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FOREST PRODUCTS LABORATORY - U. S. FOREST SERVICE - MADISON, WISCONSIN

ANTISEPTIC TREATMENT OF WOOD PULP PREVENTS MOLD AND DECAY

The U. S. Forest Products Laboratory at Madison, Wisconsin, has carried out tests which show that by the addition of certain antiseptics to wood pulp it is possible to prevent to a large extent the decay and molding which now cause such serious losses in the pulp during storage. Several preservatives were found which kept groundwood pulp clean for a year under the most severe conditions which could be devised. The procedure adopted in the tests was, briefly, to inoculate the treated pulp with active mold spores and wood-destroying fungi and then to store it in warm, moist air in piles between laps of very rotten pulp.

In determining the relative suitability of the preservatives, account was taken of their effectiveness as antiseptics, poisonous properties, tendency to discolor the pulp, objectionable odor, solubility in cold water, and cheapness. Several chemicals of excellent antiseptic qualities were necessarily ruled out because of their failure to meet certain of these other requirements.

All things considered, sodium fluoride appeared to give the best results. A 5 per cent solution sprayed on the pulp at the rate of 80 pounds of dry salt to a ton of air-dry pulp, kept it practically clean for a year. A 3 per cent solution (48 pounds per ton) permitted only slight molding. This chemical is safe to handle, and produces no discoloration in the pulp.

Borax followed a close second to sodium fluoride. A 5 per cent solution (80 pounds per ton) held the pulp in good condition for 6 to 8 months. Borax is safe for workmen to handle and does not darken the pulp to an objectionable degree. Boracic acid was equal or superior to borax in effectiveness, but the greater cost throws it out of competition. Sodium dinitrophenolate in a 1/8 per cent concentration (2 pounds per ton) had an antiseptic efficiency equal to anything tried, but yellowed the pulp somewhat. Sodium dichromate gave less consistent results than the four chemicals mentioned, and the tendency toward browning was marked in concentrations of 2 or more per cent (32 pounds per ton). Sodium carbonate and

bicarbonate, although they kept the pulp nearly free from infection for a year or more, browned and softened it too seriously for commercial use.

In the laboratory experiments, the antiseptics were sprayed with an ordinary garden sprayer on the pulp as it came from the wet machine. These experiments were followed by a mill trial in which the preservatives were applied at the press roll of the wet machine, with promising results. Improved methods of application should make it possible to lower the concentrations and, consequently, the cost of treatment. A fuller description of the tests and recommendations for further work may be obtained from the Forest Products Laboratory.