

3. Redwood Seasoning Committee

End Check Preventatives

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INTRODUCTION

End checking may be reduced by:

1. Box piling and using sticker overhang.
2. End boards.
3. End coatings.

End coatings have been classified as hot or cold. Various types of coatings have been described and discussed in the literature. (1), (2), (3), (4). This report is confined to results obtained from use of:

- A. End boards.
- B. Cold coatings.

Test Description

Controlled tests of end boards were made in the Eureka and Willits areas. Controlled tests of end coatings were made in the Eureka, Willits and Cloverdale areas.

TABLE I. Type and cost of end check preventative treatments used in Willits test.

Treatment	(2) Rate of Application per unit, Gals.	(3) Cost of Material per gal., \$	Cost of Material per MBF, \$	(2) Cost of Application per MBF, \$	Total Cost per MBF, \$
A. End boards (1)	—	—	0.24	0.88	1.12
B. Wax emulsion	0.72	0.48	0.23	0.30	0.53
C. Latex with aluminum pigment	0.30	1.75	0.35	0.30	0.65
D. Probably filled hardened gloss oil	0.31	2.50	0.52	0.30	0.82
E. " "	0.35	1.65	0.39	0.30	0.69
F. Polyvinyl emulsion	0.38	4.25	1.08	0.30	1.38
G. Drying Oil	0.43	1.80	0.52	0.30	0.82

(1) Cost of end boards is based on covering both ends of unit.

(2) Based on treating both ends of the test units.

(3) Based on cost per gallon of thinned sealer (where thinning was necessary).

The wax emulsion end sealer used in the Cloverdale and the Eureka tests is the same as the wax emulsion end sealer used in the Willits test.

All test data is based on a standard unit of 1500 BF. In calculating the savings due to the various treatments, the value of the test lumber was taken as \$200/MBF.

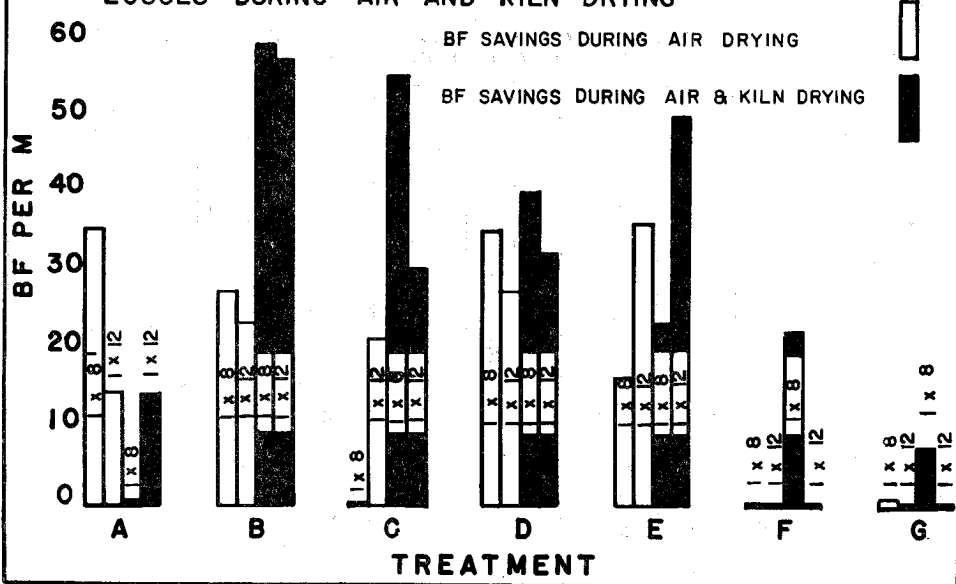
Results

Willits Area

TABLE II. Actual savings in Dollars per MBF resulting from use of various treatments in preventing trim losses due to end checking in air and kiln drying.

Treatment	Lumber Size	AIR DRYING				AIR AND KILN DRYING			
		Savings Due to Treatment, BF/MBF	Gross Savings Per MBF, \$	Cost of Material and Application Per MBF, \$	Net Saving Per MBF, \$	Savings Due to Treatment, BF/MBF	Gross Savings Per MBF, \$	Cost of Material and Application Per MBF, \$	Net Saving Per MBF, \$
A	1 x 8	36	7.20	1.12	6.08	0			
	1 x 12	15	3.00	1.12	1.88	15	3.00	1.12	1.88
B	1 x 8	28	5.60	0.53	5.07	60	12.00	0.53	11.47
	1 x 12	24	4.80	0.53	4.27	58	11.60	0.53	11.07
C	1 x 8	0				56	11.20	0.65	10.55
	1 x 12	22	4.40	0.65	3.75	31	6.20	0.65	5.55
D	1 x 8	36	7.20	0.82	6.38	41	8.20	0.82	7.38
	1 x 12	28	5.60	0.82	4.78	33	6.60	0.82	5.78
E	1 x 8	17	3.40	0.69	2.71	24	4.80	0.69	4.11
	1 x 12	37	7.40	0.69	6.71	52	10.40	0.69	9.71
F	1 x 8	0				23	4.60	1.38	3.22
	1 x 12	0				0			
G	1 x 8	1				8	1.60	0.82	0.78
	1 x 12	0				0			

FIGURE 2: SAVINGS IN BF/M RESULTING FROM THE USE OF VARIOUS TREATMENTS TO PREVENT END CHECK LOSSES DURING AIR AND KILN DRYING



Cloverdale and Eureka Areas

TABLE III. Actual savings in dollars per MBF resulting from use of end check preventative treatments during air drying.

Area and Treatment	Lumber Size	Savings Due to Treatment, BF/MBF,	Gross Savings Per MBF, \$	(1) Cost of Material and Application Per MBF, \$	Net Savings Per MBF, \$
Cloverdale: End Sealer	1 x 8	19	3.80	0.27	3.53
Eureka: End Sealer	1 x 8	21	4.20	0.27	3.93
End Boards	1 x 8	26	5.20	0.56	4.64

(1) Tests at Cloverdale and Eureka: units treated at one end only so cost of material and application is one-half that incurred in the Willits test.

Summary

TABLE IV. Comparison of net savings per MBF resulting from use of two end check preventatives during the air drying 1 x 8 lumber at various locations.

	Type of End Check Preventative	Test Location		
		Willits	Cloverdale	Eureka
Net Savings, \$/MBF	Wax emulsion end sealer (1)	5.07	3.53	3.93
	End Boards (2)	6.08	—	4.64

(1) In the Willits test, end sealer was applied at both ends of unit. In Cloverdale and Eureka tests, end sealer was applied at one end only.

(2) Willits test; end boards applied at both ends of test units. Eureka test; end boards applied at one end only.

Good end sealer treatments do significantly reduce loss due to end checking both in air and kiln drying. It appears that the end sealers tested had the following order of effectiveness in reducing the dollar per M loss due to end checking.

1. Wax emulsion
2. Aluminum pigment in latex
3. Filled hardened gloss oil (or variations thereof)

The end board treatment was effective in preventing end checking in the yard but the benefit obtained during air drying was not always carried through kiln drying. It appears economically feasible to justify this treatment on the boundaries of blocks and in areas where exposure of the ends of units to the sun subjects the ends to severe drying conditions.

More tests should be made to more definitely assess some of the following factors:

1. Effect of thickness of coating.
2. Effect of treating both ends of unit versus one end only.
3. In mild drying areas, the effect of treating all units in the yard versus treating only those ends of units on the block boundaries.
4. Effect of end check prevention on FG versus VG; wide and narrow stock.

Literature Cited

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- (3) Mottet, A. L. **End Seals for West Coast Lumber.** West Coast Lumberman's Association Research Bulletin # 3, 1942.
- (4) Hunt, G. M. **Effectiveness of Moisture Excluding Coatings on Wood.** U. S. Department of Agriculture, Circular No. 128, 1930.