

ROOF LOADS

SIMPLE-SPAN JOIST—ALLOWABLE ROOF LOAD (PLF)

Joist Span (ft)	PWI 20												PWI 30							
	9½"				11⅞"				14"				9½"				11⅞"			
	Live		Total		Live		Total		Live		Total		Live		Total		Live		Total	
	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%
6	-	301	346	376	-	301	346	376	-	301	346	376	-	311	357	388	-	311	357	388
7	-	258	297	322	-	258	297	322	-	258	297	322	-	266	306	333	-	266	306	333
8	-	226	259	282	-	226	259	282	-	226	259	282	-	233	268	291	-	233	268	291
9	-	201	231	251	-	201	231	251	-	201	231	251	-	207	238	259	-	207	238	259
10	-	181	208	226	-	181	208	226	-	181	208	226	-	186	214	233	-	186	214	233
11	-	164	189	205	-	164	189	205	-	164	189	205	-	169	195	212	-	169	195	212
12	164	138	159	173	-	150	173	188	-	150	173	188	180	155	179	194	-	155	179	194
13	131	118	135	147	-	139	160	174	-	139	160	174	144	143	165	179	-	143	165	179
14	106	101	117	127	-	129	148	161	-	129	148	161	117	130	149	156	-	133	153	166
15	87	88	102	110	-	115	132	143	-	120	138	150	96	113	128	128	-	124	143	155
16	72	78	89	96	123	101	116	126	-	113	130	141	80	99	106	106	135	117	134	146
17	61	69	79	81	104	89	103	111	-	106	122	133	67	88	89	89	114	110	126	137
18	51	61	68	68	88	80	91	99	-	95	109	118	57	76	76	76	97	102	117	127
19	44	55	58	58	75	71	82	89	-	85	98	106	48	65	65	65	83	91	105	110
20					65	64	74	81	95	77	88	96					71	82	95	95
21					56	58	67	73	82	70	80	87					62	75	83	83
22					49	53	61	66	72	63	73	79					54	68	72	72
23					43	49	56	58	63	58	67	73					48	62	64	64
24									56	53	61	67								
25									50	49	56	61								
26									44	45	52	57								
27									40	42	48	53								
28									36	39	45	47								

Notes:

- Table values apply to uniformly loaded roof joists.
- Span is measured to the center of each support.
- Roofs must be sloped at least ¼" in 12" to assure drainage.
- Table values do not account for stiffness added by glued or nailed sheathing.
- Provide at least 1¾" of bearing length at end supports and 3½" at intermediate supports.
- Provide lateral restraint at supports (e.g. blocking panels, rim board) and along the compression flange of each joist (e.g. roof sheathing, gypsum board ceiling).
- Use sizing software or consult a professional engineer to analyze conditions outside the scope of this table (e.g. different bearing lengths, concentrated loads) or for multiple span joists if the length of any span is less than half the length of an adjacent span.

HOW TO USE ROOF LOAD TABLES

1. Choose a joist spacing and convert the live and total design loads specified in pounds per square foot (psf) to joist loads in pounds per lineal foot (plf).
Joist Spacing [ft] x Design Load [psf] = Joist Load [plf]

JOIST LOAD (PLF)

Joist Spacing		Design Load (psf)								
Inches	Feet	20	30	40	50	60	70	80	90	100
12	1	20	30	40	50	60	70	80	90	100
16	1.33	27	40	53	67	80	93	106	120	133
19.2	1.6	32	48	64	80	96	112	128	144	160
24	2	40	60	80	100	120	140	160	180	200

2. Check the local building code for deflection requirements. Building codes typically require L/180 for total load and L/240 for live load. The values in the Total columns are based on L/180.
3. Choose a span. Use the horizontal span dimension from the building plans for roofs that slope up to 2" in 12". For roof slopes greater than 2" in 12", multiply the horizontal dimension by the appropriate factor from the table below.

Slope	2½ in 12	3 in 12	3½ in 12	4 in 12	4½ in 12	5 in 12	6 in 12	7 in 12	8 in 12	9 in 12	10 in 12	11 in 12	12 in 12
Factor	1.01	1.02	1.03	1.04	1.05	1.07	1.10	1.14	1.19	1.23	1.28	1.34	1.39

4. Choose a load duration category – 100% for heavy snow, 115% for snow and 125% for non-snow. When in doubt, consult the local building department.
5. Scan across the Span row to find a joist size with sufficient Live and applicable Total load capacities. Both requirements must be satisfied. When no value is shown in a Live column, Total load governs.
6. Sloping joists must be fastened to each support to resist a sliding force equal to:

$$\frac{0.5XWL}{\sqrt{X^2 + 144}} \text{ at end supports and } \frac{1.25XWL}{\sqrt{X^2 + 144}} \text{ at intermediate supports}$$

where X = roof slope in 12, L = span [ft] and W = S $\left\{ \frac{LL + DL\sqrt{X^2 + 144}}{12} \right\}$, where S = joist spacing [ft], LL = live load [psf] and DL = dead load [psf]

7. Web stiffeners are required at all supports for 22" and 24" joists. See *Web Stiffener Requirements* on page 93 for more details.

ROOF LOADS

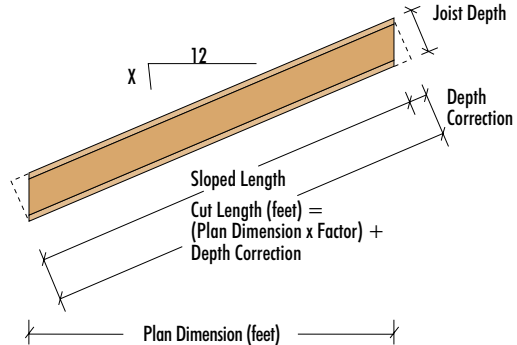
SIMPLE-SPAN JOIST—ALLOWABLE ROOF LOAD (PLF)

Joist Span (ft)	PWI 40												PWI 45																				
	9 1/2"				11 1/8"				14"				16"				9 1/2"				11 1/8"				14"				16"				
	Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		
	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	
6	-	355	408	444	-	355	408	444	-	355	408	444	-	355	408	444	-	322	371	403	-	322	371	403	-	322	371	403	-	322	371	403	
7	-	304	350	380	-	304	350	380	-	304	350	380	-	304	350	380	-	276	318	345	-	276	318	345	-	276	318	345	-	276	318	345	
8	-	266	306	333	-	266	306	333	-	266	306	333	-	266	306	333	-	242	278	302	-	242	278	302	-	242	278	302	-	242	278	302	
9	-	237	272	296	-	237	272	296	-	237	272	296	-	237	272	296	-	215	247	269	-	215	247	269	-	215	247	269	-	215	247	269	
10	-	213	245	266	-	213	245	266	-	213	245	266	-	213	245	266	-	193	222	242	-	193	222	242	-	193	222	242	-	193	222	242	
11	-	178	205	223	-	194	223	242	-	194	223	242	-	194	223	242	-	176	202	220	-	176	202	220	-	176	202	220	-	176	202	220	
12	-	150	172	187	-	178	204	222	-	178	204	222	-	178	204	222	-	161	185	201	-	161	185	201	-	161	185	201	-	161	185	201	
13	-	128	147	160	-	164	188	205	-	164	188	205	-	164	188	205	170	149	171	186	-	149	171	186	-	149	171	186	-	149	171	186	
14	138	110	127	138	-	143	164	178	-	152	175	190	-	152	175	190	138	135	155	168	-	138	159	173	-	138	159	173	-	138	159	173	
15	113	96	110	120	-	124	143	155	-	142	163	178	-	142	163	178	113	117	135	147	-	129	148	161	-	129	148	161	-	129	148	161	
16	94	84	97	105	-	109	126	137	-	132	151	165	-	133	153	166	94	103	119	126	-	121	139	151	-	121	139	151	-	121	139	151	
17	79	75	86	93	-	97	111	121	-	117	134	146	-	125	144	157	79	91	105	106	133	114	131	142	-	114	131	142	-	114	131	142	
18	67	67	77	83	-	86	99	108	-	104	120	130	-	118	136	148	67	81	90	90	113	105	121	131	-	107	124	134	-	107	124	134	
19	58	60	69	75	97	77	89	97	-	93	107	117	-	108	124	135	58	73	77	77	97	94	108	118	-	102	117	127	-	102	117	127	
20					83	70	80	87	-	84	97	105	-	98	112	122					83	85	98	106	121	97	111	121	-	97	111	121	
21					72	63	73	79	-	76	88	96	-	89	102	111					72	77	89	97	105	92	106	115	-	92	106	115	
22					63	58	66	72	-	70	80	87	-	81	93	101					63	70	81	85	92	84	96	105	-	88	101	110	
23					56	53	61	66	-	64	73	80	-	74	85	92					56	64	74	74	81	77	88	96	-	84	97	105	
24									71	58	67	73	-	68	78	85									72	70	81	88	97	81	93	101	
25									63	54	62	67	-	62	72	78										64	65	75	81	86	74	85	93
26									56	50	57	62	-	58	66	72										57	60	69	75	77	69	79	86
27									51	46	53	58	-	54	62	67										51	56	64	68	69	64	73	80
28									45	43	49	54	61	50	57	62										46	52	59	61	62	59	68	74
29													56	46	53	58														56	55	63	69
30													50	43	50	54													51	52	59	64	
31													46	41	47	51													46	48	56	60	
32													42	38	44	48													42	45	52	56	

See notes on page 66

UP-THE-SLOPE SPANS & CUTTING LENGTHS FOR SLOPED ROOFS

Slope	Factor	Joist Depth (inches)			
		9 1/2"	11 1/8"	14"	16"
		Depth Correction (feet)			
1 in 12	1.00	0.07	0.08	0.10	0.11
2 in 12	1.01	0.13	0.16	0.19	0.22
2.5 in 12	1.02	0.16	0.21	0.24	0.28
3 in 12	1.03	0.20	0.25	0.29	0.33
3.5 in 12	1.04	0.23	0.29	0.34	0.39
4 in 12	1.05	0.26	0.33	0.39	0.44
4.5 in 12	1.07	0.30	0.37	0.44	0.50
5 in 12	1.08	0.33	0.41	0.49	0.56
6 in 12	1.12	0.40	0.49	0.58	0.67
7 in 12	1.16	0.46	0.58	0.68	0.78
8 in 12	1.20	0.53	0.66	0.78	0.89
9 in 12	1.25	0.59	0.74	0.88	1.00
10 in 12	1.30	0.66	0.82	0.97	1.11
11 in 12	1.36	0.73	0.91	1.07	1.22
12 in 12	1.41	0.79	0.99	1.17	1.33



ROOF LOADS

SIMPLE-SPAN JOIST—ALLOWABLE ROOF LOAD (PLF)

Joist Span (ft)	PWI 47																												
	7½"				9½"				11½"				14"				16"				18"				20"				
	Live	Total			Live	Total			Live	Total			Live	Total			Live	Total			Live	Total			Live	Total			
L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%		
6	-	284	327	356	-	288	331	360	-	291	335	364	-	296	340	370	-	299	344	374	-	302	348	378	-	306	352	382	
7	-	244	280	305	-	247	284	308	-	249	287	312	-	254	292	317	-	256	295	321	-	259	298	324	-	262	301	328	
8	-	213	245	267	-	216	248	270	-	218	251	273	-	222	255	277	-	224	258	281	-	227	261	284	-	229	264	287	
9	-	190	218	237	-	192	221	240	-	194	223	242	-	197	227	247	-	199	229	249	-	202	232	252	-	204	234	255	
10	-	171	196	213	-	173	199	216	-	175	201	218	-	178	204	222	-	180	206	224	-	181	209	227	-	183	211	229	
11	190	155	178	194	-	157	180	196	-	159	183	198	-	161	186	202	-	163	188	204	-	165	190	206	-	167	192	208	
12	149	142	164	178	-	144	165	180	-	145	167	182	-	148	170	185	-	150	172	187	-	151	174	189	-	153	176	191	
13	119	126	144	157	-	133	153	166	-	134	154	168	-	137	157	171	-	138	159	173	-	140	161	175	-	141	162	176	
14	97	108	125	129	146	123	142	154	-	125	143	156	-	127	146	159	-	128	147	160	-	130	149	162	-	131	151	164	
15	79	94	106	106	120	115	132	144	-	116	134	145	-	118	136	148	-	120	138	150	-	121	139	151	-	122	141	153	
16					100	103	118	129	-	109	125	136	-	111	128	139	-	112	129	140	-	113	130	142	-	115	132	143	
17					84	91	105	112	-	103	118	128	-	104	120	131	-	106	121	132	-	107	123	133	-	108	124	135	
18					72	81	93	95	117	97	112	121	-	99	113	123	-	100	115	125	-	101	116	126	-	102	117	127	
19					61	73	82	82	100	92	106	115	-	93	107	117	-	94	109	118	-	96	110	119	-	97	111	121	
20									87	84	97	106	-	89	102	111	-	90	103	112	-	91	104	113	-	92	105	115	
21									75	77	88	96	-	85	97	106	-	85	98	107	-	86	99	108	-	87	100	109	
22									66	70	80	87	94	81	93	101	-	82	94	102	-	82	95	103	-	83	96	104	
23									58	64	73	77	83	76	87	95	-	78	90	98	-	79	91	99	-	80	92	100	
24													74	70	80	87	-	75	86	94	-	76	87	95	-	76	88	96	
25													65	64	74	80	87	72	83	90	-	73	83	91	-	73	84	92	
26													58	59	68	74	78	68	78	84	-	70	80	87	-	71	81	88	
27													52	55	63	69	70	63	72	78	-	67	77	84	-	68	78	85	
28													47	51	59	63	63	58	67	73	-	65	75	81	-	66	75	82	
29																	57	54	62	68	74	61	70	76	-	63	73	79	
30																	52	51	58	63	67	57	66	71	-	61	70	76	
31																	47	48	55	59	61	53	61	67	-	59	68	74	
32																	43	45	51	56	55	50	58	63	-	55	64	69	
33																					51	47	54	59	64	52	60	65	
34																					46	44	51	55	58	49	57	61	
35																					43	42	48	52	54	46	53	58	
36																					39	40	46	49	49	44	50	55	
37																										46	42	48	52
38																										42	39	45	49
39																										39	37	43	47
40																										36	36	41	44

Notes:

1. Table values apply to uniformly loaded roof joists.
2. Span is measured to the center of each support.
3. Roofs must be sloped at least ¼" in 12" to assure drainage.
4. Table values do not account for stiffness added by glued or nailed sheathing.
5. Provide at least 1¾" of bearing length at end supports and 3½" at intermediate supports.
6. Provide lateral restraint at supports (e.g. blocking panels, rim board) and along the compression flange of each joist (e.g. roof sheathing, gypsum board ceiling).
7. Use sizing software or consult a professional engineer to analyze conditions outside the scope of this table (e.g. different bearing lengths, concentrated loads) or for multiple span joists if the length of any span is less than half the length of an adjacent span.

ROOF LOADS

SIMPLE-SPAN JOIST—ALLOWABLE ROOF LOAD (PLF)

Joist Span (ft)	PWI 50																PWI 60															
	9½"				11⅞"				14"				16"				9½"				11⅞"				14"				16"			
	Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total	
	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%
6	-	334	384	417	-	334	384	417	-	334	384	417	-	334	384	417	-	355	408	444	-	355	408	444	-	355	408	444	-	355	408	444
7	-	286	329	358	-	286	329	358	-	286	329	358	-	286	329	358	-	304	350	380	-	304	350	380	-	304	350	380	-	304	350	380
8	-	250	288	313	-	250	288	313	-	250	288	313	-	250	288	313	-	266	306	333	-	266	306	333	-	266	306	333	-	266	306	333
9	-	222	256	278	-	222	256	278	-	222	256	278	-	222	256	278	-	237	272	296	-	237	272	296	-	237	272	296	-	237	272	296
10	-	200	230	250	-	200	230	250	-	200	230	250	-	200	230	250	-	213	245	266	-	213	245	266	-	213	245	266	-	213	245	266
11	-	182	209	228	-	182	209	228	-	182	209	228	-	182	209	228	-	194	223	242	-	194	223	242	-	194	223	242	-	194	223	242
12	205	167	192	209	-	167	192	209	-	167	192	209	-	167	192	209	-	178	204	222	-	178	204	222	-	178	204	222	-	178	204	222
13	164	154	177	193	-	154	177	193	-	154	177	193	-	154	177	193	199	164	188	205	-	164	188	205	-	164	188	205	-	164	188	205
14	133	143	164	178	-	143	164	179	-	143	164	179	-	143	164	179	162	152	175	190	-	152	175	190	-	152	175	190	-	152	175	190
15	110	133	146	146	-	133	154	167	-	133	154	167	-	133	154	167	134	133	152	166	-	142	163	178	-	142	163	178	-	142	163	178
16	91	117	122	122	154	125	144	156	-	125	144	156	-	125	144	156	111	117	134	146	-	133	153	166	-	133	153	166	-	133	153	166
17	77	102	102	102	130	118	135	147	-	118	135	147	-	118	135	147	94	103	119	125	156	125	144	157	-	125	144	157	-	125	144	157
18	65	87	87	87	110	111	128	139	-	111	128	139	-	111	128	139	80	92	106	106	133	118	136	148	-	118	136	148	-	118	136	148
19	56	74	74	74	94	105	121	126	-	105	121	132	-	105	121	132	68	83	91	91	114	107	123	134	-	112	129	140	-	112	129	140
20					82	97	109	109	120	100	115	125	-	100	115	125					99	97	111	121	-	107	123	133	-	107	123	133
21					71	88	94	94	104	95	110	119	-	95	110	119					86	88	101	110	125	101	117	127	-	101	117	127
22					62	80	83	83	91	91	105	114	-	91	105	114					75	80	92	100	109	96	111	120	-	97	111	121
23					54	73	73	73	80	87	100	107	-	87	100	109					66	73	84	88	96	88	101	110	-	93	107	116
24									71	80	92	94	97	83	96	104									85	81	93	101	-	89	102	111
25									63	74	84	84	86	80	92	100								76	74	86	93	102	85	98	107	
26									56	68	75	75	77	77	89	96								68	69	79	86	92	80	92	100	
27									50	63	67	67	69	73	84	91								61	64	73	80	82	74	85	92	
28									45	59	60	60	62	68	78	83								55	59	68	73	74	69	79	86	
29													56	63	72	75												67	64	74	80	
30													51	59	68	68												61	60	69	75	
31													46	55	62	62												55	56	65	70	
32													42	52	56	56												50	53	61	66	
33																																
34																																
35																																
36																																
37																																
38																																
39																																
40																																

See notes on page 68

ROOF LOADS

SIMPLE-SPAN JOIST—ALLOWABLE ROOF LOAD (PLF)

Joist Span (ft)	PWI 70																			
	11 7/8"				14"				16"				18"				20"			
	Live		Total		Live		Total		Live		Total		Live		Total		Live		Total	
	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%
6	-	381	439	477	-	381	439	477	-	381	439	477	-	381	439	477	-	381	439	477
7	-	327	376	409	-	327	376	409	-	327	376	409	-	327	376	409	-	327	376	409
8	-	286	329	358	-	286	329	358	-	286	329	358	-	286	329	358	-	286	329	358
9	-	254	292	318	-	254	292	318	-	254	292	318	-	254	292	318	-	254	292	318
10	-	229	263	286	-	229	263	286	-	229	263	286	-	229	263	286	-	229	263	286
11	-	208	239	260	-	208	239	260	-	208	239	260	-	208	239	260	-	208	239	260
12	-	191	219	238	-	191	219	238	-	191	219	238	-	191	219	238	-	191	219	238
13	-	176	202	220	-	176	202	220	-	176	202	220	-	176	202	220	-	176	202	220
14	-	163	188	204	-	163	188	204	-	163	188	204	-	163	188	204	-	163	188	204
15	-	153	175	191	-	153	175	191	-	153	175	191	-	153	175	191	-	153	175	191
16	-	143	164	179	-	143	164	179	-	143	164	179	-	143	164	179	-	143	164	179
17	-	135	155	168	-	135	155	168	-	135	155	168	-	135	155	168	-	135	155	168
18	146	127	146	159	-	127	146	159	-	127	146	159	-	127	146	159	-	127	146	159
19	126	120	139	151	-	120	139	151	-	120	139	151	-	120	139	151	-	120	139	151
20	109	114	132	143	-	114	132	143	-	114	132	143	-	114	132	143	-	114	132	143
21	95	109	125	126	-	109	125	136	-	109	125	136	-	109	125	136	-	109	125	136
22	83	104	111	111	119	104	120	130	-	104	120	130	-	104	120	130	-	104	120	130
23	73	97	97	97	105	99	114	124	-	99	114	124	-	99	114	124	-	99	114	124
24					93	95	110	119	-	95	110	119	-	95	110	119	-	95	110	119
25					83	92	105	111	111	92	105	114	-	92	105	114	-	92	105	114
26					74	88	99	99	99	88	101	110	-	88	101	110	-	88	101	110
27					67	85	89	89	89	85	97	106	-	85	97	106	-	85	97	106
28					60	80	80	80	80	82	94	102	-	82	94	102	-	82	94	102
29									73	79	91	97	94	94	91	99	-	79	91	99
30									66	76	88	88	85	76	88	95	-	76	88	95
31									60	74	80	80	78	74	85	92	-	74	85	92
32									55	71	73	73	71	72	82	89	-	72	82	89
33													65	69	80	87	82	69	80	87
34													60	67	77	79	75	67	77	84
35													55	65	73	73	69	65	75	82
36													50	63	67	67	64	64	73	79
37																	59	62	71	77
38																	54	60	69	72
39																	50	59	67	67
40																	47	57	62	62
41																				
42																				
43																				
44																				
45																				
46																				
47																				
48																				

Notes:

1. Table values apply to uniformly loaded roof joists.
2. Span is measured to the center of each support.
3. Roofs must be sloped at least 1/4" in 12" to assure drainage.
4. Table values do not account for stiffness added by glued or nailed sheathing.
5. Provide at least 1 3/4" of bearing length at end supports and 3/2" at intermediate supports.
6. Provide lateral restraint at supports (e.g. blocking panels, rim board) and along the compression flange of each joist (e.g. roof sheathing, gypsum board ceiling).
7. Use sizing software or consult a professional engineer to analyze conditions outside the scope of this table (e.g. different bearing lengths, concentrated loads) or for multiple span joists if the length of any span is less than half the length of an adjacent span.

ROOF LOADS

SIMPLE-SPAN JOIST—ALLOWABLE ROOF LOAD (PLF)

Joist Span (ft)	PWI 77																																
	9½"				11⅞"				14"				16"				18"				20"				22"				24"				
	Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total						
	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%					
6	-	423	486	528	-	423	486	528	-	423	486	528	-	423	486	528	-	423	486	528	-	640	640	640	-	640	640	640					
7	-	362	416	453	-	362	416	453	-	362	416	453	-	362	416	453	-	362	416	453	-	548	548	548	-	548	548	548					
8	-	317	364	396	-	317	364	396	-	317	364	396	-	317	364	396	-	317	364	396	-	480	480	480	-	480	480	480					
9	-	282	324	352	-	282	324	352	-	282	324	352	-	282	324	352	-	282	324	352	-	427	427	427	-	427	427	427					
10	-	254	292	317	-	254	292	317	-	254	292	317	-	254	292	317	-	254	292	317	-	384	384	384	-	384	384	384					
11	-	230	265	288	-	230	265	288	-	230	265	288	-	230	265	288	-	230	265	288	-	349	349	349	-	349	349	349					
12	-	211	243	264	-	211	243	264	-	211	243	264	-	211	243	264	-	211	243	264	-	320	320	320	-	320	320	320					
13	227	195	224	244	-	195	224	244	-	195	224	244	-	195	224	244	-	195	224	244	-	295	295	295	-	295	295	295					
14	185	181	208	226	-	181	208	226	-	181	208	226	-	181	208	226	-	181	208	226	-	274	274	274	-	274	274	274					
15	152	169	194	203	-	169	194	211	-	169	194	211	-	169	194	211	-	169	194	211	-	256	256	256	-	256	256	256					
16	127	158	169	169	-	158	182	198	-	158	182	198	-	158	182	198	-	158	182	198	-	240	240	240	-	240	240	240					
17	107	141	142	142	176	149	171	186	-	149	171	186	-	149	171	186	-	149	171	186	-	226	226	226	-	226	226	226					
18	91	121	121	121	150	141	162	176	-	141	162	176	-	141	162	176	-	141	162	176	-	213	213	213	-	213	213	213					
19	77	103	103	103	129	133	153	167	-	133	153	167	-	133	153	167	-	133	153	167	-	202	202	202	-	202	202	202					
20					111	127	146	148	-	127	146	158	-	127	146	158	-	127	146	158	-	192	192	192	-	192	192	192					
21					97	119	129	129	139	121	139	151	-	121	139	151	-	121	139	151	-	183	183	183	-	183	183	183					
22					84	109	113	113	122	115	133	144	-	115	133	144	-	115	133	144	-	175	175	175	-	175	175	175					
23					74	99	99	99	108	110	127	138	-	110	127	138	-	110	127	138	-	167	167	167	-	167	167	167					
24									95	106	121	127	128	106	121	132	-	106	121	132	-	160	160	160	-	160	160	160					
25									85	101	113	113	114	101	117	127	-	101	117	127	-	154	154	154	-	154	154	154					
26									76	93	101	101	102	98	112	122	-	98	112	122	-	146	148	148	-	148	148	148					
27									68	86	90	90	91	94	108	117	-	94	108	117	-	136	142	142	-	142	142	142					
28									61	80	81	81	82	91	104	109	106	91	104	113	-	126	137	137	-	137	137	137					
29													74	86	98	99	96	87	101	109	-	117	132	132	-	128	132	132					
30													67	80	90	90	87	85	97	106	-	110	126	128	-	120	128	128					
31													61	75	81	81	79	82	94	102	100	82	94	102	123	103	118	124	-	112	124	124	
32													56	70	74	74	72	79	91	96	91	79	91	99	112	96	111	120	-	105	120	120	
33																	66	74	86	88	83	77	88	96	103	91	104	113	-	99	114	116	
34																	61	70	81	81	77	75	86	93	94	85	98	107	-	93	107	113	
35																	56	66	74	74	70	72	83	91	87	81	93	101	105	88	101	110	
36																	51	63	68	68	65	69	80	86	80	76	88	95	97	83	95	104	
37																					60	66	76	80	74	72	83	90	89	79	90	98	
38																					55	62	72	74	68	68	79	86	83	74	86	93	
39																					51	59	68	68	63	65	75	81	77	71	81	88	
40																					48	56	64	64	59	62	71	77	71	67	77	84	
41																										55	59	68	73	66	64	74	80
42																										51	56	64	68	62	61	70	76
43																										48	53	61	64	58	58	67	73
44																										45	51	59	59	54	56	64	69
45																													51	53	61	66	
46																													47	51	58	63	
47																													45	49	56	59	
48																													42	47	54	56	

See notes on page 70

ROOF LOADS

SIMPLE-SPAN JOIST—ALLOWABLE ROOF LOAD (PLF)

Joist Span (ft)	PWI 90																																															
	9½"				11⅞"				14"				16"				18"				20"				22"				24"																			
	Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total		Live		Total																	
	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%	L/240	100%	115%	125%												
6	-	460	529	575	-	460	529	575	-	460	529	575	-	460	529	575	-	460	529	575	-	460	529	575	-	789	907	986	-	789	907	986																
7	-	395	454	493	-	395	454	493	-	395	454	493	-	395	454	493	-	395	454	493	-	395	454	493	-	676	778	845	-	676	778	845																
8	-	345	397	432	-	345	397	432	-	345	397	432	-	345	397	432	-	345	397	432	-	345	397	432	-	592	681	740	-	592	681	740																
9	-	307	353	384	-	307	353	384	-	307	353	384	-	307	353	384	-	307	353	384	-	307	353	384	-	526	605	658	-	526	605	658																
10	-	276	318	345	-	276	318	345	-	276	318	345	-	276	318	345	-	276	318	345	-	276	318	345	-	473	544	592	-	473	544	592																
11	-	251	289	314	-	251	289	314	-	251	289	314	-	251	289	314	-	251	289	314	-	251	289	314	-	430	495	538	-	430	495	538																
12	-	230	265	288	-	230	265	288	-	230	265	288	-	230	265	288	-	230	265	288	-	230	265	288	-	395	454	493	-	395	454	493																
13	-	212	244	266	-	212	244	266	-	212	244	266	-	212	244	266	-	212	244	266	-	212	244	266	-	364	419	455	-	364	419	455																
14	-	197	227	247	-	197	227	247	-	197	227	247	-	197	227	247	-	197	227	247	-	197	227	247	-	338	389	423	-	338	389	423																
15	219	184	212	230	-	184	212	230	-	184	212	230	-	184	212	230	-	184	212	230	-	184	212	230	-	316	363	395	-	316	363	395																
16	183	173	199	216	-	173	199	216	-	173	199	216	-	173	199	216	-	173	199	216	-	173	199	216	-	296	340	370	-	296	340	370																
17	155	162	187	203	-	162	187	203	-	162	187	203	-	162	187	203	-	162	187	203	-	162	187	203	-	279	320	348	-	279	320	348																
18	132	153	176	192	-	153	176	192	-	153	176	192	-	153	176	192	-	153	176	192	-	153	176	192	-	263	302	329	-	263	302	329																
19	113	145	151	151	-	145	167	182	-	145	167	182	-	145	167	182	-	145	167	182	-	145	167	182	-	249	287	311	-	249	287	311																
20					161	138	159	173	-	138	159	173	-	138	159	173	-	138	159	173	-	138	159	173	-	237	272	296	-	237	272	296																
21					140	132	151	164	-	132	151	164	-	132	151	164	-	132	151	164	-	132	151	164	-	225	259	282	-	225	259	282																
22					123	126	144	157	-	126	144	157	-	126	144	157	-	126	144	157	-	126	144	157	-	215	247	269	-	215	247	269																
23					108	120	138	144	-	120	138	150	-	120	138	150	-	120	138	150	-	120	138	150	-	206	237	257	-	206	237	257																
24									138	115	132	144	-	115	132	144	-	115	132	144	-	115	132	144	-	197	227	247	-	197	227	247																
25									123	110	127	138	-	110	127	138	-	110	127	138	-	110	127	138	-	189	218	237	-	189	218	237																
26									110	106	122	133	-	106	122	133	-	106	122	133	-	106	122	133	-	182	209	228	-	182	209	228																
27									98	102	118	128	-	102	118	128	-	102	118	128	-	102	118	128	-	175	202	219	-	175	202	219																
28									89	99	113	118	119	99	113	123	-	99	113	123	-	99	113	123	-	169	194	211	-	169	194	211																
29													107	95	110	119	-	95	110	119	-	95	110	119	-	163	188	204	-	163	188	204																
30													97	92	106	115	-	92	106	115	-	92	106	115	-	158	181	197	-	158	181	197																
31													89	89	102	111	-	89	102	111	-	89	102	111	-	175	153	176	191	-	153	176	191															
32													81	86	99	108	105	86	99	108	-	86	99	108	160	148	170	185	-	148	170	185																
33																	96	84	96	105	-	84	96	105	147	139	160	174	177	143	165	179																
34																	88	81	93	102	-	81	93	102	135	131	151	164	162	139	160	174																
35																	81	79	91	99	-	79	91	99	124	124	143	155	150	135	155	169																
36																	75	77	88	96	94	77	88	96	115	117	135	146	138	128	147	159																
37																				86	75	86	93	106	111	128	139	128	121	139	151																	
38																				80	73	84	91	98	105	121	131	118	115	132	143																	
39																				74	71	81	89	91	100	115	122	110	109	125	136																	
40																				69	69	79	86	85	95	109	113	102	103	119	129																	
41																										79	90	104	105	95	98	113	123															
42																										74	86	98	98	89	94	108	117															
43																										69	82	92	92	83	89	103	111															
44																										64	78	86	86	78	85	98	104															
45																													73	82	94	97																
46																													68	78	90	91																
47																														64	75	86	86															
48																														60	72	80	80															

Notes:

1. Table values apply to uniformly loaded roof joists.
2. Span is measured to the center of each support.
3. Roofs must be sloped at least ¼" in 12" to assure drainage.
4. Table values do not account for stiffness added by glued or nailed sheathing.
5. Provide at least 1¾" of bearing length at end supports and 3½" at intermediate supports.
6. Provide lateral restraint at supports (e.g. blocking panels, rim board) and along the compression flange of each joist (e.g. roof sheathing, gypsum board ceiling).
7. Use sizing software or consult a professional engineer to analyze conditions outside the scope of this table (e.g. different bearing lengths, concentrated loads) or for multiple span joists if the length of any span is less than half the length of an adjacent span.