

WET AND FROZEN SPECIMENS FROM SPRUCE BEAM 22.

Shearing Tests.

Compression Tests.

Tension Tests.

Spec.

Tension Tests.										Compression Tests.				Shearing Tests.			
Spec.	Coefficients of elasticity.			Tensile strength in lbs. per sq. in.	Sp. wt. in lbs. per cub. ft.	Spec.	Coefficients of elasticity.			Compressive strength in lbs. per sq. in.	Sp. wt. in lbs. per cub. ft.	Spec.	Coefficients of elasticity.			Shearing strength in lbs. per sq. in.	Sp. wt. in lbs. per cub. ft.
	Forward.	Return.					Forward.	Return.					Forward.	Return.			
a_1	2,219,600	2,274,750	16,202	36,213	1		1,813,380	1,831,110		2,401.4	38.019	d_1	2,401.4	38.019		287.76	36.027
b_1	2,281,770	2,281,770	15,610	37,209	1		1,786,130	1,786,130		337.7	38.07	d_2	337.7	38.07		301.05	36.017
b_2	2,213,170	2,211,170	23,313	43,032	1		2,085,710	2,085,710		235.0	38.529	d_3	235.0	38.529		190.34	36.876
c_1	2,115,850	2,137,810	10,681	37,945	1							d_4				437.37	37.554
c_2	2,036,110	2,057,910	12,115	40,529	1							d_5				367.45	35.122
e_1	2,199,000	2,305,910	12,005									d_6				469.78	36.202
e_2	1,963,180	1,963,120	15,151									d_7				425.12	36.205
a_2	2,025,160	2,027,170	15,687	38,706								d_8				430.36	36.205
SPECIMENS KILN DRIED AT 212° F. FROM SURFACE BEAM 22.																	
d_2	2,271,210	2,292,730	9,338	32.97		f_2	2,975,120	2,971,790	6371.7			d_9	2,975,120	2,971,790	6371.7	391.11	39.612
b_2	2,311,530	2,316,310	19,665	32.71								d_{10}	2,311,530	2,316,310	19,665	278.41	39.612
c_2	2,089,700	2,104,730	19,665	32.71								d_{11}	2,089,700	2,104,730	19,665	379.38	39.612
e_2	2,435,350	2,451,170	9,592	37.563								d_{12}	2,435,350	2,451,170	9,592	371.58	39.612
a_2	2,441,030	2,451,170	12,897	37.563								d_{13}	2,441,030	2,451,170	12,897	371.58	39.612
m_2	2,483,330	2,496,680	18,978	30.356								d_{14}	2,483,330	2,496,680	18,978	371.58	39.612
m_3	2,483,330	2,496,680	18,978	30.356								d_{15}	2,483,330	2,496,680	18,978	371.58	39.612
m_4	2,437,780	2,473,810	8,713	30.07								d_{16}	2,437,780	2,473,810	8,713	371.58	39.612
m_5	2,437,780	2,473,810	20,780									d_{17}	2,437,780	2,473,810	20,780	371.58	39.612
m_6	2,437,780	2,473,810	13,226	31.816								d_{18}	2,437,780	2,473,810	13,226	371.58	39.612
m_7	2,295,796	2,278,640	18,384	28.597								d_{19}	2,295,796	2,278,640	18,384	371.58	39.612
m_8	2,292,020	2,254,570	18,384									d_{20}	2,292,020	2,254,570	18,384	371.58	39.612
m_9	2,758,130	2,759,900	17,210	30.896								d_{21}	2,758,130	2,759,900	17,210	371.58	39.612

Remarks.—The mean direct tensile strength of the saturated specimens was nearly double the calculated mean skin-stress of the beam and 3.88 times the mean compressive strength.

By the kiln-drying, the tensile strength seems to have been slightly increased, the compressive strength was increased 80 per cent, and the shearing strength was diminished more than 12 per cent. The coefficients of elasticity were also increased.

The ratios of the length to the least transverse dimension in the compression members varied from 4.07 to 5.85, and failure was in each case due to direct crushing.

After compression specimen 1 had been tested the injured portion was removed and the remainder re-tested, when its specific weight was 37.457 lbs. per cubic foot, its coefficient of elasticity 1,627,890 (forward) and 1,631,960 (return), and its compressive strength 3700 lbs. per square inch. The injured portion was removed from this last, and the remainder was dried at 212° F. and then tested with the following results:—

- Coefficient of elasticity from 1st series of readings
= 2,402,710 (forward), 2,400,310 (return).
- Coefficient of elasticity from 2nd series of readings
= 2,415,620 (forward), 2,411,810 (return).
- Coefficient of elasticity from 3rd series of readings
= 2,419,940 (forward), 2,421,360 (return).