

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



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.

Important notice: The information and advice provided in the publication is intended as a guide only. As successful design and construction depends upon numerous factors outside the scope of this publication, the Timber Development Association (NSW) accepts no responsibility for specifications in, nor work done or omitted to be done in reliance on this information sheet. Whilst all care has been taken to ensure the accuracy of the information contained in this publication, the Timber Development Association (NSW) disclaims, to the full extent permitted by law, all and any liability for any damage or loss, whether direct, indirect, special or consequential, arising directly or indirectly out of use of or reliance on this guide, whether as a result of the Timber Development Association (NSW) negligence or otherwise.

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.

Important notice: The information and advice provided in this publication is intended as a guide only. As successful design and construction depends upon numerous factors outside the scope of this publication, the Timber Development Association (NSW) accepts no responsibility for specifications in, nor work done or omitted to be done in reliance on this information sheet. Whilst all care has been taken to ensure the accuracy of the information contained in this publication, the Timber Development Association (NSW) disclaims, to the full extent permitted by law, all and any liability for any damage or loss, whether direct, indirect, special or consequential, arising directly or indirectly out of use of or reliance on this guide, whether as a result of the Timber Development Association (NSW) negligence or otherwise.

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



Australian Government
Forest and Wood Products
Research and Development
Corporation

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.

Important notice: The information and advice provided in the publication is intended as a guide only. As successful design and construction depends upon numerous factors outside the scope of this publication, the Timber Development Association (NSW) accepts no responsibility for specifications in, nor work done or omitted to be done in reliance on this information sheet. Whilst all care has been taken to ensure the accuracy of the information contained in this publication, the Timber Development Association (NSW) disclaims, to the full extent permitted by law, all and any liability for any damage or loss, whether direct, indirect, special or consequential, arising directly or indirectly out of use of or reliance on this guide, whether as a result of the Timber Development Association (NSW) negligence or otherwise.

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 – 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 Sizes for Standard Spans for Balconies & Decks Revised Loading (Joist Spacing 450 mm)

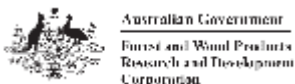
Single Span (See Note iii)

| 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
 - 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 190x35 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.



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.

Important notice: The information and advice provided in the publication is intended as a guide only. As successful

design and construction depends upon numerous factors outside the scope of this publication, the Timber Development Association (NSW) accepts no responsibility for specifications in, nor work done or omitted to be done in reliance on this information sheet. Whilst all care has been taken to ensure the accuracy of the information contained in this publication, the Timber Development Association (NSW) disclaims, to the full extent permitted by law, all and any liability for any damage or loss, whether direct, indirect, special or consequential, arising directly or indirectly out of use of or reliance on this guide, whether as a result of the Timber Development Association (NSW) negligence or otherwise.