Natural Resources Canada

R&D Update

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Attributes of the prototype FAST Tester

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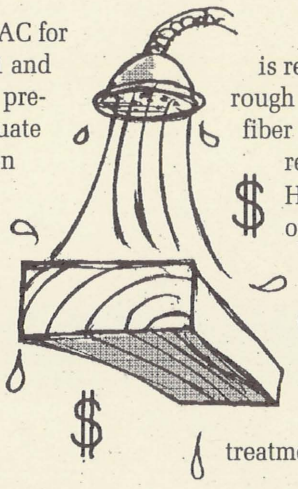
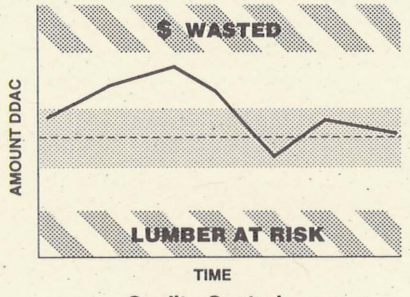
Didecyldimethylammonium chloride (DDAC for short) is the main active ingredient in F-2, NP-1 and Timbercote antisapstain treatments. In order to prevent sap-stain formation there must be an adequate amount of DDAC (about 100 µg/cm^2) retained on the wood surface. Amounts in excess of this constitute over-treatment and do not provide any extra protection, and thus represent excess cost of treating. Treating at lower concentrations puts the wood at increased risk to sap stain. Frequent analysis of treated wood is thus necessary to ensure that it is adequately treated, while saving the extra costs of over treatment.



Surface treatment of green lumber by DDAC is required for sap stain control. Surprisingly, rough wood, which has many times more 'wood fiber surface'/cm^2 than smooth wood, does not require any more DDAC measured as µg per cm^2. However, rough wood treated under conditions optimized for smooth wood will often retain much more DDAC. This presents an extra cost and an unnecessary environmental burden. Only the **FAST tester** measures the DDAC actually on the wood surface within a time frame that makes it possible for mills to optimize treatment systems for adequate surface treatment of rough or smooth boards.

Current analytical techniques require an extensive laboratory, highly trained personnel and a considerable amount of time to analyze for DDAC on wood. The **FAST tester** utilizes a completely different approach to analysis. By shining an infrared light on the wood surface and measuring the reflected portion, we can accurately measure DDAC on the wood surface in a matter of seconds. Once installed and calibrated, measurement consists simply of putting the piece of wood to be analyzed on the **FAST tester** and waiting for the results (about 20 seconds). There are no chemicals involved, and no sample preparation required. The speed and ease of use make it possible to constantly monitor treatment levels and even determine how uniformly individual boards have been treated. **This means that an in-mill quality control program will soon be possible.**



Quality Control

In a case study for a number of industrially treated STAND & BTR S-GRN HEM-FIR(N) 2 x 4's, chemical retention profiles by the **FAST tester** showed that the top surfaces of the boards retained almost twice as much chemical as the bottom surfaces. Also, concentration gradients from leading to trailing ends and from side to side were revealed. This information could prove invaluable for designing a better spray system and could help reduce over treatment of one surface while under treating other surfaces.

In the future, with the advent of an at-line analysis system, based on the **FAST tester** technology, industry will have a facile means of obtaining sufficient data to adjust the sprayer to achieve optimal treatments regardless of the surface characteristics of this furnish. This will help to minimize waste of chemical, increase protection of the environment, while achieving protection of green lumber.

Fast Tester