

TECHNICAL NOTE NUMBER 186

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

COATINGS THAT PREVENT END CHECKS

Wood dries more rapidly from the end grain than from the side grain, and is apt to check and split during seasoning unless end drying is retarded. For this reason it is advisable to use a moisture-resistant end coating on wood during air seasoning or kiln drying, especially on woods which are difficult to dry and on short kiln samples.

The coatings ordinarily used are of two classes. The first are liquid at ordinary temperatures and can be applied cold. The second are solid at ordinary temperatures and must be applied hot. Cold coatings have the advantage that they may be used as easily on logs and lumber as on kiln samples and dimension stock; hot coatings, because of the method of application (end dipping), are not easy to use on large stock.

Either the cold or the hot coatings can be used effectively for drying temperatures up to 140° F. Temperatures much above this cause blistering in the cold coatings, but make the hot coatings plastic enough to form new surfaces as fast as the old ones break. For this reason the hot coatings are apt to be more effective than the cold coatings for temperatures from 140° to 170°, where they liquefy to such an extent that they run off. No coating has been found which is entirely satisfactory for temperatures above 170°. Cold coatings are perhaps somewhat better than hot coatings for temperatures above 170° and for use on kiln samples when temperatures are high enough to cause loss of part of a hot coating. Some asphalts are highly moisture-resistant, but they are hard to apply because of the high temperatures required to make them plastic. Paraffine has proved very satisfactory as an end coating for stock during air seasoning, but cannot be used in the kiln because of its low melting-point.

Excessive shrinkage of the wood and rough handling often cause the end coatings to chip or shear off, and a fresh application of the coating must be made. To reduce end-drying sufficiently there must be a thick coating over the entire end surface. When hot dips are used, the wood should be dipped 1/2 inch into the liquid. Cold coatings should have about the consistency of heavy syrup. The amount of filler required ranges from 1/2 to 4 parts by weight to 1 of the vehicle.

The two best cold coatings developed at the Forest Products Laboratory are hardened gloss oil thickened with barytes and asbestine (very cheap), and high-grade spar varnish and barytes (expensive).

The gloss oil coating is made as follows: The oil itself should be of a thick grade, made up (by the paint manufacturer) of about 8 parts by weight quick lime, 100 parts rosin, and 57.5 parts spirit. To 100 parts of the gloss oil add 25 parts barytes and 25 parts of asbestine. One or two parts of lampblack may also be added if a black coating is desired. The asbestine helps to prevent the settling out of the pigment. Any paint manufacturer can make up this coating. It can also be mixed by the user as needed, if the proper grade of gloss oil is obtained. Some of the gloss oils on the market have little moisture resistance. It is essential, therefore, that the coating be made up in accordance with the foregoing formula.

Cold coatings must be allowed to dry a few hours before being subjected to kiln temperatures.

The hot dips are effective in the following order:

213° coal-tar pitch	Cheap.
254° coal-tar pitch	Cheap.
Rosin and lampblack (100 parts of rosin to 7 parts of lampblack)	Moderate cost.