

## Appendix

Table A1. Moisture content (MC) and specific gravity (SG) of selected samples for all species.

Species	Sample No.	Wet. Wt.	Dry wt.	MC	SG
Red oak	1	17.39	13.15	7.04	0.756
	2	16.42	10.72	7.15	0.653
	3	17.64	10.16	7.48	0.576
	4	16.89	11.39	7.38	0.674
	5	16.66	13.069	7.73	0.784
	6	17.31	11.88	7.49	0.686
	7	16.94	11.9	6.8	0.702
	8	16.92	11.81	7.22	0.698
	9	14.73	8.67	7.35	0.589
	10	17.02	12.7	7.27	0.746
Hard Maple	1	13.62	12.67	7.50	0.648
	2	11.05	10.32	7.07	0.648
	3	12.08	11.28	7.09	0.651
	4	18.95	17.65	7.37	0.665
	5	12.4	11.52	7.64	0.603
	6	17.5	16.33	7.16	0.665
	7	12.45	11.69	6.50	0.688
	8	15.7	14.7	6.80	0.606
	9	8.46	7.89	7.22	0.584
White Pine	1	4.15	3.88	6.96	0.282
	2	6.41	5.95	7.73	0.372
	3	6.64	6.22	6.75	0.348
	4	9.59	8.97	6.91	0.415
	5	5.29	4.92	7.52	0.343
	6	3.55	3.3	7.58	0.276
	7	7.51	6.98	7.59	0.432
	8	3.25	3.04	6.91	0.312
	9	5.53	5.18	6.76	0.325
	10	4.3	3.99	7.77	0.351

Table A2. P-values for differences between oak knot classes for parameters.

Parameter		Knot_A	Knot_B
R <sub>m</sub>	Knot_B	0.977	.
	Knot_C	0.721	0.740
G <sub>m</sub>	Knot_B	0.998	.
	Knot_C	0.748	0.873
B <sub>m</sub>	Knot_B	0.998	.
	Knot_C	0.609	0.730
H <sub>m</sub>	Knot_B	0.135	.
	Knot_C	0.079	0.007
S <sub>m</sub>	Knot_B	0.991	.
	Knot_C	0.925	0.9252
I <sub>m</sub>	Knot_B	0.999	.
	Knot_C	0.689	0.7950
X <sub>m</sub>	Knot_B	0.385	.
	Knot_C	0.945	0.392
ASP	Knot_B	0.959	.
	Knot_C	0.419	0.748
RND	Knot_B	0.956	.
	Knot_C	0.981	0.927
R <sub>s</sub>	Knot_B	0.446	.
	Knot_C	0.824	0.841
G <sub>s</sub>	Knot_B	0.413	.
	Knot_C	0.529	0.968
B <sub>s</sub>	Knot_B	0.273	.
	Knot_C	0.478	0.9115
H <sub>s</sub>	Knot_B	0.944	.
	Knot_C	0.996	0.9443
S <sub>s</sub>	Knot_B	0.982	.
	Knot_C	0.804	0.812
I <sub>s</sub>	Knot_B	0.318	.
	Knot_C	0.608	0.877
X <sub>s</sub>	Knot_B	0.440	.
	Knot_C	0.9079	0.393

Table A3. P-values for differences between oak bark classes for parameters.

Parameter		Bark_A	Bark_B
R <sub>m</sub>	Bark_B	0.006	.
	Bark_C	0.890	0.222
G <sub>m</sub>	Bark_B	0.005	.
	Bark_C	0.859	0.229
B <sub>m</sub>	Bark_B	0.004	.
	Bark_C	0.823	0.245
H <sub>m</sub>	Bark_B	0.952	.
	Bark_C	0.604	0.757
S <sub>m</sub>	Bark_B	0.021	.
	Bark_C	0.773	0.477
I <sub>m</sub>	Bark_B	0.004	.
	Bark_C	0.854	0.217
X <sub>m</sub>	Bark_B	0.747	.
	Bark_C	0.1379	0.068
ASP	Bark_B	0.0259	.
	Bark_C	0.125	0.991
RND	Bark_B	0.001	.
	Bark_C	0.009	0.951
R <sub>s</sub>	Bark_B	0.998	.
	Bark_C	0.511	0.533
G <sub>s</sub>	Bark_B	0.945	.
	Bark_C	0.424	0.592
B <sub>s</sub>	Bark_B	0.5376	.
	Bark_C	0.091	0.380
H <sub>s</sub>	Bark_B	0.745	.
	Bark_C	0.818	0.994
S <sub>s</sub>	Bark_B	0.003	.
	Bark_C	0.512	0.191
I <sub>s</sub>	Bark_B	0.918	.
	Bark_C	0.347	0.538
X <sub>s</sub>	Bark_B	0.025	.
	Bark_C	0.988	0.258

Table A4. P-values for differences between hard maple knot classes for parameters.

Parameter	P-value
R <sub>m</sub>	0.269
G <sub>m</sub>	0.241
B <sub>m</sub>	0.213
H <sub>m</sub>	0.605
S <sub>m</sub>	0.144
I <sub>m</sub>	0.241
X <sub>m</sub>	0.821
ASP	0.527
RND	0.637
R <sub>s</sub>	0.021
G <sub>s</sub>	0.021
B <sub>s</sub>	0.021
H <sub>s</sub>	0.746
S <sub>s</sub>	0.892
I <sub>s</sub>	0.021
X <sub>s</sub>	0.997

Table A5. P-values for differences between white pine knot classes for parameters.

Parameter	P-value
$R_m$	0.001
$G_m$	0.001
$B_m$	0.001
$H_m$	0.715
$S_m$	0.007
$I_m$	0.001
$X_m$	0.561
ASP	0.088
RND	0.064
$R_s$	0.001
$G_s$	0.002
$B_s$	0.108
$H_s$	0.001
$S_s$	0.001
$I_s$	0.003
$X_s$	0.369

Table A6. P-values for statistical differences for parameters between feature types for red oak.

Parameter	Feature Type	Feature Type		
		Knot	Bark Pocket	Stain/Mineral
R <sub>m</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.5252	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
G <sub>m</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.4298	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
B <sub>m</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.513	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
H <sub>m</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.9677	0.0003	.
	Clearwood	0.999	0.0001	0.9884
S <sub>m</sub>	Bark Pocket	0.9689	.	.
	Stain/Mineral	0.9998	0.952	.
	Clearwood	0.7774	0.5011	0.8266
I <sub>m</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.478	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
X <sub>m</sub>	Bark Pocket	0.8792	.	.
	Stain/Mineral	0.4412	0.8683	.
	Clearwood	0.0087	0.064	0.3183
ASP	Bark Pocket	0.8157	.	.
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0329	0.2315	0.0001
RND	Bark Pocket	0.0309	.	.
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0037	0.8829	0.0004

Table A7. P-values for statistical differences for parameters between feature types for red oak.

Parameter	Feature Type	Feature Type		
		Knot	Bark Pocket	Stain/Mineral
$R_s$	Bark Pocket	0.0059	.	.
	Stain/Mineral	0.0683	0.8279	.
	Clearwood	0.7451	0.0879	0.4405
$G_s$	Bark Pocket	0.2293	.	.
	Stain/Mineral	0.0192	0.6915	.
	Clearwood	0.012	0.6025	0.9993
$B_s$	Bark Pocket	0.3716	.	.
	Stain/Mineral	0.0029	0.1913	.
	Clearwood	0.0001	0.0003	0.1179
$H_s$	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.9994	0.0001	.
	Clearwood	0.4147	0.0001	0.4982
$S_s$	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.3203	0.0001	.
	Clearwood	0.848	0.0001	0.0644
$I_s$	Bark Pocket	0.0952	.	.
	Stain/Mineral	0.0236	0.9335	.
	Clearwood	0.0229	0.9393	1.000
$X_s$	Bark Pocket	0.3323	.	.
	Stain/Mineral	0.0001	0.0027	.
	Clearwood	0.0001	0.0008	0.9872

Table A8. P-values for statistical differences for parameters between feature types for hard maple.

	Feature Type	Feature Type		
		Knot	Bark Pocket	Stain/Mineral
R <sub>m</sub>	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
G <sub>m</sub>	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
B <sub>m</sub>	Bark Pocket	0.0017	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
H <sub>m</sub>	Bark Pocket	0.6814	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0408
S <sub>m</sub>	Bark Pocket	0.1206	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.7521
I <sub>m</sub>	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
X <sub>m</sub>	Bark Pocket	0.9696	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0004	0.0003	0.0001
ASP	Bark Pocket	0.7946	.	
	Stain/Mineral	0.0001	0.0081	.
	Clearwood	0.2171	0.8296	0.0401
RND	Bark Pocket	0.0213	.	
	Stain/Mineral	0.0001	0.3582	.
	Clearwood	0.0317	0.9763	0.1264



Table A9. P-values for statistical differences for parameters between feature types for hard maple.

	Feature Type	Feature Type		
		Knot	Bark Pocket	Stain/Mineral
R <sub>s</sub>	Bark Pocket	0.963	.	.
	Stain/Mineral	0.0003	0.0047	.
	Clearwood	0.0001	0.0001	0.1068
G <sub>s</sub>	Bark Pocket	0.7079	.	.
	Stain/Mineral	0.0085	0.2002	.
	Clearwood	0.0001	0.0036	0.4216
B <sub>s</sub>	Bark Pocket	0.8042	.	.
	Stain/Mineral	0.203	0.7705	.
	Clearwood	0.0051	0.1233	0.5817
H <sub>s</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.4348	0.0001	.
	Clearwood	0.6928	0.0001	0.0617
S <sub>s</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.0255	0.0001	.
	Clearwood	0.0001	0.0001	0.3383
I <sub>s</sub>	Bark Pocket	0.8087	.	.
	Stain/Mineral	0.0073	0.1296	.
	Clearwood	0.0001	0.0010	0.3234
X <sub>s</sub>	Bark Pocket	0.1508	.	.
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.9976

Table A10. P-values for statistical differences for parameters between feature types for white pine.

	Feature Type	Feature Type		
		Knot	Bark Pocket	Stain/Mineral
$R_m$	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
$G_m$	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
$B_m$	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0002	0.0001	0.0001
$H_m$	Bark Pocket	0.0056	.	
	Stain/Mineral	0.0005	0.9915	.
	Clearwood	0.0007	0.9983	0.9991
$S_m$	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0375	.
	Clearwood	0.0025	0.2209	0.0001
$I_m$	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
$X_m$	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.9331	.
	Clearwood	0.0351	0.0001	0.0001
ASP	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0007	0.0514	.
	Clearwood	1	0.0001	0.0006
RND	Bark Pocket	0.0001	.	
	Stain/Mineral	0.0001	0.0389	.
	Clearwood	0.9444	0.0001	0.0006

Table A11. P-values for statistical differences for parameters between feature types for white pine.

	Feature Type	Feature Type		
		Knot	Bark Pocket	Stain/Mineral
R <sub>s</sub>	Bark Pocket	0.8708	.	.
	Stain/Mineral	0.0001	0.0001	.
	Clearwood	0.0001	0.0001	0.0001
G <sub>s</sub>	Bark Pocket	0.8684	.	.
	Stain/Mineral	0.0001	0.0015	.
	Clearwood	0.1778	0.055	0.0001
B <sub>s</sub>	Bark Pocket	0.9996	.	.
	Stain/Mineral	0.2935	0.3416	.
	Clearwood	0.9132	0.9637	0.0805
H <sub>s</sub>	Bark Pocket	0.5418	.	.
	Stain/Mineral	0.9433	0.2654	.
	Clearwood	0.0001	0.0001	0.0001
S <sub>s</sub>	Bark Pocket	0.9999	.	.
	Stain/Mineral	0.0001	0.0002	.
	Clearwood	0.0001	0.0001	0.0001
I <sub>s</sub>	Bark Pocket	0.8771	.	.
	Stain/Mineral	0.0001	0.0027	.
	Clearwood	0.0376	0.0114	0.0001
X <sub>s</sub>	Bark Pocket	0.0001	.	.
	Stain/Mineral	0.0001	0.9929	.
	Clearwood	0.0001	0.0001	0.0001

Table A12. P-values for significance of species\*feature interactions for each parameter

Parameter	P-value
R <sub>m</sub>	0.0001
G <sub>m</sub>	0.0001
B <sub>m</sub>	0.0001
H <sub>m</sub>	0.0001
S <sub>m</sub>	0.0001
I <sub>m</sub>	0.0001
X <sub>m</sub>	0.0001
ASP	0.0001
RND	0.0008
R <sub>s</sub>	0.0001
G <sub>s</sub>	0.0001
B <sub>s</sub>	0.0001
H <sub>s</sub>	0.0001
S <sub>s</sub>	0.0001
I <sub>s</sub>	0.0001
X <sub>s</sub>	0.0780

Table A13. P-values for parameter differences between species for knots.

Parameter	Species	Red Oak	Hard Maple
$R_m$	Hard Maple	0.0077	.
	White Pine	0.0001	0.0995
$G_m$	Hard Maple	0.1310	.
	White Pine	0.0004	0.09076
$B_m$	Hard Maple	0.9617	.
	White Pine	0.0287	0.0545
$H_m$	Hard Maple	0.0120	.
	White Pine	0.5049	0.1642
$S_m$	Hard Maple	0.0001	.
	White Pine	0.0008	0.0004
$I_m$	Hard Maple	0.1533	.
	White Pine	0.0004	0.0813
$X_m$	Hard Maple	0.9247	.
	White Pine	0.0001	0.0001
ASP	Hard Maple	0.6479	.
	White Pine	0.0451	0.0041
RND	Hard Maple	0.9984	.
	White Pine	0.3395	0.3130
$R_s$	Hard Maple	0.0043	.
	White Pine	0.0619	0.5685
$G_s$	Hard Maple	0.0037	.
	White Pine	0.0042	0.9991
$B_s$	Hard Maple	0.0066	.
	White Pine	0.0324	0.8230
$H_s$	Hard Maple	0.0001	.
	White Pine	0.0014	0.6432
$S_s$	Hard Maple	0.0275	.
	White Pine	0.6688	0.1805
$I_s$	Hard Maple	0.0046	.
	White Pine	0.0312	0.7598
$X_s$	Hard Maple	0.0074	.
	White Pine	0.0539	0.7241

Table A14. P-values for parameter differences between species for bark pockets.

Parameter	Species	Red Oak	Hard Maple
R <sub>m</sub>	Hard Maple	0.9273	.
	White Pine	0.6205	0.8326
G <sub>m</sub>	Hard Maple	0.4336	.
	White Pine	0.3886	0.9711
B <sub>m</sub>	Hard Maple	0.0201	.
	White Pine	0.0810	0.9744
H <sub>m</sub>	Hard Maple	0.0096	.
	White Pine	0.1239	0.7945
S <sub>m</sub>	Hard Maple	0.002	.
	White Pine	0.0925	0.2407
I <sub>m</sub>	Hard Maple	0.3775	.
	White Pine	0.3262	0.931
X <sub>m</sub>	Hard Maple	0.7341	.
	White Pine	0.6426	0.9705
ASP	Hard Maple	0.9970	.
	White Pine	0.0001	0.0001
RND	Hard Maple	0.9954	.
	White Pine	0.0006	0.0016
R <sub>s</sub>	Hard Maple	0.9894	.
	White Pine	0.9998	0.9904
G <sub>s</sub>	Hard Maple	0.7529	.
	White Pine	0.9176	0.9746
B <sub>s</sub>	Hard Maple	0.4861	.
	White Pine	0.9985	0.5862
H <sub>s</sub>	Hard Maple	0.0001	.
	White Pine	0.1575	0.0805
S <sub>s</sub>	Hard Maple	0.0118	.
	White Pine	0.6220	0.2621
I <sub>s</sub>	Hard Maple	0.8276	.
	White Pine	0.9981	0.9059
X <sub>s</sub>	Hard Maple	0.9929	.
	White Pine	0.4403	0.4300

Table A15. P-values for parameter differences between species for stain and mineral streak.

Parameter	Species	Red Oak	Hard Maple
$R_m$	Hard Maple	0.0001	.
	White Pine	0.0001	0.9734
$G_m$	Hard Maple	0.0001	
	White Pine	0.0001	0.6391
$B_m$	Hard Maple	0.0001	.
	White Pine	0.0014	0.2868
$H_m$	Hard Maple	0.0926	.
	White Pine	0.1572	0.9895
$S_m$	Hard Maple	0.2431	.
	White Pine	0.8162	0.1078
$I_m$	Hard Maple	0.0001	.
	White Pine	0.0001	0.6431
$X_m$	Hard Maple	0.0001	.
	White Pine	0.0001	0.0001
ASP	Hard Maple	0.0958	.
	White Pine	0.1236	1.0000
RND	Hard Maple	0.1038	.
	White Pine	0.3437	0.8537
$R_s$	Hard Maple	0.0032	.
	White Pine	0.9287	0.0199
$G_s$	Hard Maple	0.0259	.
	White Pine	0.8885	0.0155
$B_s$	Hard Maple	0.1975	.
	White Pine	0.9494	0.1539
$H_s$	Hard Maple	0.0690	.
	White Pine	0.6667	0.4356
$S_s$	Hard Maple	0.0001	.
	White Pine	0.4484	0.0012
$I_s$	Hard Maple	0.0219	.
	White Pine	0.9840	0.0592
$X_s$	Hard Maple	0.0057	.
	White Pine	0.0031	0.9200

Table A16. P-values for parameter differences between species for clearwood.

Parameter	Species	Red Oak	Hard Maple
R <sub>m</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.0002
G <sub>m</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.0001
B <sub>m</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.0001
H <sub>m</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.0006
S <sub>m</sub>	Hard Maple	0.0001	.
	White Pine	0.3614	0.0001
I <sub>m</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.0001
X <sub>m</sub>	Hard Maple	0.3345	.
	White Pine	0.0001	0.0001
ASP	Hard Maple	0.3914	.
	White Pine	0.7939	0.7824
RND	Hard Maple	0.4888	.
	White Pine	0.9404	0.6959
R <sub>s</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.5253
G <sub>s</sub>	Hard Maple	0.0001	.
	White Pine	0.0014	0.0954
B <sub>s</sub>	Hard Maple	0.0001	.
	White Pine	0.0002	0.0122
H <sub>s</sub>	Hard Maple	0.0003	.
	White Pine	0.8535	0.0018
S <sub>s</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.0001
I <sub>s</sub>	Hard Maple	0.0001	.
	White Pine	0.0001	0.1742
X <sub>s</sub>	Hard Maple	0.0005	.
	White Pine	0.0086	0.6050



Table A17. P-values for percent differences between clearwood and knot parameters for each species.

Parameter	Species	Red Oak	Hard Maple
R <sub>m</sub>	Hard Maple	0.9273	.
	White Pine	0.2934	0.4874
G <sub>m</sub>	Hard Maple	0.0236	.
	White Pine	0.9277	0.0536
B <sub>m</sub>	Hard Maple	0.1149	.
	White Pine	0.0208	0.7070
H <sub>m</sub>	Hard Maple	0.0320	.
	White Pine	0.9784	0.0497
S <sub>m</sub>	Hard Maple	0.0007	.
	White Pine	0.9303	0.0003
I <sub>m</sub>	Hard Maple	0.0653	.
	White Pine	0.0664	0.8959

Table A18. P-values for percent differences between clearwood and bark pocket parameters for each species.

Parameter	Species	Red Oak	Hard Maple
R <sub>m</sub>	Hard Maple	0.0225	.
	White Pine	0.4777	0.2384
G <sub>m</sub>	Hard Maple	0.5912	.
	White Pine	0.4316	0.9610
B <sub>m</sub>	Hard Maple	0.0021	.
	White Pine	0.1217	0.2000
H <sub>m</sub>	Hard Maple	0.2984	.
	White Pine	0.0170	0.3356
S <sub>m</sub>	Hard Maple	0.2173	.
	White Pine	0.4343	0.8878
I <sub>m</sub>	Hard Maple	0.5420	.
	White Pine	0.1101	0.5672

Table A19. P-values for percent differences between clearwood and stain/mineral streak parameters for each species.

Parameter	Species	Red Oak	Hard Maple
R <sub>m</sub>	Hard Maple	0.0225	.
	White Pine	0.4777	0.2384
G <sub>m</sub>	Hard Maple	0.5912	.
	White Pine	0.4316	0.9610
B <sub>m</sub>	Hard Maple	0.0021	.
	White Pine	0.1217	0.2000
H <sub>m</sub>	Hard Maple	0.2984	.
	White Pine	0.0170	0.3356
S <sub>m</sub>	Hard Maple	0.2173	.
	White Pine	0.4343	0.8878
I <sub>m</sub>	Hard Maple	0.5420	.
	White Pine	0.1101	0.5672

Table A20. P-values for percent differences for between clearwood and feature density for each species.

Feature	Parameter	Species	Red Oak	Hard Maple
Knots	X <sub>m</sub>	Hard Maple	0.4050	.
		White Pine	0.0001	0.002
Bark Pockets	X <sub>m</sub>	Hard Maple	0.0475	
		White Pine	0.9837	0.0685
Stain/mineral	X <sub>m</sub>	Hard Maple	0.0475	.
		White Pine	0.9837	0.0685