

# TECHNICAL NOTES

FOREST PRODUCTS LABORATORY

U. S. FOREST SERVICE

MADISON, WISCONSIN

No. F-9.

## FOAMY GLUES

Glue which is foamy when spread is likely to give unsatisfactory results, owing to the formation of dry spots in the joints by the air bubbles. Spots as big around as a pea are sometimes thus formed and numerous smaller bare spots are to be found in any joint made with foamy glue. Such breaks in the glue film, of course, weaken the joint appreciably.

A loss of 25 per cent has been noted by the Forest Products Laboratory in the shear strength of plywood due to the use of foamy glue, and even greater losses were found when the glue coat was heavy.

Foaming in animal glues may be caused by running the spreader too rapidly, or by running it idle, or by over heating the glue. Foaming is also dependent on the amount of grease the glue contains, the kind of stock used and the method of manufacture. Alkaline glues are more subject to foaming than glues of acid reaction. Unless a special foamless glue, which most manufacturers are prepared to furnish, is used, or some more desirable preventive measure is taken, the addition of a little grease or oil may allay foaming troubles in animal glue. Fish oil, corn oil, mineral oil and preparations containing tallow are in use for this purpose.

Foaming in casein glue is commonly the result of mixing at too high a speed or for too long a time. Casein glue mixed at high speed may have twice the volume it would have if mixed at the proper speed, owing to the incorporation of air. Foaming is also caused by improper operation of the spreader.

Blood glue has a marked tendency to foam when used in a mechanical spreader. The addition of sulfonated oils has been suggested as a remedy, and it is probable that improvements in the glue formula also will reduce the foaming tendency.