

Seasoned Softwood Span Tables: Domestic Internal Floor Joists Not Supporting Roof Loads

Seasoned softwood floor joists are the most popular choice for house construction in Australia for a number of important reasons:

- Economical and readily available in lengths of up to 6 m. (For spans over 6 m, check with your supplier)
- Dressed or “reeded” finish for ease of handling
- Seasoned to minimise movement of the installed timber
- A great base for popular timber appearance flooring
- Readily available preservative treated against borers and termites.

The following table provides an easy comparison of popular seasoned softwood grades and sizes for joists in residential domestic internal floor applications.

Internal Floor Joist Spans for 450 mm and 600 mm Joist Spacing

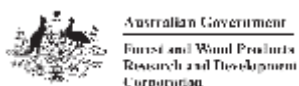
Single Span

Size D×B (mm)	Joist Spacing 450 mm			Joist Spacing 600 mm		
	F5	F7	MGP 10	F5	F7	MGP 10
90×35	NS	1000	NS	NS	NS	NS
90×45	1000	1400	1500	NS	1100	1200
120×35	1600	1800	1900	1300	1700	1500
120×45	1900	2000	2100	1700	1800	2000
140×35	2000	2100	2300	1900	2000	2100
140×45	2200	2300	2600	2100	2200	2400
190×35	2900	3000	3300	2600	2800	3000
190×45	3100	3300	3600	2900	3000	3300
240×35	3800	4000	4400	3400	3600	3900
240×45	4100	4400	4800	3700	3900	4300
290×45	5000	5200	5500	4600	4800	5200

Continuous Span

Size D×B (mm)	Joist Spacing 450 mm			Joist Spacing 600 mm		
	F5	F7	MGP 10	F5	F7	MGP 10
70×45	NS	1100	1200	NS	NS	1000
90×35	1100	1500	1300	NS	1200	1000
90×45	1600	1700	1800	1200	1500	1700
120×35	2000	2100	2300	1800	1900	2100
120×45	2200	2300	2500	2000	2100	2300
140×35	2400	2500	2800	2200	2300	2500
140×45	2600	2800	3100	2400	2500	2700
190×35	3400	3600	4000	3100	3200	3500
190×45	3800	4000	4400	3400	3500	3900
240×35	4600	4900	5200	4000	4200	4500
240×45	5100	5300	5600	4400	4600	5000
290×45	5900	6100	6400	5400	5600	6000

- Notes**
- Table is extracted from AS 1684 – 2006 – Residential Timber-Framed Construction Standard and assumes the building practice contained within that standard. Roof load width is set to zero, i.e. no wall or roof loads are taken into account. Maximum floor mass of 40 kg/m².
 - The sizes given in this table are not suitable for heavy point loads, except those allowed in CI 4.3.2.4 of AS1684.2 and AS1684.3.
 - Joists crippled over supports shall be considered as single span joists. Refer CI 4.2.2.3, AS1684.2 and 3.
 - For design parameters, refer to Figure 4.9, AS1684.2 and 3.
 - NS = Not Suitable



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Seasoned Softwood Span Tables: Floor Bearers for Domestic Balconies & Decks - Revised Loading

The 2006 AS 1684 – Residential Timber-Framed Construction Standard is based on the loadings contained in the Loading Code AS1170.2 – 1989. The current Loading Code, AS/NZS 1170.1: 2002, has introduced a reduced imposed loading of 2.0 kPa on domestic decks above 1 m from the ground. This guide has been produced so that designers and builders can take advantage of the reduced loading and compare the most commonly used seasoned softwood grades. As the timber is for external exposed above ground application, it is assumed that it will be preservative treated to H3 level.

Seasoned Softwood Floor Bearer Spans for Balconies & Decks – Revised Loading

Depth × Breadth (mm)		Floor Load Width (mm)											
		1200		2400		4800		1200		2400		4800	
		Maximum Bearer Span (mm)											
		Span	Cant.	Span	Cant.	Span	Cant.	Span	Cant.	Span	Cant.	Span	Cant.
Single Span						Continuous Span							
Seasoned Softwood, F5	2/90×35	1500	400	1000	300	NS	NS	1500	400	1000	300	NS	NS
	2/90×45	1700	500	1100	300	NS	NS	1700	500	1100	300	NS	NS
	2/120×35	2000	600	1400	400	NS	NS	2000	600	1400	400	NS	NS
	2/120×45	2200	600	1500	400	1100	300	2200	600	1500	400	1100	300
	2/140×35	2300	600	1600	400	1100	300	2300	600	1600	400	1100	300
	2/140×45	2600	700	1800	500	1200	300	2600	700	1800	500	1200	300
	2/190×35	3100	900	2200	600	1500	400	3100	900	2200	600	1500	400
	2/190×45	3500	1000	2500	700	1700	500	3500	1000	2500	700	1700	500
	2/240×35	3900	1100	2800	800	1900	500	3900	1100	2800	800	1900	500
	2/240×45	4400	1300	3100	900	2200	600	4400	1300	3100	900	2200	600
2/290×35	4700	1400	3300	900	2300	600	4700	1400	3300	900	2300	600	
2/290×45	5200	1500	3800	1100	2600	700	5300	1500	3800	1100	2600	700	
Seasoned Softwood, F7	2/90×35	1600	400	1100	300	NS	NS	1600	400	1100	300	NS	NS
	2/90×45	1900	500	1300	300	NS	NS	1900	500	1300	300	NS	NS
	2/120×35	2200	600	1500	400	1000	300	2200	600	1500	400	1000	300
	2/120×45	2500	700	1700	500	1200	300	2500	700	1700	500	1200	300
	2/140×35	2600	700	1800	500	1200	300	2600	700	1800	500	1200	300
	2/140×45	2900	800	2000	600	1400	400	2900	800	2000	600	1400	400
	2/190×35	3500	1000	2400	700	1700	500	3500	1000	2400	700	1700	500
	2/190×45	3900	1100	2800	800	1900	500	3900	1100	2800	800	1900	500
	2/240×35	4400	1300	3100	900	2100	600	4400	1300	3100	900	2100	600
	2/240×45	4600	1300	3500	1000	2400	700	4900	1400	3500	1000	2400	700
2/290×35	5000	1500	3700	1100	2600	700	5300	1500	3700	1100	2600	700	
2/290×45	5400	1600	4200	1200	2900	800	6000	1800	4200	1200	2900	800	
MGP Seasoned Softwood, MGP10	2/90×35	1600	400	1100	300	NS	NS	1600	400	1100	300	NS	NS
	2/90×45	1900	500	1300	300	NS	NS	1900	500	1300	300	NS	NS
	2/120×35	2100	600	1500	400	1000	300	2100	600	1500	400	1000	300
	2/120×45	2600	700	1800	500	1200	300	2600	700	1800	500	1200	300
	2/140×35	2400	700	1700	500	1200	300	2400	700	1700	500	1200	300
	2/140×45	3000	900	2100	600	1500	400	3000	900	2100	600	1500	400
	2/190×35	3200	900	2200	600	1500	400	3200	900	2200	600	1500	400
	2/190×45	3900	1100	2800	800	1900	500	3900	1100	2800	800	1900	500
	2/240×35	3900	1100	2800	800	1900	500	3900	1100	2800	800	1900	500
	2/240×45	4800	1400	3400	1000	2400	700	4800	1400	3400	1000	2400	700
	2/290×35	4500	1300	3200	900	2200	600	4500	1300	3200	900	2200	600
2/290×45	5500	1600	3900	1100	2700	800	5500	1600	3900	1100	2700	800	

- i These tables assume the building practice contained in AS1684 – 2006 – Residential Timber Framed Construction and should be read in conjunction with that standard
- ii Check available bearer lengths with your supplier before specifying
- iii While the same deflection criteria used by Timber Solutions © to produce the AS1684 span tables have been used, the resultant deck may exhibit some "bounce". Where this is not desirable, designers and builders may reduce the span and cantilever lengths.
- iv Maximum deck joist span is based on supporting a maximum decking mass of 20 kg/m², imposed point load of 1.8 kN, imposed distributed loading of 2 kPa and 450 mm joist spacing. Suitable for high and low decks.
- v Maximum cantilever length is 30% of the backspan. Minimum backspan is 200% of overhang.
- vi Bearers crippled or joined over supports must be considered as single span bearers.
- vii Multiple members shall be nailed together as per AS1684.2 Cl. 2.3.
- viii Bearing lengths shall be a minimum of 50 mm at end supports and 100 mm at internal supports for continuous members.
- ix Continuous indicates continuous members, i.e. where the joists span over 3 or more bearers, see AS1684.2 Cl. 2.7.5.5.
- x Cant. indicates the allowable cantilever length.
- xi NS = Not Suitable

These tables have been produced using Timber Solutions software Version 2.02 © Forest and Wood Products Research and Development Corporation (FWPRDC). This publication was produced by the Timber and Building Materials Association, in conjunction with the Timber Development Association (NSW) and with assistance from the FWPRDC. The FWPRDC is jointly funded by the forest and wood products industry and the Australian Government.

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Seasoned Softwood Span Tables: Floor Joists for Domestic Balconies & Decks - Revised Loading

The 2006 AS 1684 – Residential Timber-Framed Construction Standard is based on the loadings contained in the Loading Code AS1170.2 – 1989. The current Loading Code, AS/NZS 1170.1: 2002, has introduced a reduced imposed loading of 2.0 kPa on domestic decks above 1 m from the ground. This guide has been produced so that designers and builders can take advantage of the reduced loading and compare the most commonly used seasoned softwood grades. As the timber is for external exposed above ground application, it is assumed that it will be preservative treated to H3 level.

Seasoned Softwood Floor Joist Spans for Balconies & Decks – Revised Loading (Joist Spacing 450 mm)

Single Span (See Note iii)

Size D×B (mm)	F5		F7		MGP 10	
	Span (mm)	Cant. (mm)	Span (mm)	Cant. (mm)	Span (mm)	Cant. (mm)
70×35	NS	NS	NS	NS	NS	NS
70×45	NS	NS	NS	NS	NS	NS
90×35	NS	NS	1000	300	NS	NS
90×45	1100	300	1200	300	1400	400
120×35	1500	400	1700	500	1700	500
120×45	1800	500	2000	600	2200	600
140×35	2100	600	2200	600	2400	700
140×45	2300	600	2500	700	2900	800
190×35	3300	900	3400	1000	3500	1000
190×45	3600	1000	3800	1100	4100	1200
240×35	4200	1250	4400	1300	4300	1200
240×45	4500	1300	4800	1400	5100	1500
290×45	5500	1650	5700	1700	6000	1800

Continuous Span (See Note iii)

Size D×B (mm)	F5		F7		MGP 10	
	Span (mm)	Cant. (mm)	Span (mm)	Cant. (mm)	Span (mm)	Cant. (mm)
70×35	NS	NS	NS	NS	NS	NS
70×45	NS	NS	NS	NS	1100	300
90×35	1000	300	1300	300	1200	300
90×45	1300	300	1500	400	1700	500
120×35	1900	500	2100	600	2200	600
120×45	2200	600	2400	700	2700	800
140×35	2500	750	2700	800	2700	800
140×45	2800	800	3000	850	3300	900
190×35	3400	1000	3800	1050	3500	1000
190×45	3800	1100	4200	1150	4300	1250
240×35	4300	1250	4800	1300	4300	1200
240×45	4800	1400	5400	1450	5200	1550
290×45	5800	1650	6500	1750	6000	1800

- Notes**
- i These tables assume the building practice contained in AS1684 – 2006 – Residential Timber Framed Construction and should be read in conjunction with that standard
 - ii Check available joist lengths with your supplier before specifying
 - iii While the same deflection criteria used by Timber Solutions © to produce the AS1684 span tables have been used, the resultant deck may exhibit some “bounce”. Where this is not desirable, for sizes above 190×35 mm designers and builders may reduce the spans by 500 mm and cantilevers by 250 mm.
 - iv Maximum deck joist span is based on supporting a maximum decking mass of 20 kg/m², imposed point load of 1.8 kN, imposed distributed loading of 2 kPa and 450 mm joist spacing. Suitable for high and low decks.
 - v Maximum cantilever length is 30% of the backspan. Minimum backspan is 200% of overhang.
 - vi Joists crippled over supports must be considered as single span joists.
 - vii Where joist depth is more than 4 times greater than breadth, restraint may be required. Refer AS1684.2 or AS1684.3 Cl. 4.2.2.3.
 - viii Bearing lengths shall be a minimum of 35 mm at end supports and 70 mm at internal supports for continuous members.
 - ix Continuous indicates continuous members, i.e. where the joists span over 3 or more bearers.
 - x Cant. indicates the allowable cantilever length.
 - xi NS = Not Suitable



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Seasoned Softwood Floor Joist Sizes for Standard Spans for Balconies & Decks Revised Loading (Joist Spacing 450 mm)

Single Span (See Note iii)

Span (mm)	F5 Size D×B (mm)	F7 Size D×B (mm)	MGP 10 Size D×B (mm)
1200	120 x 45	90 x 45	90 x 45
1500	120 x 45	120 x 45	90 x 45
1800	120 x 45	120 x 45	120 x 45
2100	140 x 45	140 x 45	120 x 45
2400	190 x 45	140 x 45	140 x 45
2700	190 x 45	190 x 45	140 x 45
3000	190 x 45	190 x 45	190 x 45
3300	190 x 45	190 x 45	190 x 45
3600	190 x 45	190 x 45	190 x 45

Continuous Span (See Note iii)

Span (mm)	F5 Size D×B (mm)	F7 Size D×B (mm)	MGP 10 Size D×B (mm)
1200	90 x 45	90 x 45	90 x 45
1500	120 x 45	90 x 45	90 x 45
1800	120 x 45	120 x 45	120 x 45
2100	120 x 45	120 x 45	120 x 45
2400	140 x 45	120 x 45	120 x 45
2700	140 x 45	140 x 45	140 x 45
3000	190 x 45	140 x 45	140 x 45
3300	190 x 45	190 x 45	140 x 45
3600	190 x 45	190 x 45	190 x 45

- Notes**
- i These tables assume the building practice contained in AS1684 – 2006 – Residential Timber Framed Construction and should be read in conjunction with that standard
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