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

ACTION OF WATER ON ZINC CHLORIDE IN WOOD

Although zinc chloride is one of the most effective of wood preservatives, it will not give permanent protection. Under the action of water this preservative loses its strength in two ways. In time a considerable amount of the solution is leached out of the wood, and that remaining is not of sufficient strength to be effective. It has also been brought out in a study of preservatives at the Forest Products Laboratory, that water eventually causes a chemical decomposition of zinc chloride by the removal of excess amounts of chlorine.

Samples of ties analyzed after service had a zinc content equivalent to 0.4 pound of zinc chloride, with scarcely enough chlorine present for 0.08 pound of zinc chloride per cubic foot. Treated blocks leached for a month at the laboratory lost about 90 per cent of their chlorine content and only 70 per cent of their zinc.

The disappearance of the chlorine from zinc chloride explains decay which has been found in treated ties and timbers which still have high zinc content. Although the zinc is the toxic or poisonous part of zinc chloride, it is not effective against the fungi which cause decay unless it is combined with some acid radical which makes it soluble. In analyzing zinc-chloride-treated wood after service, it is necessary to determine both the chlorine and zinc contents in order to calculate the amount of preservative solution present in the wood. Even then only a rough estimate can be formed, for some of the chlorine which would be obtained in the analysis is in the wood in the form of an insoluble basic chloride of zinc of unknown composition.