

## THE VALUE OF KILN DRYING IN TODAY'S LUMBER MARKETS

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Thank you for the opportunity to speak here again this year. It's always nice to get together with many of the friends I have made over the years in my duties as Chief Lumber Inspector.

I must admit to some misgivings on being included as a speaker for a "Technical Session." When it comes to the science and technical aspects of drying lumber, I'm about as green as the wood that goes into your kilns.

At WWPA, much of our work begins once the lumber emerges from the dry kilns and carries through to the final end use of the product. So, today I would like to direct my comments and observations to what happens after the lumber is kiln dried.

It's no surprise the business environment in which you are practicing your craft is changing dramatically. The challenges facing the lumber industry and those of us who serve the industry are unprecedented.

Last month's Forest Summit in Portland underscored the conflict between this nation's need for affordable wood products and concern about the environment.

As we've already seen, the decisions required to resolve this situation will drastically change the fundamentals of what we do as an industry. Every part of the lumber manufacturing business -- including kiln drying -- will be impacted by these changes.

I'll come back to this subject in a moment. But first I would like to talk about what we do at WWPA and how kiln-dried lumber is viewed in the marketplace.

Western Wood Products Association provides services to lumber producers in 12 western states, from the Canadian border to Mexico and as far east as Colorado, New Mexico and the Black Hills of South Dakota. And just recently we expanded our territory to cover Alaska. Some 65 percent of the region's production use our grade marking and quality control services. WWPA quality control services cover nearly 10 billion feet of lumber produced by Western mills each year.

In addition to our lumber grading activities, WWPA also conducts a broad range of lumber marketing services, including promotion, literature and field support work in both domestic and international markets. And WWPA gathers statistics about the Western lumber industry, providing business information to Western lumber industry decision-makers.

Our work with kiln-dried lumber begins at the quality control end of our services. WWPA's grading rules do not specifically define how lumber should be dried. Our basic definitions segregate lumber as dry, which has a moisture content of 19 percent or less, and green, with a moisture content of 20 percent or more. We also offer a designation of MC 15 for products dried to 15 percent moisture content or below.

Traditionally, lumber 4-inches and under in thickness are the products which can be designated as dry. Those products 5-inches and thicker are almost always considered green. However, as drying technology improves and demands from the marketplace increase, it's possible that thicker products may soon be dried.

WWPA gradestamps note whether the lumber is green, dry or dried to a moisture content of 15 percent and below. During our mill inspections, we check the moisture content of lumber to insure it meets specified requirements. Samples are checked with moisture meters about two feet from the grademarked end of the piece.

Until recently, kiln drying was not even mentioned in WWPA's grading rules. But that is changing with growing demands for kiln-dried products in the marketplace. This past March, a definition of kiln dried was added to our Grading Rules. In the coming months, a revision of Product Standard 20-70, which provides the basis for all lumber grades, is expected to include language allowing the use of the KD or kiln-dried designation as an official part of lumber grade stamp markings.

The addition of kiln-drying definitions to grading rules and KD designations on gradestamps reflects the value which lumber marketers and customers are placing on kiln dried lumber. And those perceptions are shaping Western mill production trends.

The percentage of kiln dried lumber produced by Western mills has increased in recent years. In 1986, about 48 percent of the lumber produced in the West was kiln dried. By 1990, the most recent year we have numbers for, the share of kiln dried lumber increased to 52 percent. It's likely our 1992 figures will show a continuation of this trend.

The shift toward more kiln-dried production roughly parallels the rise in repair and remodeling uses of lumber. Repair and remodeling has grown from 28 percent of total lumber consumption in 1986 to an estimated 33 percent for this year. This growth has been so great, in fact, that in 1990 and 1991 the lumber volume used in repair and remodeling projects exceeded that used in residential construction.

Increases in repair and remodeling have influenced sales of kiln-dried lumber. Customers who purchase lumber for remodeling projects -- particularly do-it-yourselfers -- prefer the appearance of kiln-dried lumber to that which is unseasoned. Because the lumber looks better, do-it-yourselfers believe it must also perform better. When these people go to their local retailer or lumber yard, they will more likely choose kiln-dried lumber for their projects.

The use of lumber in repair and remodeling will continue to grow, as many homeowners find it's much cheaper to remodel their existing homes rather than purchase a new house. Those who are serving that market, including home centers and the warehouse-style retailers, will make sure to have kiln-dried lumber on their shelves to give their customers what they prefer.

Kiln drying was developed to provide controlled drying of lumber. But increasingly, international markets are demanding -- and even requiring -- kiln drying of American lumber as a way to guard against importing forest pests and diseases.

WWPA has worked to meet these concerns, and recently developed a kiln drying documentation program in cooperation with the U.S. Animal and Plant Health Inspection Service. Under this program, WWPA certifies the lumber has

been dried to under 19 percent moisture content and has reached a temperature of 71° C, or 160° F. APHIS can then issue a phytosanitary certificate on the lumber, which is required by many Middle Eastern and Pacific Rim countries.

Our ability to provide this service and keep lumber trade doors open is due to the work done by many of you in the dry kiln industry. Your well-documented research has been extremely helpful in persuading foreign plant health officials that normal mill kiln drying practices get the lumber to the temperatures necessary to kill whatever bugs or diseases are present.

Dry kilns could have a larger role in the international lumber trade in the future. Last fall, the European Community adopted rules requiring all lumber entering the EC after June 1 be heat treated to a core temperature of 56° C for at least 30 minutes. These regulations were adopted to protect European forests from a perceived threat from the pinewood nematode, a microscopic worm found in pine species.

While negotiations on alternative certifications for green lumber are continuing, it's likely that kiln dried lumber may be the only product accepted by the EC.

The value of kiln-dried lumber, and in fact all lumber, has risen dramatically in recent months. Timber shortages caused by lawsuits and injunctions aimed at protecting the spotted owl and other wildlife are impairing Western mills' ability to serve improving demand for lumber in the U.S. As a result, lumber prices have escalated to record levels in just a few short months (see Figure 1).

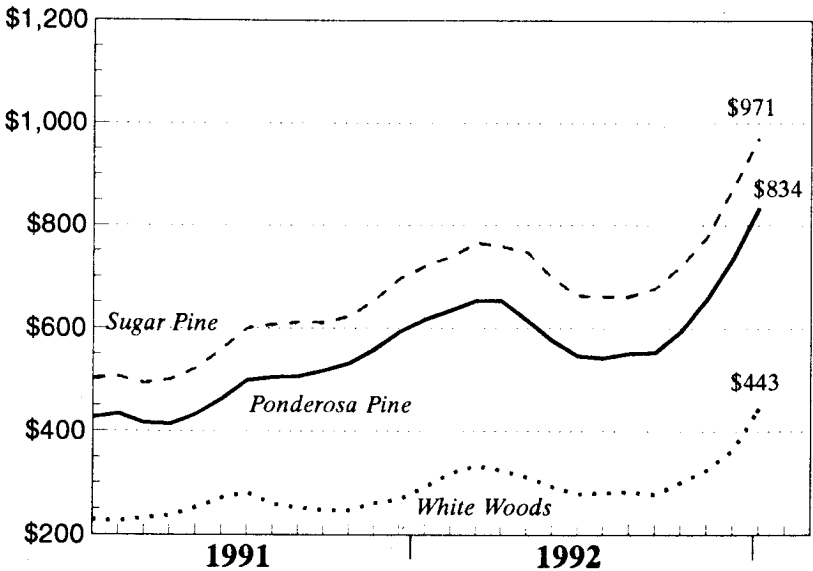


Figure 1. Lumber price trends, 1991 to 1993.

Prices for species manufactured in the Inland Region, where nearly three-quarters of the production is kiln dried, have jumped dramatically since last fall. Average mill prices for Coast-Inland Ponderosa Pine jumped from \$553 per thousand in November of last year to \$834 per thousand in March, an increase of more than 50 percent. Sugar Pine prices were up 44 percent over the same period, while average prices for White Woods -- which include Engelmann Spruce and Lodgepole Pine -- climbed by 59 percent.

With changes in the volume and size of timber processed by Western mills, it is more important than ever to use manufacturing techniques such as kiln drying to get the maximum value out of every piece of lumber. Missing the little details in kiln drying can have big impacts. Poor stacking, missing stickers and improper placement of loads on kiln carts can affect any number of courses of boards in the kiln. This and overdrying can cause splits, twist, warping and checking, all of which will lead to lower prices for the wood and, in today's market, has some very real dollar and cents consequences.

Let me give you a couple of examples. In March, 5/4 Sugar Pine No. 1 Shop sold for \$1,204 per thousand (Table 1). But if the grade had dropped to No. 2 Shop because of drying problems, the lumber would have sold for only \$1,057, a loss of \$147. Many times, however, these problems lead to drops of more than one grade. If the same stock dropped to No. 3 Shop, the value of the lumber would be cut by more than \$380.

Table 1. Prices of 5/4 sugar pine shop lumber. A grade loss of one or two grades results in value losses of 12% and 32%, respectively.

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5/4 Sugar Pine (Mill F.O.B. Prices)

No. 1 Shop	\$1,204
No. 2 Shop	\$1,057
Price Dif., No. 1 vs. No. 2	<b>-\$147</b>
No. 3 Shop	\$821
Price Dif., No. 1 vs No. 3	<b>-\$383</b>

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Ponderosa Pine No. 3 Common was priced at \$419 per thousand in March (Table 2). But if poor drying and stacking procedures lead to defects which lower the grade to No. 4 Common, the value of the lumber would drop 35 percent to just \$272 per thousand. If it dropped one more grade, to No. 5 Common, the lumber would be worth less than half of the No. 3 Common price in today's market.

Even dimension products, such as 2x10 Hem-Fir, require careful drying to retain and enhance their value (Table 3). A No. 2 2x10 which drops to a No. 3 because of drying problems will lose nearly half its value -- from \$572 per thousand to \$292.

Table 2. Prices of 4/4 ponderosa pine common lumber. A grade loss of one or two grades results in value losses of 35% and 58%, respectively.

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<u>4/4 Ponderosa Pine</u> (Mill F.O.E. Prices)	
No. 3 Common	\$419
No. 4 Common	\$272
Price Dif., No. 3 vs. No. 4	<b>-\$147</b>
No. 5 Common	\$177
Price Dif., No. 3 vs. No. 5	<b>-\$242</b>

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Table 3. Prices of 8/4 hem-fir dimension lumber. A grade loss of one results in value loss of 49%.

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<u>2x10 Hem-Fir</u> (Mill F.O.B. Prices)	
No. 2 & Better	\$572
No. 3	\$292
Price Dif.	<b>-\$280</b>

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The value of Western kiln-dried products in current markets, such as Shop, are not going unnoticed. Our Southern counterparts are now looking to develop Shop grading rules for Southern Yellow Pine, and they certainly will be adapting many of the kiln drying techniques pioneered here in the West.

Kiln drying will be important to those who bring in wood from sources outside of North America. Current building codes do not allow the use of imported species such as Radiata Pine or Russian Pine in structural applications. Thus, products made from these species will go into appearance grades, which are traditionally kiln-dried. Defining drying techniques and schedules will be important in establishing a market for products from these new species.

Earlier, I mentioned the dramatic changes we are experiencing in the wood products industry. The battle over how we should manage our forest resources is one that has gained much of the attention. But the same issues fueling this forest are also moving into the marketplace. The public is increasingly concerned about the environmental impacts of the products they use. And those concerns are now impacting decisions to buy -- or not buy -- lumber products.

WWPA recently surveyed lumber retailers about environmental trends. Half of those responding to the survey said more customers are asking questions or showing concern about the environmental impact of using wood products. More than a quarter said some customers have rejected purchasing wood products because they believe the products hurt the environment.

The message in this is clear: If lumber is judged environmentally sound, people will choose to buy it. And therein lies a unique opportunity for wood and products made from wood. For when it comes to building products, wood is the most environmentally compatible material available today. It is the perfect product for this new Environmental Age.

Wood can be recycled, reshaped, reused and reconstituted. It is biodegradable, if need be, and takes little energy to manufacture compared to other materials. It is strong and lightweight, and can last indefinitely when used correctly. These qualities are also true of finished products made from wood, such as windows and doors.

Most importantly of all, wood is renewable. Forests can be harvested, replanted and harvested again, providing timber for products for generations to come.

We at WWPA are now working to capitalize on these positive environmental values and create marketing advantages for Western lumber and associated products that have never before been exploited. We have pioneered an environmental benefits marketing program, representing a dramatic new direction to promote the "green" advantages of Western lumber and products made from lumber.

This action-oriented program covers a wide range of opportunities, from publicity and trade advertising to forest and mill tours for the major trade and regular media. Work is underway to generate credible, scientific comparisons of wood versus alternative products such as steel, plastic and concrete. These comparisons will cover products and building systems made from wood. This research will provide objective, third-party endorsements for using wood.

We believe lumber's environmental story will convince the public of the need for the wise use of forests. Such understanding will allow us to secure reasonable, sustainable timber harvests and, in turn, provide a steady stream of products to customers.

Defining the environmental benefits of lumber and wood products will go far in confirming the value of the products we produce. Kiln drying will further enhance that value, and help make lumber the preferred choice in building materials now and in the future.