

TECHNICAL NOTES

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FOREST PRODUCTS LABORATORY

U. S. FOREST SERVICE

MADISON, WISCONSIN

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METHOD OF TESTING STRENGTH OF JOINT GLUES

In using glues for high grade joint work, a knowledge of the strength of the joint is important. A method which is inexpensive, accurate, and suitable for use in a woodworking factory has not yet been developed. The following method, which is used at the Forest Products Laboratory, can be employed if a universal timber testing machine is available.

Two blocks of selected hard maple, about 1" x 2½" x 12" in size are glued together. After the glue has aged sufficiently they are cut into shear specimens and these are placed in a testing machine so that the base of the long half of the block rests on a metal seat, as shown in the accompanying sketch. Pressure is then exerted on the short half, causing it to slide past the long half at the glued joint. The pressure required to separate the blocks in this way is measured and the percentage of the area of wood surface torn out by the glue estimated.

If the failure occurs entirely in the glue, a measure of the strength of the glue joint is obtained, but if the failure is entirely or partly in the wood, as frequently happens, the full strength of the glue is not developed and the test may have to be repeated, using stronger blocks.

As the same method has been used in securing data on the strength of wood in shear, when the strength of glue has been determined it can be compared with that of any wood whose average shearing strength is known.

The Forest Products Laboratory has made thousands of tests on specimens glued with casein and animal glues and when properly used, these glues have shown shear values of 2400 pounds or more per square inch. Few commercial American woods average more than 2400 pounds per square inch in shearing strength, and the majority of them average less than 2000 pounds. Many glue tests have averaged as high as 3000 pounds.

A working drawing of the shearing tool used and a more detailed description of the test may be secured by application to the Director, Forest Products Laboratory, Madison, Wisconsin.