

## WORKING GROUP 2

### SPREAD OF DECAY IN PACKAGED LUMBER: A NEW METHOD FOR DETERMINING A FUNGICIDE'S LONGER-TERM POTENTIAL

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This laboratory developed an "Accelerated Laboratory Test for Evaluating the Toxicity of fungicides for Lumber" (Materials Research and Standards, March 1970) and this ASTM Standard Method has proven to be an effective means for determining a chemical's sapstain and mould preventive value. However, to further test a chemical's ability to control the spread of decay within packages of lumber a new laboratory method has been devised and is proposed as an ASTM Standard:

- fresh lodgepole pine or hemlock sapwood is sawn into beams 7 x 15 x 70 mm (the same as for the 1970 standard)
- inoculum beams are sterilized and decayed for three weeks over a malt agar culture of the most prevalent of decay fungi, such as Fomitopsis pinicola or Perenniporia subacida
- test beams are dip-treated in solutions of the fungicide under test (exactly as done in the 1970 standard)
- four inoculum and 21 test beams are packaged into sets as shown in Figure 1
- these 25-beam sets are tightly and individually plastic-bagged, sealed, and incubated in the dark, at room temperature, for several weeks
- packages are opened and test beams are rated for the degree of decay.

Preliminary tests also explored:

- the necessity of sterilizing test beams prior to chemical dipping
- the effect of repeated openings (for decay rating) of packages during the test progress.
- the effects of also dip-treating the inoculum beams prior to package assembly.

Assessment of fungal advance differs from the 1970 standard; a scale of from 0 to 5 rates decay from no growth to heavy growth

where test beams are already softened by decay. Table 1 summarizes the results.

Of the various combinations examined, the use of unsterilized test pieces and of inoculated pieces which were not treated with fungicide were the most promising. The results obtained have yet to be correlated with the commercial situations.

The method has proved to be useful in assessing the effectiveness of fungicidal formulations in preventing the spread of decay from piece-to-piece in close-piled packages of unseasoned lumber and it is offered as a standard method for testing.

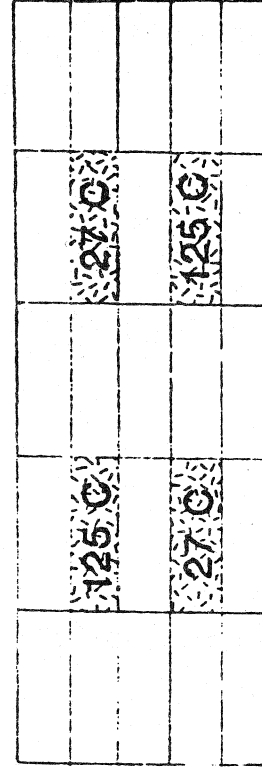


Figure 1. Arrangement of Experimental Packages  
 [ ] non inoculated test pieces [shaded] decayed or inoculated test pieces

Table 1 Average Decay Scores of Packages (each piece rated on a scale of 0-5) After Treatment with Sodium Tetrachlorophenate and Incubation for 16 Weeks

Treatment Conc. % NaTCP	Western Hemlock									
	Lodgepole Pine					Western Hemlock				
	Experiment 1*		Experiment 2**		Experiment 1		Experiment 2			
	Test pieces sterilized	test pieces not sterilized	Inoc. pieces treated	Inoc. pieces not treated	test pieces sterilized	test pieces not sterilized	Inoc. pieces treated	Inoc. pieces not treated	test pieces sterilized	Inoc. pieces not treated
0	4.2	0.8 +	4.0	4.0	4.5	4.4	2.9	2.8	4.4	2.8
0.38	4.2	1.1 +	1.1	3.0	4.4	3.9	0.8	1.4	3.9	1.4
0.5	4.0	1.3 +	1.1	1.5	3.5	2.6	0.1	0.9	2.6	0.9
0.75	4.0	3.6 +	0.8	1.2	3.0	0.9	0.3	0.8	0.9	0.8
1.0	4.0	3.2 +	0.4	0.6	1.2	0.4	0.0	0.2	0.4	0.2
1.5	4.0	0.3	0.3	0.4	1.2	0.4	0.0	0.0	0.4	0.0
2.0										
3.0										
4.0										
8.0										

\* Averages of 3 packages of 21 test pieces  
 \*\* Averages of 4 packages of 21 test pieces

+ Test piece contaminated with molds which are antagonistic to decay fungi