

DRYING PRACTICES IN NEW ZEALAND

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Earlier this month I had the opportunity to visit a number of facilities in New Zealand that are involved in drying radiata pine for the U.S. market. These visits were made before and after kiln drying seminars in Rotorua and Christchurch. The seminars, sponsored by the Ministry of Forestry, were designed to introduce a new publication on quality drying and familiarize participants with drying for export markets. During the seminars I presented information on factors affecting the market in the U.S. and how the quality of drying impacts the sales of radiata pine in the U.S. market.

Forestry in New Zealand

For 100 years New Zealand has had a history of plantation forestry, but in the 1960s and 1970s, plantings intensified due to national concern regarding exportable commodities. In contrast to earlier plantings, these plantings were aggressively pruned and thinned. This crop began to reach the marketplace in the early 1990s and will increase until 2010 as most of the plantations are in the 10- to 15-year-old age class. Currently, some New Zealanders are concerned about having a market (at a price that justifies the aggressive management) for the product. This was quite a surprise compared to North America where the timber supply is in a reverse situation. This wood is coming and will be competition for the U.S. in foreign markets such as Asia as well as domestically. Because of the extensive pruning, the trees contain a significant portion of clear wood.

High Temperature Drying, Myth or Reality

Most of us in the U.S. have an incorrect perception that radiata pine for the appearance grade export market is dried at temperatures in excess of 100°C. Because of the quality requirements of this grade - color, few internal checks, free of stress - producers use a temperature of 90°C or about 195°F. The combination of high temperatures and weights was initially developed a technique to deal with twist that was occurring in material in thinnings from plantations. Since the higher appearance grades come from the outside of the tree, they contain little juvenile wood and producers have been able to reduce the drying temperature without excessive warp. Weights are still used on most products. Temperatures of 120°C (248°F) are still commonly used for structural material and wood used within New Zealand.

People who dry wood in New Zealand believe that it is important to raise the temperature in the kiln to the operating temperature as quickly as possible. Quickly means 30 minutes to two hours. They try to do this with a high relative humidity so

the outer part of the wood remains wet and will plasticize. Only after the board is heated, the wet-bulb temperature is lowered to allow it to begin to dry.

Kilns in New Zealand generally are designed to be capable of drying at high temperature. They tend to be small by our standards, one-fourth to one-third the size of a typical west coast softwood kiln. Humidification is often accomplished by boiling water in a trough located in one plenum. Steam spray is used in some kilns.

Austral-Asian Drying

One significant thing I learned during the visit was that an Austral-Asia wood drying specification is being developed, similar to the European standard. This will specify the moisture, stress, and defects to be allowed in lumber of a certain quality dried to a given moisture content. We, in North America, may want to think about adopting a similar standard so that importing companies can use the same specifications to order domestic and imported lumber. Familiarity with such a standard (not presently used in the U.S.) would make it easier for U.S. companies to order lumber from New Zealand as well as export to Europe and Asia.

Forest Research Institute

The Forest Research Institute in Rotorua on the North Island is a large organization with research occurring in many disciplines. The institute arguably has the most comprehensive and active solid wood drying group in the world. Approximately 12 to 15 people work on wood drying problems ranging from stains to kiln schedules, to mathematical modeling. Their work is closely tied to and supported by industry. The industry watches and follows the research produced by the FRI.

Conclusions

New Zealand has a resource base that will keep it competitive as a supplier of wood for the foreseeable future. They are working hard to learn what the customer requirements are and produce a product that meets them.