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Preservative Treatment For Fence Posts and Lumber

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Farmers constantly face the problem of keeping their fences and wooden structures in good shape. Part of the trouble is that decay and insects attack the wood and cause damage; the farmer must then replace the wood, an expensive process both in time and labor.

This folder describes a simple way to treat wooden items on the farm with a preservative. This treatment will make many species of wood useful for three to four times longer than if they were not treated.

The Need For Treated Wood

All native woods are subject to decay and insect attack if they are used in wet places. The sapwood (light-colored portion beneath the bark) of all trees is readily attacked by these organisms. The heartwood (darker portion toward center of tree) of some species is resistant to these attacks. The heartwood of northern white cedar, black locust, and black walnut is classed among the so-called durable woods of Michigan; it often lasts up to 20 years under severe exposure. Under the same conditions, the sapwood of these species and heartwood of most other species will have an average life of only about 5 years.

If durable woods are available, the heartwood may be used without a preservative treatment. Unfortunately, in many sections

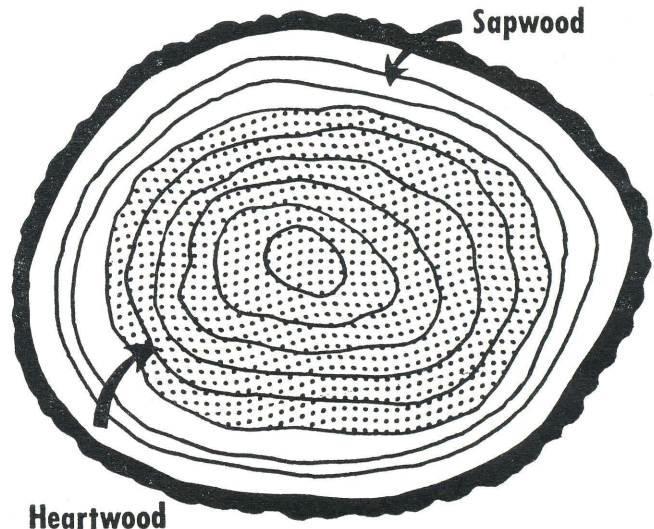


Fig. 1. Cross section of a log

of Michigan the supply of durable species is growing scarcer, and the non-durable woods, or durable woods containing mostly sapwood, must be used. By receiving good preservative treatment, these less durable woods will be useful about as long as the heartwood of durable species.

Of the species found in Michigan, the following are fairly receptive to treatment: Northern white pine, jack pine, red pine, white ash, green ash, river birch, sweet birch, yellow birch, red oak, black willow, cottonwood, silver maple, sugar maple, American elm, and slippery elm. The cold-soak treatment described in this folder is recommended for these species.

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Where to Use Treated Wood

Always use treated wood or untreated heartwood of durable species where there is danger of prolonged wetness or dampness. Wood having a high moisture content is always subject to insect attack and decay. High moisture content often occurs when wood touches the ground or is used within 18 inches of the ground surface. Wood may also become very moist when it is in direct contact with damp masonry or when it is used in structures, such as livestock barns, which may be exposed to high humidities.

Preparing Wood for Treatment

Wood to be treated by the method described in this folder must be free of all bark and partially dried. Enough water must evaporate from the wood cells to make room for the preservative.

You can remove the bark most easily from trees felled between the months of May and August. Peel the bark immediately after cutting. The bark will slip readily during this time, and you can remove it easily with a draw-knife or spud. (A sharpened hoe, square shovel, or axe will also serve as barking tools.) You must remove *all* the bark, including the stringy inside portion. The presence of bark will interfere with effective drying and preserving.

After removing the bark, or after sawing boards from green logs, pile the material in the open to dry. Drying time will depend upon how you plan to use the material, since thoroughly dried wood is not necessary for the preservative treatment.

Timbers to be used in contact with the ground will be dry enough for treating after 4 or 5 months of summer seasoning. If cut and piled in the fall, they probably will have to season until early summer of the next year before treating.

Timbers and lumber to be used for building purposes must be thoroughly dried to prevent shrinkage. The length of drying time required depends on size of the pieces, time of year, and species of wood. You can get detailed instructions for drying various

sizes and species by writing to the Department of Forest Products, Michigan State University, East Lansing.

Locate seasoning piles on well-drained ground from which you have cleared all debris and weeds. Raise the piles at least 18 inches above the ground on treated wood or masonry blocks. Cross-pile posts and other round timbers with spaces between the posts.

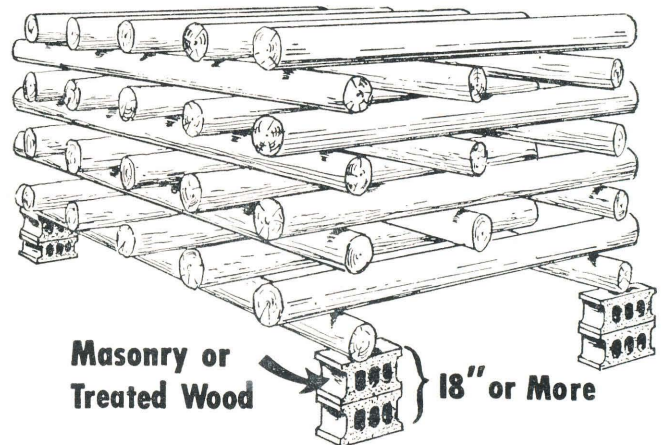


Fig. 2. A good way to season round timbers

Pile the lumber with stickers (1- by 2-inch wood strips) between every two layers of boards to allow air to circulate. The front supporting blocks should be at least 6 inches higher than the rear blocks in order to slope the pile for good drainage.

If possible, finish all trimming, notching, and boring of holes before you treat the wood. If you must perform any of these operations after treating, give the exposed wood two or three heavy brush applications of the preservative.

Preservatives to Use

Because it is effective, easily applied, and easy to buy in Michigan, pentachlorophenol (penta) is the best preservative for home use. You can buy penta in three forms: as dry crystals, as a liquid concentrate, and in a ready-to-use solution.

(1) *The crystals* are very difficult to put into solution. Because they require the use of hot oil and special equipment, they are not recommended for home use.

(2) *The concentrates* are usually sold in a 4 to 1 or 10 to 1 form; that is, add 4 or 10 gallons of petroleum oil to 1 gallon of concentrate according to directions. Diesel oil, fuel oil, or even used crankcase drainings can be used as thinners.

Concentrates are the most economical form of penta available and should be used for all general preserving treatments where the wood will *NOT* be painted. They are recommended for all material that will be exposed to severe weathering conditions. This includes fence posts, poles, and all lumber that will be used in contact with the ground.

Although some manufacturers sell a concentrate that they claim can be painted over, most concentrates are not designed for this purpose and will "bleed" through the paint film, causing dark stains. Use even the so-called paintable concentrates with caution. You must dilute them with very volatile oils, such as mineral spirits, to prevent bleeding. In any event, don't paint over concentrates unless the manufacturer's instructions recommend it.

The 10 to 1 concentrates sell for about \$4.25 a gallon in 5-gallon containers. The 4 to 1 type costs about \$2.25 a gallon in 5-gallon lots.

(3) All *ready-to-use* forms of penta are paintable. They will not bleed through paint nor crystallize on the surface of the wood. You can use them successfully beneath all light-colored paints. They contain quick-drying oils and can be painted over shortly after treating.

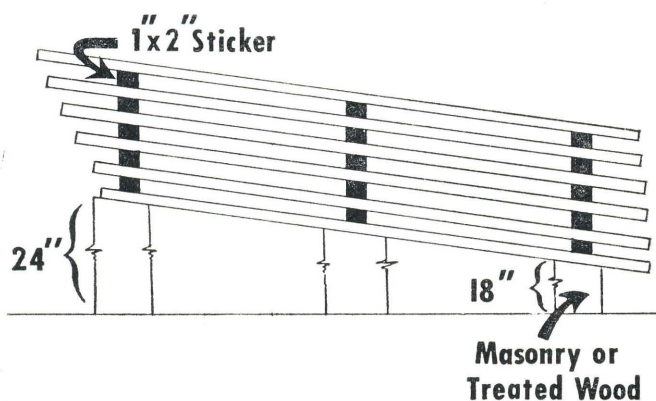


Fig. 3. Side view of a lumber pile

Two ready-to-use forms of penta are available, a straight preservative and a combination preservative-water repellent. The two forms have the same painting characteristics and are recommended for all wood that is to be painted after treatment.

The water-repellent form has the added advantage of retarding the swelling and shrinking of wood due to gain and loss of moisture. This form is effective on such material as exterior siding and millwork.

Siding treated with water-repellent penta before being applied to a building will require less frequent painting than untreated siding, or that treated with a straight preservative. Millwork items, such as doors and windows, treated with the water-repellent form of penta will last longer, retain paint longer, and be virtually free from sticking due to swelling of the wood.

The average price per gallon of straight, ready-to-use penta is about \$1.85 in 5-gallon containers. The water-repellent form costs about \$2.80. If you dilute either of these two types, the penta loses its effectiveness.

The above prices for concentrated and ready-to-use penta are only averages and will vary for different sections of the state. All forms are considerably lower in cost when you buy them in drum lots.

Treating Methods

The best way to preserve wood is by a commercial pressure process. This process is recommended for all wood that will be in contact with the ground. For material that will not be in contact with the ground, or when pressure-treated wood is not available, you can use other treating methods that will greatly increase the service life of wood.

The only recommended method of using the preservatives discussed above, on the farm, is the cold-soak method. Other types of treatment either involve complicated equipment, are too hazardous to use, or are ineffective.

Equipment Needed

A treating tank large enough to hold the material you are treating is the only piece of equipment needed for the cold-soak method.

You can make a simple vertical tank, suitable for treating 7-foot posts, by welding two 55-gallon steel drums together after removing all heads except the one which will serve as the bottom of the tank. To keep it from tipping over, brace or partially bury the tank in the ground.

For longer material, you may need to build a horizontal tank of sheet metal, reinforced with wood. Keep the dimensions at a minimum; otherwise you will need excessive quantities of preservative to cover the material being treated. A hold-down device is necessary with a horizontal tank in order to keep the material submerged.

Treating Schedules

Soak fence posts and other round timbers that will be used in contact with the ground for 48 hours. If you use a vertical tank for fence posts, put the large end of the posts at the bottom of the tank. Use enough pre-

servative to cover the posts to a point which will be 18 inches above ground level. This will insure good protection at the ground-line area. The posts will give good service with just the lower portion treated.

However, to better protect the posts and possibly increase their service life, you can treat the top halves also. In this case, follow the same procedure as above, except that the preservative should cover at least the lower half of the posts. After 48 hours, reverse the posts and soak the top halves for about 6 hours. You don't need to soak the upper half of a post for longer than 6 hours because the above-ground conditions are not as severe as those at the ground-line area.

Soak sawed or hewed material which has the heartwood exposed, and which will be used in contact with the ground, for 72 to 96 hours.

For exterior lumber, such as millwork and siding that will not be in contact with the ground, a 15-minute dip is long enough.

If you use other species than those listed on page 1, increase treating times considerably. Even then, the treatment may not be effective.

POINTS TO REMEMBER

1. Remove all bark (outer and inner) from logs immediately after cutting.
2. Dry the wood before treating.
3. Keep drying piles off the ground.
4. Do as much trimming, fitting, and boring as possible before treating.
5. If necessary to trim, fit, or bore wood after preserving, brush two or three coats of treating solution on exposed surfaces.
6. Use penta concentrate wherever possible. It is the most economical.
7. Treating tanks should be adequate but not larger than necessary. Otherwise you will need unnecessarily large volumes of treating solution.
8. You can treat a 7-foot post, measuring 6 inches in diameter at the large end, for as little as 30 cents by using penta concentrate and crankcase drainings.
9. Due to absorption by wood under treatment, you will have to add more solution during the process to maintain the proper level.
10. Brushing on penta solutions will give only superficial treatment and is not recommended for severe service conditions.
11. For more information on specific problems, write the Department of Forest Products, Michigan State University, East Lansing, or see your county agricultural agent.