

SP Mechanically Graded Lumber (MSR & MEL) Grades & Design Values

Based on the 2002 SPIB Standard Grading Rules for Southern Pine Lumber, including Supplement 12
values in psi (pounds per square inch)

Grade	Bending F _b	Tension Parallel to Grain F _t	Shear Parallel to Grain ¹ F _v	Compression Perpendicular to Grain ¹ F _{c⊥}	Compression Parallel to Grain F _c	Modulus of Elasticity E	Modulus of Elasticity E _{min}
Machine Stress Rated (MSR)							
750f - 1.4E	750	425	175	565	925	1,400,000	710,000
850f - 1.4E	850	475	175	565	975	1,400,000	710,000
975f - 1.6E	975	550	175	565	1450	1,600,000	810,000
1050f - 1.2E	1050	450	175	565	1225	1,200,000	610,000
1050f - 1.6E	1050	575	175	565	1500	1,600,000	810,000
1200f - 1.3E	1200	600	175	565	1400	1,300,000	660,000
1200f - 1.6E	1200	650	175	565	1550	1,600,000	810,000
1250f - 1.6E	1250	725	175	565	1600	1,600,000	810,000
1350f - 1.4E	1350	750	175	565	1600	1,400,000	710,000
1450f - 1.3E	1450	825	175	565	1600	1,300,000	660,000
1500f - 1.5E	1500	900	175	565	1650	1,500,000	760,000
1500f - 1.6E	1500	900	175	565	1650	1,600,000	810,000
1500f - 1.7E	1500	900	175	565	1650	1,700,000	860,000
1650f - 1.5E	1650	1020	175	565	1700	1,500,000	760,000
1650f - 1.7E	1650	1020	175	565	1750	1,700,000	860,000
1800f - 1.6E	1800	1175	175	565	1750	1,600,000	810,000
1850f - 1.7E	1850	1175	175	565	1850	1,700,000	860,000
1950f - 1.5E	1950	1375	175	565	1800	1,500,000	760,000
1950f - 1.7E	1950	1375	175	565	1800	1,700,000	860,000
2100f - 1.8E ²	2100	1575	190	805	1875	1,800,000	910,000
2250f - 1.9E	2250	1750	190	805	1925	1,900,000	970,000
2400f - 2.0E	2400	1925	190	805	1975	2,000,000	1,020,000
2550f - 1.8E ²	2550	1400	190	805	2000	1,800,000	910,000
2550f - 2.1E	2550	2050	190	805	2025	2,100,000	1,070,000
2700f - 2.2E	2700	2150	190	805	2100	2,200,000	1,120,000
2850f - 1.8E ²	2850	1600	190	805	2100	1,800,000	910,000
2850f - 2.3E	2850	2300	190	805	2150	2,300,000	1,170,000
3000f - 2.4E	3000	2400	190	805	2200	2,400,000	1,220,000

Not all of the possible MSR and MEL grades will be produced. The marketplace will eventually determine the most common grades.

¹When a grade is qualified by test and quality controlled for specific gravity, the allowable shear and compression perpendicular-to-grain design values may be higher. ²When not qualified by test and quality control for specific gravity, the grademark for mechanically graded lumber grades with a 1,800,000 psi modulus of elasticity design value shall include a specific gravity of .55, a shear value of 175 psi, and a compression perpendicular-to-grain value of 565 psi. ³MEL grades requiring compression parallel-to-grain qualification and quality control.

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Machine Evaluated Lumber (MEL)							
M-32	750	425	175	565	925	1,400,000	650,000
M-33	850	475	175	565	975	1,400,000	650,000
M-5	900	500	175	565	1050	1,100,000	510,000
M-34	975	550	175	565	1450	1,600,000	750,000
M-35	1050	575	175	565	1500	1,600,000	750,000
M-6	1100	600	175	565	1300	1,000,000	470,000
M-7	1200	650	175	565	1400	1,100,000	510,000
M-36	1200	650	175	565	1550	1,600,000	750,000
M-37	1250	725	175	565	1600	1,600,000	750,000
M-8	1300	700	175	565	1500	1,300,000	610,000
M-10	1400	800	175	565	1600	1,200,000	560,000
M-9	1400	800	175	565	1600	1,400,000	650,000
M-38	1500	900	175	565	1650	1,600,000	750,000
M-11	1550	850	175	565	1675	1,500,000	700,000
M-29	1550	850	175	565	1650	1,700,000	790,000
M-12	1600	850	175	565	1675	1,600,000	750,000
M-13	1600	950	175	565	1675	1,400,000	650,000
M-39	1650	1020	175	565	1750	1,700,000	790,000
M-15	1800	1100	175	565	1750	1,500,000	700,000
M-16	1800	1300	175	565	1750	1,500,000	700,000
M-14	1800	1000	175	565	1750	1,700,000	790,000
M-40	1850	1175	175	565	1850	1,700,000	790,000
M-17 ³	1950	1300	175	565	2050	1,700,000	790,000
M-19	2000	1300	175	565	1825	1,600,000	750,000
M-18 ²	2000	1200	190	805	1825	1,800,000	840,000
M-20 ³	2000	1600	190	805	2100	1,900,000	890,000
M-30	2050	1050	175	565	1850	1,700,000	790,000
M-28	2200	1600	175	565	1900	1,700,000	790,000
M-21	2300	1400	190	805	1950	1,900,000	890,000
M-22	2350	1500	175	565	1950	1,700,000	790,000
M-23 ²	2400	1900	190	805	1975	1,800,000	840,000
M-41 ²	2550	1400	190	805	2000	1,800,000	840,000
M-24	2700	1800	190	805	2100	1,900,000	890,000
M-25	2750	2000	190	805	2100	2,200,000	1,030,000
M-26	2800	1800	190	805	2150	2,000,000	930,000
M-42 ²	2850	1600	190	805	2100	1,800,000	840,000
M-31	2850	1600	190	805	2150	1,900,000	890,000
M-27 ³	3000	2000	190	805	2400	2,100,000	980,000

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