for quartersawing stock in terms of structural integrity. There is a lot of waste in this cut in the form of pie-shaped wedges discarded from between the harvested boards.

This article originally appeared in the April 2012 issue.

By John English, Source: <http://woodshopnews.com>, June 2012

Timber and Forest Products

Equipment

1988 19'6" Mack, 350 HP. 12 speed, camelback suspension pulp truck w/Prentice F90T loader 22' w/1987 Rosa pup, 16'3" spring ride all in good running condition, \$22,500 Also for sale - material conveyor 2' wide belt x 38' on running gear. Gear box on head pulley - no motor \$3,500. Can be used as firewood or gravel conveyor. Contact Lloyd Wiese, W3117 County Road A, Stetsonville, Wisconsin 54480; (715) 678-2319; cell (715) 965-6331.

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Timber and Forest Products

EMPLOYMENT

Timber/log buyer: Seeking a qualified person to mark and purchase standing timber and cut logs. Qualified candidate will work with established vendors and acquire new vendors. Strong communication skills, good organizational skills and must be able to work independently. Experience a plus. Competitive compensation package and benefits package. Send resume to Krueger Lumber Company, Inc., 21324 USH 151, Valders, Wisconsin 54245; Phone (920) 775-4663. E-mail: denise@kruegerlumber.com

If you want to list items, fill in the form below:

FOR SALE WANTED TO BUY SERVICES EMPLOYMENT

FOREST PRODUCTS FOREST PRODUCTS FOR SALE AVAILABLE REMOVE FROM

EQUIPMENT EQUIPMENT WANTED WANTED MAILING LIST

NAME ----- DATE -----

ADDRESS-----COUNTY -----

CITY ----- ZIP CODE -----PHONE AC (-----) -----

Wisconsin Local Use-Dimension Lumber Grading

A procedure is in place under which Wisconsin sawmills are able to produce dimension lumber that may be sold without a grade-stamp issued under the authority of a lumber grading bureau, and that lumber may be used in residential construction when directly sold to the person who will inhabit the dwelling (or to a person acting on his or her behalf) and for whom a building permit has been issued. To do this someone from the mill must attend one of the **Wisconsin Local-Use Dimension Lumber Grading Short-Courses** that are offered for Wisconsin sawmill operators. These one day special short-course training sessions are offered several times a year, at no charge, and are advertised in the WI-DNR's Wisconsin Woods Marketing Bulletin. **Successful completion of this course and successfully passing an associated test is required for anyone that wishes to produce and sell local-use dimension lumber in Wisconsin that will be used in residential construction. This means someone in your company needs to attend the course if you wish to produce Wisconsin Local-Use Dimension Lumber. (Note: Local-use dimension lumber is lumber that is not grade-stamped under the authority of a grading association.)**

If you wish to produce and directly sell Wisconsin Local-Use Dimension Lumber that may be used in residential construction, you will need to get someone from your mill to a course so they be certified (as a representative of your mill). Also if you do custom sawing for anyone who wishes to use the lumber in their dwelling (such as if you have a portable mill and are custom sawing logs for forest landowners who want to use that lumber in building their home), this would apply to you and you also should get the training and get certified.

The next one-day Wisconsin Local-Use Dimension Lumber Grading Short-Course that you can register for will be offered on April 4th at the University of Wisconsin-Stevens Point Wood Lab in Stevens Point WI. The short-course is one day in length, beginning at 9:00 AM and ending at around 4:30 PM (at the latest).

There will be no fee for attending - HOWEVER - pre-registration is required – there will be NO WALK-IN REGISTRATION - (space is limited to 20 persons maximum for each course to allow for more interactive discussion). Pre-registration for the course must be received before March 18th for the April class permit time to confirm registrations, and for mailing all students a grading manual for advance study, and travel directions and other materials.

To register for any of the short-course, you may email, FAX or phone in your registration. Your registration will be confirmed (also by email, FAX, mail or phone) OR you will be informed the course is full.

TO REGISTER:

Email the following information to: RGOVETT@UWSP.EDU (email registration is preferred if possible)

Provide the following information when registering:

- 1) The full name (or names) of the person (or persons) being registered
- 2) The company name (if different from the person's name)
- 3) A complete mailing address (including zip code)
- 4) Phone number (with area code)

OR if you do not use email you can FAX to: Bob Govett 715-346-4821

OR you can simply phone Bob Govett (715-346-4212) – if you phone in your registration – please be sure to spell out the name and address



Department of Natural Resources
Forest Products Specialist
3911 Fish Hatchery Road, Route 4
Madison, WI 53711

ADDRESS SERVICE REQUESTED

The Wisconsin Department of Natural Resources reserves the right to edit all items included and accepts no responsibility for the accuracy of description or for the commercial integrity of the persons or firms making offers in this Bulletin.

If you wish to use the facilities of the Bulletin, forward a letter, post card or form on page 11 with detailed description of your "wanted" or "for sale" items. All forest products (stumpage, logs, pulpwood, posts, poles, trees and lumber, etc.) and services (custom sawing, custom kiln drying and tree planting, etc.) may be listed. Please be sure your full name, address (including zip code), telephone number accompany your listing, there is no cost for listing any items. If you want items repeated in the next issue, send in a written request. If you have comments about the Bulletin or have suggestions on its content, write to: Forest Products Specialist, 3911 Fish Hatchery Road, Fitchburg, WI 53711, phone (608) 231-9329 FAX (608) 275-3338.

DEADLINE FOR ITEMS TO BE LISTED IS THE 20TH OF: MARCH, JUNE, SEPTEMBER and DECEMBER.



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