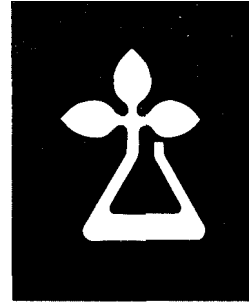


In Cooperation with the University of Wisconsin

U. S. FOREST SERVICE
RESEARCH NOTE

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COMPARATIVE STRENGTH OF AIR-DRIED
AND KILN-DRIED WOOD¹

Some wood users claim that kiln-dried wood is brash and not equal in strength to wood that is air dried. Others advance figures purporting to show that kiln-dried wood is much stronger than air-dried wood. But some 150,000 comparative strength tests, made by the Forest Products Laboratory, of the U.S. Forest Service, on kiln-dried and air-dried specimens of 28 common species of wood show that good kiln drying and good air drying have the same effect upon the strength of the wood.

The belief that kiln drying produces stronger wood than air drying is usually the result of failure to consider differences in moisture content. The moisture content of wood on leaving the kiln is generally from 2 to 6 percent lower than that of thoroughly air-dried wood. Since wood rapidly increases in strength with loss of moisture, higher strength values may be obtained temporarily from kiln-dried wood that has not come into equilibrium with the atmosphere, than would be obtained from air-dried wood. Such a difference in strength has no real significance, however, since in use a piece of wood will come to practically the same moisture condition whether it is kiln dried or air dried.

It must be emphasized that the appearance of the dried wood is not a reliable criterion of the effect the drying process has had upon its strength. The strength properties may be seriously injured by the use of excessive temperatures without visible damage to the wood. Also, it has been found that the same kiln-drying process cannot be applied with equal success to all species. To insure uninjured kiln-dried material, an efficient kiln, a skilled operator with a knowledge of the correct kiln conditions to use with a stock of a given species, grade, and thickness and a record showing that no more severe treatment has been employed, are necessary.

¹This Research Note is a reprint of Forest Products Laboratory Technical Note 180 of the same title, originally issued 1922, revised 1952, and reissued 1961.