

Southern Pine Span Tables

Tables 1 through 12 are abbreviated span tables for selected Southern Pine visual, Machine Stress Rated (MSR) and Machine Evaluated Lumber (MEL) grades. These tables are intended for use under dry-service conditions. For other grades, loading conditions and on-center spacings, refer to *Maximum Spans for Southern Pine Joists & Rafters* published by the Southern Forest Products Association.

Applied loads for each table are given in pounds per square foot (psf). Deflection is limited to the span in inches divided by 360, 240 or 180 and is based on live load only. The load duration factor, C_D , is 1.0 unless shown as 1.15 for snow loads or 1.25 for construction loads. Spans are given in feet and inches and are the maximum allowable horizontal span of the member from inside to inside of bearings. For sloping rafters, the span is also measured along the horizontal projection.

The spans were determined on the same basis as the code-recognized *Span Tables for Joists and Rafters* published by the American Wood Council. Standard engineering design formulas for simple span beams with uniformly distributed gravity loads were used; concentrated loads and uplift loads caused by wind were not considered. The calculated spans assume fully supported members, properly sheathed and nailed on the top edge of the joist or rafter. Maximum spans for the visual grades (No.1, No.2 and No.3) were calculated using design values that became effective June 1, 2013. Not all of the possible Southern Pine grade/size combinations are produced. Check sources of supply for available grades and sizes, and for lumber longer than 20 feet; an asterisk (*) indicates a listed span has been limited to 26'-0" based on availability.

Each piece of lumber should be identified by the grade mark of an agency certified by the Board of Review of the American Lumber Standard Committee, and manufactured in accordance with *Product Standard PS 20* published by the U.S. Department of Commerce.

Typical Lumber Grade Marks


 AUDITED BY
TP® NO.1 KD HT
012 SYP

SP1B® KD19HT (7)
2400f MSR 2.0E

SP1B® KD19 HT (7)
1550fb M-29 1.7E
850ft

SFPA does not test lumber or establish design values. Accordingly, neither SFPA, nor its members, warrant that the design values on which the span tables are based are correct, and disclaim responsibility for injury or damage resulting from the use of such span tables. The conditions under which lumber is used in construction may vary widely, as does the quality of workmanship. Neither SFPA, nor its members, have knowledge of the quality of materials, workmanship or construction methods used on any construction project, and accordingly, do not warrant the technical data, design or performance of the lumber in completed structures.

Table 1 Floor Joists

30 or 40 psf live load; 10 psf dead load; $\ell/360$ deflection limit

Visual Grade		No. 1		No. 2		No. 3		
		Live Load						
		30	40	30	40	30	40	
Size & Spacing	2x6	12	11-10	10-9	11-3	10-3	9-2	8-2
		16	10-9	9-9	10-3	9-4	7-11	7-1
		24	9-4	8-6	8-6	7-7	6-5	5-9
	2x8	12	15-7	14-2	14-11	13-6	11-6	10-3
		16	14-2	12-10	13-3	11-10	10-0	8-11
		24	12-4	11-3	10-10	9-8	8-2	7-3
	2x10	12	19-10	18-0	18-1	16-2	13-11	12-6
		16	18-0	16-1	15-8	14-0	12-1	10-10
		24	14-8	13-1	12-10	11-5	9-10	8-10
	2x12	12	24-2	21-11	21-4	19-1	16-6	14-9
		16	21-4	19-1	18-6	16-6	14-4	12-10
		24	17-5	15-7	15-1	13-6	11-8	10-5

Table 2 Ceiling Joists – Drywall ceiling

10 psf live load; 5 psf dead load; $\ell/240$ deflection limit

20 psf live load; 10 psf dead load; $\ell/240$ deflection limit

Visual Grade		No. 1		No. 2		No. 3		
		Live Load						
		10	20	10	20	10	20	
Size & Spacing	2x6	12	19-6	15-6	18-8	13-11	14-11	10-7
		16	17-8	14-0	16-11	12-0	12-11	9-2
		24	15-6	11-5	13-11	9-10	10-7	7-5
	2x8	12	25-8	20-5	24-7	17-7	18-9	13-3
		16	23-4	17-9	21-7	15-3	16-3	11-6
		24	20-5	14-6	17-7	12-6	13-3	9-5
	2x10	12	26-0*	23-11	26-0*	20-11	22-9	16-1
		16	26-0*	20-9	25-7	18-1	19-9	13-11
		24	23-11	16-11	20-11	14-9	16-1	11-5

Table 3 Rafters – Medium roofing; Drywall ceiling; Snow load

20, 30, or 40 psf live load; 15 psf dead load; $\ell/240$ deflection limit

Load duration factor = 1.15 for snow loads

Visual Grade		No. 1			No. 2			No. 3			
		Live Load									
		20	30	40	20	30	40	20	30	40	
Size & Spacing	2x6	12	15-6	13-6	12-3	13-10	12-2	11-0	10-6	9-3	8-4
		16	13-11	12-3	11-1	11-11	10-7	9-6	9-1	8-0	7-3
		24	11-4	10-0	9-1	9-9	8-7	7-9	7-5	6-6	5-11
	2x8	12	20-4	17-10	16-2	17-6	15-5	14-0	13-2	11-8	10-6
		16	17-7	15-6	14-1	15-2	13-4	12-1	11-5	10-1	9-1
		24	14-5	12-8	11-6	12-4	10-11	9-10	9-4	8-3	7-5
	2x10	12	23-9	21-0	19-0	20-9	18-4	16-7	16-0	14-1	12-9
		16	20-7	18-2	16-5	18-0	15-10	14-4	13-10	12-3	11-1
		24	16-10	14-10	13-5	14-8	12-11	11-9	11-4	10-0	9-0
	2x12	12	26-0*	24-11	22-6	24-5	21-7	19-6	18-11	16-8	15-1
		16	24-5	21-7	19-6	21-2	18-8	16-11	16-5	14-6	13-1
		24	20-0	17-7	15-11	17-3	15-3	13-9	13-5	11-10	10-8

Table 4 Rafters – Drywall or No Finished ceiling; Construction load

20 psf live load; 10 psf dead load; $\ell/240$ or $\ell/180$ deflection limit

Load duration factor = 1.25 for construction loads

Visual Grade		No. 1		No. 2		No. 3		
		Deflection Limit						
		240	180	240	180	240	180	
Size & Spacing	2x6	12	15-6	17-0	14-9	15-7	11-9	11-9
		16	14-1	15-6	13-5	13-6	10-2	10-2
		24	12-3	12-9	11-0	11-0	8-4	8-4
	2x8	12	20-5	22-5	19-6	19-8	14-10	14-10
		16	18-6	19-10	17-1	17-1	12-10	12-10
		24	16-2	16-2	13-11	13-11	10-6	10-6
	2x10	12	26-0	26-0*	23-5	23-5	18-0	18-0
		16	23-2	23-2	20-3	20-3	15-7	15-7
		24	18-11	18-11	16-6	16-6	12-9	12-9

Table 5 Floor Joists

30 or 40 psf live load; 10 psf dead load; $\ell/360$ deflection limit

MSR Grade		2400f-2.0E		1650f-1.5E		1500f-1.6E		
		Live Load						
		30	40	30	40	30	40	
Size & Spacing	2x6	12	12-9	11-7	11-7	10-6	11-10	10-9
		16	11-7	10-6	10-6	9-6	10-9	9-9
		24	10-1	9-2	9-2	8-4	9-4	8-6
	2x8	12	16-9	15-3	15-3	13-10	15-7	14-2
		16	15-3	13-10	13-10	12-7	14-2	12-10
		24	13-4	12-1	12-1	11-0	12-4	11-3
	2x10	12	21-5	19-5	19-5	17-8	19-10	18-0
		16	19-5	17-8	17-8	16-0	18-0	16-5
		24	17-0	15-5	15-5	14-0	15-9	14-4
	2x12	12	26-0	23-7	23-7	21-6	24-2	21-11
		16	23-7	21-6	21-6	19-6	21-11	19-11
		24	20-8	18-9	18-9	17-0	19-2	17-5

Table 6 Ceiling Joists – Drywall ceiling

10 psf live load; 5 psf dead load; $\ell/240$ deflection limit

20 psf live load; 10 psf dead load; $\ell/240$ deflection limit

MSR Grade		2400f-2.0E		1650f-1.5E		1500f-1.6E		
		Live Load						
		10	20	10	20	10	20	
Size & Spacing	2x6	12	21-0	16-8	19-1	15-2	19-6	15-6
		16	19-1	15-2	17-4	13-9	17-8	14-1
		24	16-8	13-3	15-2	12-0	15-6	12-0
	2x8	12	26-0*	21-11	25-2	19-11	25-8	20-5
		16	25-2	19-11	22-10	18-2	23-4	18-6
		24	21-11	17-5	19-11	15-10	20-5	15-10
	2x10	12	26-0*	26-0*	26-0*	25-5	26-0*	26-0
		16	26-0*	25-5	26-0*	23-2	26-0*	23-8
		24	26-0*	22-3	25-5	20-2	26-0	20-3

Table 7 Rafters – Medium roofing; Drywall ceiling; Snow load

20, 30, or 40 psf live load; 15 psf dead load; $\ell/240$ deflection limit

Load duration factor = 1.15 for snow loads

MSR Grade		2400f-2.0E			1650f-1.5E			1500f-1.6E			
		Live Load									
		20	30	40	20	30	40	20	30	40	
Size & Spacing	2x6	12	16-8	14-7	13-3	15-2	13-3	12-0	15-6	13-6	12-3
		16	15-2	13-3	12-0	13-9	12-0	10-11	14-1	12-3	11-2
		24	13-3	11-7	10-6	12-0	10-6	9-6	11-11	10-7	9-6
	2x8	12	21-11	19-2	17-5	19-11	17-5	15-10	20-5	17-10	16-2
		16	19-11	17-5	15-10	18-2	15-10	14-5	18-6	16-2	14-8
		24	17-5	15-3	13-10	15-10	13-10	12-7	15-9	13-11	12-7
	2x10	12	26-0*	24-6	22-3	25-5	22-3	20-2	26-0	22-9	20-8
		16	25-5	22-3	20-2	23-2	20-2	18-4	23-8	20-8	18-9
		24	22-3	19-5	17-8	20-2	17-8	16-0	20-1	17-9	16-0
	2x12	12	26-0*	26-0*	26-0*	26-0*	26-0*	24-7	26-0*	26-0*	25-1
		16	26-0*	26-0*	24-7	26-0*	24-7	22-4	26-0*	25-1	22-10
		24	26-0*	23-7	21-6	24-7	21-6	19-6	24-5	21-7	19-6

Table 8 Rafters – Drywall or No Finished ceiling; Construction load

20 psf live load; 10 psf dead load; $\ell/240$ or $\ell/180$ deflection limit

Load duration factor = 1.25 for construction loads

MSR Grade		2400f-2.0E		1650f-1.5E		1500f-1.6E		
		Deflection Limit						
		240	180	240	180	240	180	
Size & Spacing	2x6	12	16-8	18-4	15-2	16-8	15-6	17-0
		16	15-2	16-8	13-9	15-2	14-1	15-6
		24	13-3	14-7	12-0	13-3	12-3	13-6
	2x8	12	21-11	24-2	19-11	21-11	20-5	22-5
		16	19-11	21-11	18-2	19-11	18-6	20-5
		24	17-5	19-2	15-10	17-5	16-2	17-9
	2x10	12	26-0*	26-0*	25-5	26-0*	26-0	26-0*
		16	25-5	26-0*	23-2	25-5	23-8	26-0
		24	22-3	24-6	20-2	22-3	20-8	22-8

Table 9 Floor Joists

30 or 40 psf live load; 10 psf dead load; $\ell/360$ deflection limit

MEL Grade		M-14 (1800-1.7)		M-29 (1550-1.7)		M-12 (1600-1.6)		
		Live Load						
		30	40	30	40	30	40	
Size & Spacing	2x6	12	12-0	10-11	12-0	10-11	11-10	10-9
		16	10-11	9-11	10-11	9-11	10-9	9-9
		24	9-7	8-8	9-7	8-8	9-4	8-6
	2x8	12	15-10	14-5	15-10	14-5	15-7	14-2
		16	14-5	13-1	14-5	13-1	14-2	12-10
		24	12-7	11-5	12-7	11-5	12-4	11-3
	2x10	12	20-3	18-5	20-3	18-5	19-10	18-0
		16	18-5	16-9	18-5	16-9	18-0	16-5
		24	16-1	14-7	16-1	14-7	15-9	14-4
	2x12	12	24-8	22-5	24-8	22-5	24-2	21-11
		16	22-5	20-4	22-5	20-4	21-11	19-11
		24	19-7	17-9	19-7	17-9	19-2	17-5

Table 10 Ceiling Joists – Drywall ceiling

10 psf live load; 5 psf dead load; $\ell/240$ deflection limit

20 psf live load; 10 psf dead load; $\ell/240$ deflection limit

MEL Grade		M-14 (1800-1.7)		M-29 (1550-1.7)		M-12 (1600-1.6)		
		Live Load						
		10	20	10	20	10	20	
Size & Spacing	2x6	12	19-11	15-9	19-11	15-9	19-6	15-6
		16	18-1	14-4	18-1	14-4	17-8	14-1
		24	15-9	12-6	15-9	12-3	15-6	12-3
	2x8	12	26-0*	20-10	26-0*	20-10	25-8	20-5
		16	23-10	18-11	23-10	18-11	23-4	18-6
		24	20-10	16-6	20-10	16-2	20-5	16-2
	2x10	12	26-0*	26-0*	26-0*	26-0*	26-0*	26-0
		16	26-0*	24-1	26-0*	24-1	26-0*	23-8
		24	26-0*	21-1	26-0*	20-7	26-0	20-8

Table 11 Rafters – Medium roofing; Drywall ceiling; Snow load

20, 30, or 40 psf live load; 15 psf dead load; $\ell/240$ deflection limit

Load duration factor = 1.15 for snow loads

MEL Grade		M-14 (1800-1.7)			M-29 (1550-1.7)			M-12 (1600-1.6)			
		Live Load									
		20	30	40	20	30	40	20	30	40	
Size & Spacing	2x6	12	15-9	13-9	12-6	15-9	13-9	12-6	15-6	13-6	12-3
		16	14-4	12-6	11-5	14-4	12-6	11-5	14-1	12-3	11-2
		24	12-6	10-11	9-11	12-2	10-9	9-8	12-3	10-9	9-9
	2x8	12	20-10	18-2	16-6	20-10	18-2	16-6	20-5	17-10	16-2
		16	18-11	16-6	15-0	18-11	16-6	15-0	18-6	16-2	14-8
		24	16-6	14-5	13-1	16-0	14-2	12-9	16-2	14-2	12-10
	2x10	12	26-0*	23-2	21-1	26-0*	23-2	21-1	26-0	22-9	20-8
		16	24-1	21-1	19-2	24-1	21-1	19-2	23-8	20-8	18-9
		24	21-1	18-5	16-9	20-5	18-0	16-4	20-8	18-0	16-5
	2x12	12	26-0*	26-0*	25-7	26-0*	26-0*	25-7	26-0*	26-0*	25-1
		16	26-0*	25-7	23-3	26-0*	25-7	23-3	26-0*	25-1	22-10
		24	25-7	22-5	20-4	24-10	21-11	19-10	25-1	21-11	19-11

Table 12 Rafters – Drywall or No Finished ceiling; Construction load

20 psf live load; 10 psf dead load; $\ell/240$ or $\ell/180$ deflection limit

Load duration factor = 1.25 for construction loads

MEL Grade		M-14 (1800-1.7)		M-29 (1550-1.7)		M-12 (1600-1.6)		
		Deflection Limit						
		240	180	240	180	240	180	
Size & Spacing	2x6	12	15-9	17-4	15-9	17-4	15-6	17-0
		16	14-4	15-9	14-4	15-9	14-1	15-6
		24	12-6	13-9	12-6	13-8	12-3	13-6
	2x8	12	20-10	22-11	20-10	22-11	20-5	22-5
		16	18-11	20-10	18-11	20-10	18-6	20-5
		24	16-6	18-2	16-6	18-0	16-2	17-10
	2x10	12	26-0*	26-0*	26-0*	26-0*	26-0	26-0*
		16	24-1	26-0*	24-1	26-0*	23-8	26-0
		24	21-1	23-2	21-1	23-0	20-8	22-9