# SmartJoist. Now has the strongest flanges around.

New SmartJoist has flanges that are cleverly made of Douglas Fir giving them unsurpassed strength. The SmartJoist range covers a broad selection of section sizes to suit almost any job and continually comes in under budget. Plus they are backed up by the know-how at the SmartFrame Design Centre, SmartFrame technical team, state of the art Smart-Frame software and comprehensive literature.

Turn over for the SmartJoist span table for residential floors.

SmartJoist®

# Recommended maximum spans for lightweight residential floors

## General domestic - 1.5 kPa

Loadings: Permanent Loading G: self weight + 40 kg/m$^2$ + 0.5 kPa of live load permanently applied, live load Q: 1.5 kPa or 1.8 kN point live load

| Joist spacing (mm) | | 300 | 400 | 450 | 600 | 300 | 400 | 450 | 600 |
|---|---|---|---|---|---|---|---|---|---|
| SmartJoist code | Self weight (kg/m) | Maximum recommended floor joist span (mm) | | | | | | | |
| | | Single span | | | | Continuous span | | | |
| SJ20044 | 2.8 | 4750 | 4400 | 4150 | 3750 | 5400 | 5000 | 4800 | 4300 |
| SJ24040 | 3.0 | 5150 | 4800 | 4650 | 4250 | 5900 | 5550 | 5300 | 4900 |
| SJ24051 | 3.4 | 5450 | 5050 | 4900 | 4550 | 6200 | 5700 | 5600 | 5100 |
| SJ24070 | 4.0 | 5850 | 5450 | 5250 | 4900 | 6600 | 6150 | 6000 | 5500 |
| SJ24090 | 5.0 | 6200 | 5750 | 5600 | 5200 | 7000 | 6500 | 6350 | 5850 |
| SJ25570 | 4.4 | 6100 | 5650 | 5450 | 5050 | 6900 | 6400 | 6200 | 5750 |
| SJ30040 | 3.4 | 5900 | 5450 | 5300 | 4900 | 6650 | 6100 | 5900 | 5650 |
| SJ30051 | 3.9 | 6250 | 5800 | 5600 | 5200 | 7000 | 6500 | 6250 | 5900 |
| SJ30070 | 4.3 | 6650 | 6200 | 6000 | 5550 | 7500 | 6900 | 6700 | 6300 |
| SJ30090 | 5.5 | 7000 | 6600 | 6350 | 5900 | 7950 | 7350 | 7100 | 6700 |
| SP30095 | 6.6 | 7150 | 6700 | 6550 | 6050 | 8300 | 7650 | 7400 | 6850 |
| SJ36058 | 4.8 | 7200 | 6700 | 6500 | 6000 | 8150 | 7500 | 7250 | 6900 |
| SJ36090 | 5.9 | 7750 | 7250 | 7050 | 6550 | 8850 | 8150 | 7900 | 7500 |
| SJ40090 | 6.2 | 8200 | 7700 | 7500 | 6950 | 9400 | 8650 | 8400 | 7800 |

### Serviceability criteria:

Max permanent load deflection - lesser of span / 300 or 15 mm ($j_2 = 2$)

Max live load deflection - lesser of span / 360 or 9 mm

Minimum floor Natural Frequency - 8 Hertz

Maximum differential deflection between joists of 2 mm under a concentrated load of 1.0 kN mid-span to simulate the foot force effect on the design of floor joists.

### Flooring:

Spans are suitable for solid timber, particle board and ply flooring. Floor sheathing glued and nailed to the joists will improve floor rigidity. Where a heavy overlay material is to be applied, such as thick mortar bed tiled or slate floors, the permanent load allowance should be increased to 1.2 kPa. A reduction of joist spacing can be used to accommodate this extra permanent load. A satisfactory result can be achieved by adopting the maximum spans for 600 mm and 450 mm spacing but installing the joists at 450 mm and 300 mm spacing respectively.

### Continuous spans:

For beams which are continuous over two unequal spans, the design span and the "resultant span description" depend on the percentage difference between the two spans as shown below:

| Span difference | Effective span | Resultant span description |
|---|---|---|
| 10% max | main span | continuous |
| 10 - 30% | 1.1 x main span | continuous |
| above 30% diff | main span | single |

$$\text{span difference} = \frac{(\text{main span} - \text{second span})}{(\text{main span} + \text{second span})} \times 100$$



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