

TECHNICAL NOTES

FOREST PRODUCTS LABORATORY

U. S. FOREST SERVICE

MADISON, WISCONSIN

No. 99

EFFECT OF OILS ON STRENGTH OF GLUES IN PLYWOOD

Plywood may be used near machinery and tanks with little likelihood of being dangerously weakened by the action of oil or gasoline on the glue joints. This fact is evident from a test lately completed at the Forest Products Laboratory.

Plywood panels glued with animal, vegetable, blood albumin, and casein glues were immersed for nearly a year in engine oil and gasoline. At regular intervals specimens were removed from the liquids and tested for joint strength. All the glues weakened somewhat during the early part of the test, the animal and vegetable glues more than the casein and blood albumin glues. The total loss of strength in any case, however, was small enough to be negligible under most conditions of service. A glue shear strength of 100 to 125 pounds per square inch is considered sufficient for practically any purpose for which plywood is used. Only in two or three instances did the strength of the casein and blood albumin glues fall below 150 pounds per square inch. Engine oil, castor oil, and gasoline seemed to have practically the same effect on the glue joints.

During the 45 weeks' test, the wood absorbed 60 per cent of its original weight in engine oil and 70 per cent of its original weight in gasoline. The absorption of these oils did not cause any noticeable swelling of the wood.