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VENEER RECOVERY FROM PEELER GRADE DOUGLAS-FIR LOGS SOUTHWESTERN OREGON[1/]

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With the continued expansion of Douglas-fir plywood production, demand will increase for all grades of peelable logs to supply the industry. Thus, it becomes increasingly important to know the veneer-grade recovery expected so that timber and log values can be more accurately appraised.

During March and April, 1956, the Pacific Northwest Forest and Range Experiment Station conducted two veneer-recovery studies[2/] in southwestern Oregon at Brookings Plywood Corporation, Brookings, and at Evans Products Company, Roseburg.

1/ Southwestern Oregon is here defined as the area west of the Cascade summit and south of the line approximating the southern boundary of Lane County.

2/ Other agencies cooperating were Bureau of Land Management, Bureau of Indian Affairs, Douglas Fir Plywood Association, Northern California Log Scaling and Grading Bureau and Columbia River Log Scaling and Grading Bureau.

A total volume of 241,230 board-feet of Douglas-fir logs at the two locations was graded as follows:

Log grade	Net volume board-feet
No. 1 Peeler	57,240
No. 2 Peeler	61,890
No. 3 Peeler	82,220
Special Peeler 3/	39,880
	241,230

The logs were scaled and graded in the water by representatives of the log scaling and grading bureau employed at the mill with the Forest Service check scaler collaborating. The grading rules used were the official rules for the Puget Sound, Grays Harbor, Southern Oregon, and Northern California log scaling and grading bureaus. Logs of like grade were segregated into test runs of approximately four hours peeling time at the lathe. The logs were bucked into 8½-foot blocks for the lathe. They were cut into 1/8- or 1/10-inch veneer as desired by mill management.

The veneer was dried in conventional steam-heated driers immediately after cutting and was graded under the direction of a Douglas Fir Plywood Association grading supervisor. Grading was done in accordance with Commercial Standard CS45-55 for Douglas-fir plywood, with the following modifications: full-width sheets (50- by 101-inch) of A-face admitted 8, and B-face admitted 12 patches or plugs acceptable in the grade. Narrower sheets admitted a proportional amount of patching. The volume of the veneer was measured after drying and expressed in terms of equivalent 3/8-inch rough trimmed panel volume. Correction for veneer grade fall-down occurring at the patchers and pluggers was applied to the volume tally of the appropriate grade. Since neither mill possessed a core lathe, the volume of veneer which could be obtained if the peelable cores were rerun to a 6-inch diameter was calculated and credited as D-grade veneer.

For each grade of veneer, the volume removed in trimming to panel size, jointing, dry clipping, and the volume discarded at the glue spreaders were deducted from the appropriate gross volume. Correction for grade reduction of veneer in the finishing operation was made by transferring 5 percent of the A veneer to B and 5 percent of the B veneer to C.4/

3/ Small No. 2 Sawmill logs (18 through 23 inches) meeting requirements of at least No. 3 Peelers except for size.

4/ Estimates obtained from several plywood plant superintendents.

The average volume-recovery ratios for each of the four log grades are almost identical (table 1). These ratios, ranging from 2.67 to 2.69 indicate the finished plywood panel volume equalled the net scaled board-foot content of the log (one board-foot equals 2.67 square feet on a 3/8-inch basis). The logs available for test were predominately 3-block logs, many possessing an abnormally high degree of taper, which resulted in a considerable volume of unscaled wood present in the taper. This factor would tend to increase recovery ratios. Another factor affecting these ratios is the volume of veneer calculated to be available from usable cores to a 6-inch diameter. This additional volume represented approximately 4 percent of the total volume of the study veneer and as much as 9 percent of the volume for test runs of Special Peeler logs.

Table 1 also shows that the smaller size No. 1 and No. 2 Peeler logs yielded a higher recovery ratio than larger logs of the same grade. This may be due in part to an oddity of the Scribner log rule. In comparison with the actual calculated volume of logs, this rule indicates a volume yield for logs 32 through 36 inches in diameter considerably lower than for logs immediately above and below that range (over 36 inches and 25 to 31 inches). The lowest yield is for logs 34 inches in diameter.

In these studies, it was not feasible to determine every source of processing loss occurring in plywood plants. This is due, in part, to variation in the equipment and techniques employed at different plants. The amount of veneer patching and repairing practiced also varies between plants and contributes to some volume and grade changes. Also, loss in volume occurs due to the assortment of log lengths available because some logs are not fully utilized when bucked into peeler blocks. This factor did not occur in these studies, since test logs were selected only in 17-, 26-, 34-, or 42-foot lengths. Some other areas where minor volume losses are incurred, but were not included in these studies, are the dry-clip developed during lay-up and rejected panels.

For comparison with industry production reports it is necessary to determine the recovery on the basis of plywood panels shipped. This necessitates adjusting table 1 to allow for all volume losses not measured during the study. For the 12-month period ending August 1956 the reported average industry-recovery ratio (volume 3/8-inch panels divided by net log scale) was approximately 2.3. Converting the percentage values of table 1 to a 2.3 ratio gives the veneer-grade yield (table 2).

The procedure for reducing table 1 to a 2.3 ratio is as follows: Table 1 shows that 41 percent of the No. 1 Peeler net log scale is A veneer. Thus, $41 \times 2.3/2.67 = 35.32$ percent or 35 percent as shown in table 2. Other items can be reduced in a similar manner.

Table 1.--Recovery of dry Douglas-fir veneer, southwestern Oregon

Log				Dry veneer recovered (3/8-inch equivalent)	Veneer recovery				Recovery ratio[2]
Grade	Diameter	Net Scale	Scaling deductions[1]		A	B	C	D	
	Inches	Board-feet	Percent	Sq. ft.	Percent of net log scale				
1 Peeler	30-36	26,000	7.8	73,040	47	10	36	13	2.81
	over 36	31,240	9.4	79,750	36	8	40	11	2.55
		57,240	8.7	152,790	41	9	38	12	2.67
2 Peeler	30-36	29,230	8.7	84,120	38	7	46	16	2.88
	over 36	32,660	14.6	81,330	32	7	38	16	2.49
		61,890	11.9	165,450	35	7	42	16	2.67
3 Peeler	24-29	42,450	6.8	114,050	21	7	41	31	2.69
	over 29	39,770	12.3	106,100	18	11	34	37	2.67
		82,220	9.5	220,150	20	9	38	34	2.68
Special Peeler	18-23	39,880	5.3	107,460	8	5	52	36	2.69

1/ Determined as follows: $\frac{\text{Gross scale - Net scale}}{\text{Gross scale}} \times 100$

2/ Volume of veneer (3/8-inch basis) divided by net log scale.

Table 2.--Adjusted[1/] recovery of dry Douglas-fir veneer--southwestern Oregon

Log grade	Veneer recovery			
	A	B	C	D
	Percent of net log scale			
1 Peeler	35	8	33	10
2 Peeler	30	6	36	14
3 Peeler	17	8	32	29
Special Peeler	7	4	44	31

1/ Based on industry average recovery ratio of 2.3.