ABSTRACT—After a faltering beginning in 1958, vigorous growth in the 1970s, and extraordinary expansion in 1980, 1981, and 1982, the structural flakeboard industry in North America is competing strongly with the softwood plywood industry in midwestern, eastern, and southern structural panel markets. In early 1982, existing and planned annual capacities in North America totaled about 1,186 million ft² in Canada and 1,733 million ft² in the United States (¾-inch basis). Most mills use aspen, but two currently under construction will use hardwoods indigenous to Louisiana and east Texas.

Numerous laboratories in the world have experimented with fabrication of structural panels made from wafers (wide flakes) or strands (narrow flakes). In such panels, the flakes can be either randomly placed or oriented (fig. 1). Prominent in early efforts were J. d’A. Clark, who currently is a consultant in Bellingham, Washington, and A. L. Mottet, formerly research director of the Long-Bell Lumber Company, Longview, Washington. Both described waferboard products in papers presented during 1954 at meetings of the Forest Products Research Society. By 1958 a waferboard plant based on Clark’s ideas was in operation at Sandpoint, Idaho. The board was manufactured primarily from western redcedar (Thuja plicata).

The introduction of a waferboard or structural flakeboard product in 1958, however, was not timely. North America had an abundant supply of low-cost peeler logs and therefore sheathing-grade plywood. As a result, the Sandpoint plant did not succeed in penetrating the market for structural sheathing-grade plywood.

In 1961, another waferboard plant was built in Hudson Bay, Saskatchewan. This venture also had marketing problems. It was eventually sold to MacMillan Bloedel, Ltd., and under this management waferboard found its way into the structural sheathing market in competition with West Coast plywood. Success was due mainly to its freight advantage.

The first markets for waferboard in the Canadian Prairies were in the construction and remodeling of farm buildings and fences, and as a general utility panel. In these applications, the product proved itself to be satisfactory as an exterior grade panel. Subsequently it received Canadian Code approval in the construction of homes and two-story apartment buildings.

In 1969, MacMillan Bloedel doubled its capacity at Hudson Bay. In the period from 1971 to 1979, four more waferboard plants were built in Canada and one particleboard plant was converted to waferboard, for a total Canadian annual capacity of 660 million ft², ¾-inch basis.

By 1980 there were two waferboard plants in the United States, with total annual capacity of 200 million ft², ¾-inch basis. In 1980 and 1981 three more plants started up in Canada and several in the United States. In early 1982, existing and planned annual capacities in North America totaled about 1,186 million ft² in Canada and 1,733 million ft² in the United States, ¾-inch basis (table 1 and fig. 2).

Through 1980 virtually all of the mills used only aspen (mostly Populus tremuloides). In 1981, one plant in New Brunswick, Canada, and another in New Hampshire in the United States were using some Betula and Acer species in mixture with less dense softwoods and aspen. Not listed in table 1 or figure 2 is the Georgia-Pacific Corporation’s waferboard plant in Woodland, Maine; with annual capacity of 166 million ft², ¾-inch basis, it uses softwoods only.

At the end of 1981, no plants were producing structural flakeboard from the mixtures of more-or-less dense hardwoods that typically grow among southern pines, despite the large potential for such production. In 1981 the Martin group of companies of Alexandria, Louisiana, began construction of such a plant in La. Moyen, Louisiana; it is scheduled for start-up in early 1983, with planned production capacity of 120 million ft² per
The rapid development of the North American structural flakeboard industry will result in intense competition with softwood sheathing-grade plywood for midwestern, eastern, and southern structural panel markets. Readers interested in analyses of the economics of flakeboard sheathing manufacture should read Koch (1978a,b,c,d, 1982), Harpole (1978, 1979), Vajda (1978), Dickerhoof and Marcin (1978), and Springate and Roubicek (1981).

Jorgensen (1978) described the history of requirements and codes related to structural flakeboard use in the United States. Standards applicable in the United States to structural flakeboard have been published by the National Particleboard Association (1980) and the American Plywood Association (1980).

**Table 1. Location, type, and annual capacity of existing and planned North American structural flakeboard plants using hardwoods, as of early 1982.**

<table>
<thead>
<tr>
<th>Country and company</th>
<th>Location</th>
<th>Board type</th>
<th>Annual capacity (74-inch basis) Million sq. ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant Waterboard</td>
<td>Engehart, Ont.</td>
<td>Waterboard</td>
<td>150</td>
</tr>
<tr>
<td>Great Lakes Forest Products L.t.</td>
<td>Thunder Bay, Ont.</td>
<td>Waterboard</td>
<td>127</td>
</tr>
<tr>
<td>McMillan Bloedel Industries Ltd.</td>
<td>Thunder Bay, Ont.</td>
<td>Waterboard</td>
<td>130</td>
</tr>
<tr>
<td>(Thunder Bay Division)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MacMillan Bloedel Industries Ltd.</td>
<td>Hudson Bay, Sask.</td>
<td>Waterboard</td>
<td>150</td>
</tr>
<tr>
<td>Malette Waterboard*</td>
<td>St. Georges-de-Champlain, P.Q.</td>
<td>Waterboard</td>
<td>130</td>
</tr>
<tr>
<td>Normick Perron, Inc.</td>
<td>LaSarre, P.Q.</td>
<td>Waterboard</td>
<td>50</td>
</tr>
<tr>
<td>Northwood Pulp and Timber Ltd.</td>
<td>Chatham, N.B.</td>
<td>Waterboard</td>
<td>150</td>
</tr>
<tr>
<td>Waterboard Corp. Ltd.</td>
<td>Timmins, Ont.</td>
<td>Waterboard</td>
<td>60</td>
</tr>
<tr>
<td>Waterboard of Canada Ltd.</td>
<td>Longlac, Ont.</td>
<td>Waterboard</td>
<td>110</td>
</tr>
<tr>
<td>Waterfloyd of Canada Ltd.</td>
<td>Slave Lake, Alta.</td>
<td>Waterboard</td>
<td>120</td>
</tr>
<tr>
<td>UNITED STATES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blandin Wood Products Co. #1</td>
<td>Grand Rapids, Minn.</td>
<td>Waterboard</td>
<td>90</td>
</tr>
<tr>
<td>Blandin Wood Products Co. #2</td>
<td>Grand Rapids, Minn.</td>
<td>Waterboard</td>
<td>180</td>
</tr>
<tr>
<td>Diamond International Corp.*</td>
<td>Winnie, Texas</td>
<td>Oriented-strand board</td>
<td>165</td>
</tr>
<tr>
<td>Elsmendorf Board Corp.</td>
<td>Claremont, N.H.</td>
<td>Oriented-strand board</td>
<td>100</td>
</tr>
<tr>
<td>Louisiana-Pacific Corp.*</td>
<td>Corring, Tex.</td>
<td>Oriented-strand board</td>
<td>125</td>
</tr>
<tr>
<td>Louisiana-Pacific Corp.*</td>
<td>Houlton, Maine</td>
<td>Oriented-strand board</td>
<td>130</td>
</tr>
<tr>
<td>Louisiana-Pacific Corp.*</td>
<td>Hayward, Wis.</td>
<td>Oriented-strand board</td>
<td>125</td>
</tr>
<tr>
<td>Martin group of companies</td>
<td>Le Moyen, La.</td>
<td>Oriented-strand board</td>
<td>120</td>
</tr>
<tr>
<td>Northwood Panelboard Co.</td>
<td>Springate, N.C.</td>
<td>Oriented-strand board</td>
<td>120</td>
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<td>Postich Corp.</td>
<td>Cook, Minn.</td>
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<td>155</td>
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<tr>
<td>Postich Corp.</td>
<td>Midge Lake, Minn.</td>
<td>Oriented-strand board</td>
<td>155</td>
</tr>
<tr>
<td>Weyerhaeuser Co.*</td>
<td>Grayling, Mich.</td>
<td>Oriented-strand board</td>
<td>215</td>
</tr>
</tbody>
</table>

1. Based on data from Forest Industries (1979, 1980), Hickson (1980), and correspondence with companies listed.
2. In operation.
3. See figure 2 for map of plant locations.
4. In planning stage.
5. Capacity increased in 1982 to about 256 million ft², 74-inch basis.

**Figure 2. Locations of plants operating, under construction, or planned, for the manufacture of hardwood structural flakeboard, based on data available in early 1982.**

**Literature Cited**


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March 1983/JOURNAL OF FORESTRY/161
March 1983/Volume 81/Number 3

A publication of the Society of American Foresters devoted to advancing the science, technology, practice, and teaching of professional forestry


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