

Control of Decay in Waterfront Structures

Wood is one of the most widely used materials for piers and wharves. However, decay of above-water marine structures resulting from inadequate treatment costs marina and dock owners millions of dollars annually. Particularly prone to decay are the heartwood portions of pressure-treated Douglas-fir fender piles and other large structural timbers; decay causes deep checks that penetrate the treated shell. Premature failure is especially serious in fender piles, which protect both the docking vessel and the pier or wharf from impact damage.

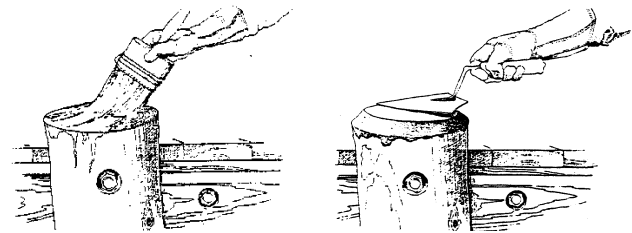
Research conducted by the Forest Products Laboratory (FPL) has shown that simple in-place treatments can prevent above-water decay and extend the service life of marine pilings at least 10 years.

The technique involves in-place application of either ammonium bifluoride or a fungicide in a mastic material to the top surface of cut-off piles. A coal-tar "cap" is then placed on top of the treated pile. This treatment protects against the initiation of decay only at the top of the pile. Either treatment is effective by itself, and retreatment does not appear necessary for at least 10 years.

Ammonium bifluoride or a fungicidal mastic can provide Douglas-fir piles with long-term protection from decay. Immediately after pile tops are cut off, the piles are brush-treated with a 20% aqueous solution of ammonium bifluoride (the easier of the two methods), or fungicidal mastic is applied with a trowel.

Regardless of which method of fungicide treatment is used, FPL researchers recommend applying a coal-tar cap to the top of the treated pile. This protective coating prevents troublesome weather checking and lengthens the inhibitive action of the fluoride treatment.

The growing replacement costs for piles, decks, curbs, fender pilings, and other waterfront structures have increased the significance of these research results. Learning to protect wood in waterfront structures is important



Applications of fungicide (left) and coal-tar cap (right).

because of the many unique advantages of wood for marine use, such as high strength-to-weight ratio, resiliency, ease of construction, and relatively low cost.

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Reference

Highley, T.L.; Scheffer, T.C. 1989. Controlling decay in waterfront structures. Evaluation, prevention, and remedial treatments. Res. Pap. FPL-RP-494. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 26 p.

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