

TECHNICAL NOTES

AI3005-F19

FOREST PRODUCTS LABORATORY

U. S. FOREST SERVICE

MADISON, WISCONSIN

LO-11
387

No. F-19✓

SETTING BLOOD ALBUMIN GLUE IN A KILN

The high water resistant qualities of blood albumin glue would make it very valuable for gluing thicker stock than plywood, when such stock is to be used under moist atmospheric conditions. An obstacle in the way of using this glue in ordinary joint work, however, is the fact that to coagulate and set it a temperature of 160° F. or more is required. In the manufacture of plywood with blood glue the joint is made in a hot plate press, but this method is not feasible for heavy stock.

Recent experiments at the Forest Products Laboratory, Madison, Wis., point to the possibility of setting blood glue satisfactorily in a kiln. Heavy blocks were glued up with blood glue in the usual manner and put under pressure with retaining clamps and I-beams. They were then placed in a kiln and subjected for several hours to a temperature of from 175° to 200° F. A relatively high humidity was maintained in order to prevent loss of moisture from the blocks and an accompanying decrease in the pressure.

When the glue was applied to cold wood, from 15 to 18 hours in the kiln were required to set the glue. When the wood was heated to 150° F. before gluing, the length of time the stock had to be left in the kiln was much reduced. Two hours at a temperature of 200° F. were found sufficient to set the glue in blocks 7-1/2 inches thick, consisting of 3 laminations.

Severe soaking and drying tests were afterwards given these blocks, and except for slight checking on the unprotected ends, the glue line remained intact. The shearing strength (on black walnut blocks) previous to the soaking tests averaged 1670 pounds per square inch, with 80 per cent wood failure. When tested wet after soaking for 3 days, they gave an average strength of 1280 pounds per square inch, with 42 per cent wood failure.