Span Tables

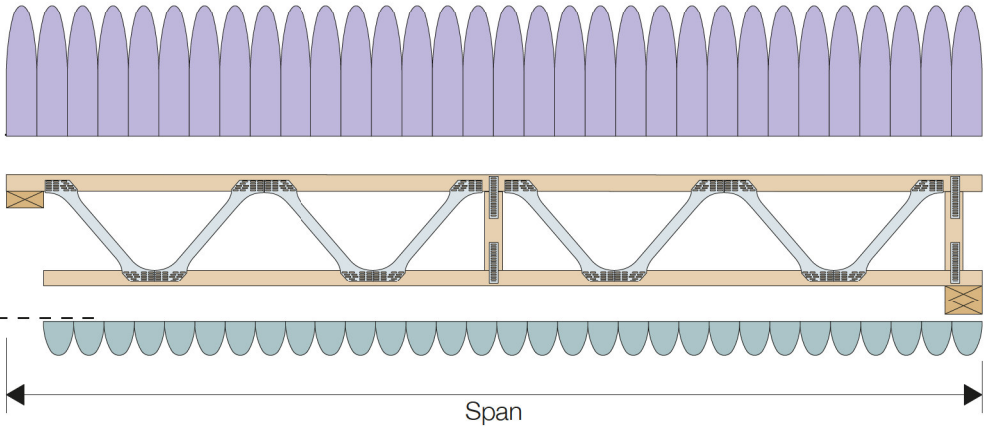
The following span tables are to be used as a basic guide to achievable joist span for given depth and spacing, and should be used for estimating or feasibility only.

Due to variations in timber grades, load sets, support conditions and bearing widths, the tables are not suitable as a design tool. Please consult an easi-joist® manufacturer for more information and design assistance.

United Kingdom and Ireland Span Table

Joist depth	Joist centres	Chord dimensions	Maximum achievable span - BS	Maximum achievable span - EC5 UK	Maximum achievable span - EC5 Ireland
WS200 easi-joist®					
195	400	72 x 35	4,675	4,300	4,275
		97 x 35	5,025	4,625	4,625
		122 x 35	5,275	4,900	4,900
		147 x 35	5,500	5,100	5,100
	600	72 x 35	4,025	3,775	3,700
		97 x 35	4,425	4,125	4,025
		122 x 35	4,725	4,400	4,300
		147 x 35	4,925	4,675	4,550
WS200 easi-joist®					
219	400	72 x 47	5,175	4,800	4,800
		97 x 47	5,550	5,150	5,150
		122 x 47	5,850	5,450	5,450
		147 x 47	6,075	5,700	5,700
	600	72 x 47	4,675	4,350	4,250
		97 x 47	4,975	4,775	4,675
		122 x 47	5,225	5,125	5,025
		147 x 47	5,450	5,375	5,300
WS250 easi-joist®					
254	400	72 x 47	5,650	5,225	5,225
		97 x 47	6,025	5,625	5,625
		122 x 47	6,350	5,950	5,950
		147 x 47	6,625	6,200	6,200
	600	72 x 47	5,075	4,900	4,800
		97 x 47	5,425	5,300	5,250
		122 x 47	5,675	5,600	5,575
		147 x 47	5,925	5,825	5,825
WS300 easi-joist®					
304	400	72 x 47	6,275	5,800	5,800
		97 x 47	6,700	6,225	6,225
		122 x 47	7,075	6,575	6,575
		147 x 47	7,375	6,875	6,875
	600	72 x 47	5,625	5,600	5,550
		97 x 47	6,025	6,000	5,975
		122 x 47	6,325	6,325	6,300
		147 x 47	6,600	6,600	6,575
WS400 easi-joist®					
417	400	72 x 47	7,200	6,900	6,900
		97 x 47	7,650	7,400	7,400
		122 x 47	8,000	7,825	7,825
		147 x 47	8,275	8,200	8,200
	600	72 x 47	6,400	6,600	6,450
		97 x 47	6,775	7,175	7,000
		122 x 47	7,075	7,525	7,300
		147 x 47	7,325	7,900	7,625

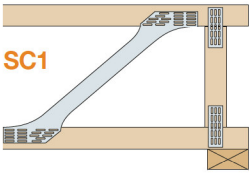
Load and Span Description



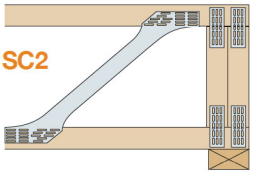
Support Conditions (SC)

There are four typical support conditions used in the design of easi-joist® which provide an important benefit in flexibility for connecting to different bearing members such as timber frame, masonry or steel. For more information on support conditions, see pages 28 - 34 of this manual.

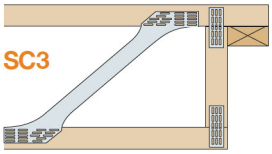
The support conditions below are possible for varying methods of connection to timber frame or masonry walls, or connection to steel or timber beams.



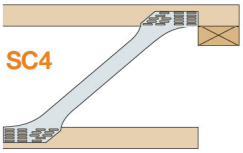
Bottom Chord Trimmable



Bottom Chord Full



Top Chord Closed



Top Chord Open

Floor Load Criteria

Spans are calculated based on the following applied loads

	BS	EC5 UK	EC5 Ireland
Top chord (Imposed)	1500 N/m²	1500 N/m²	1500 N/m²
Top chord (Dead)	210 N/m²	210 N/m²	210 N/m²
Top Chord (Partitions)	220 N/m²	350 N/m²	500 N/m²
Bottom chord (Dead)	200 N/m²	200 N/m²	200 N/m²

General Notes:-

1. Maximum span assumes 100mm wide bearing with the support condition SC2, maximum span of the joist taken over the bearing.
2. Lateral restraint is provided by a suitably fixed floor deck, which will prevent buckling of the compression flange.
3. Support conditions and web direction/orientation can affect the spanning capacity of a joist.
4. Strongbacks to be used for spans over 4m.

BS applicable notes:-

5. Spans are based on deflections being limited to 0.003 x span up to a maximum of 14mm.
6. The joists are assumed to be part of a load-sharing system as defined in BS 5268 2, Clause 2.9.

EC5 applicable notes:-

5. UK -Spans are based on vibrations checks of fundamental frequency being not less than 8 Hz, Unit point load deflection and Unit impulse velocity response as per limits in table NA.6, NA to BS EN 1995-1-1:2004.
6. Ireland - Spans are based on vibrations checks of fundamental frequency being not less than 8 Hz, Unit point load deflection and Unit impulse velocity response as per limits in NA.2.7, NA:2010+A1:2003 to I.S. EN 1995-1-1:2005.
7. UK - Net final deflection, $w_{net,fin}$, limited to l/250, for floor member with plasterboard, Table NA.5, NA to BE EN 1995-1-1:2004.
8. Ireland - Net final deflection, $w_{net,fin}$, limited to l/250, for floor member with plasterboard, Table NA.3, NA:2010+A1:2003 to I.S. EN 1995-1-1:2005.
9. UK - The joists are part of a load distribution system, with a ksys factor of 1.1, BS EN 1995-1-1:2004, clause 6.6 (2).
10. Ireland - The joists are part of a load distribution system, with a ksys factor of 1.1, IS EN 1995-1-1:2005, clause 6.6 (2).

Roof Span Tables

The following span tables are to be a basic guide to achievable joist span for given depth and spacing, and should be used for estimating or feasibility only.

Due to variations in timber grades, load sets, support conditions and bearing widths, the tables are not suitable as a design tool. Please consult an easi-joist® manufacturer for more information and design assistance.

United Kingdom and Ireland Roof Span Table

Joist depth	Joist centres	Chord dimensions	Maximum achievable roof span - BS	Maximum achievable roof span - EC5 UK & Ireland
WS200 easi-joist®				
195	400	72 x 35	5,625	5,375
		97 x 35	6,175	6,050
		122 x 35	6,625	6,575
		147 x 35	7,025	7,050
	600	72 x 35	4,900	4,875
		97 x 35	5,375	5,350
		122 x 35	5,750	5,750
		147 x 35	6,100	6,100
WS200 easi-joist®				
219	400	72 x 47	6,450	6,425
		97 x 47	7,075	7,175
		122 x 47	7,600	7,725
		147 x 47	8,075	8,200
	600	72 x 47	5,625	5,625
		97 x 47	6,150	6,200
		122 x 47	6,600	6,650
		147 x 47	7,000	7,075
WS250 easi-joist®				
254	400	72 x 47	7,250	7,275
		97 x 47	7,950	8,050
		122 x 47	8,550	8,675
		147 x 47	9,050	9,200
	600	72 x 47	6,300	6,325
		97 x 47	6,900	6,950
		122 x 47	7,425	7,475
		147 x 47	7,850	7,950
WS300 easi-joist®				
304	400	72 x 47	8,350	7,650
		97 x 47	9,175	9,325
		122 x 47	9,850	10,025
		147 x 47	10,450	10,650
	600	72 x 47	7,250	6,900
		97 x 47	7,975	8,075
		122 x 47	8,550	8,675
		147 x 47	9,050	9,200
WS400 easi-joist®				
417	400	72 x 47	10,300	8,375
		97 x 47	11,275	10,475
		122 x 47	12,125	12,325
		147 x 47	12,825	13,025
	600	72 x 47	8,875	7,550
		97 x 47	9,700	9,450
		122 x 47	10,375	10,550
		147 x 47	10,975	11,150

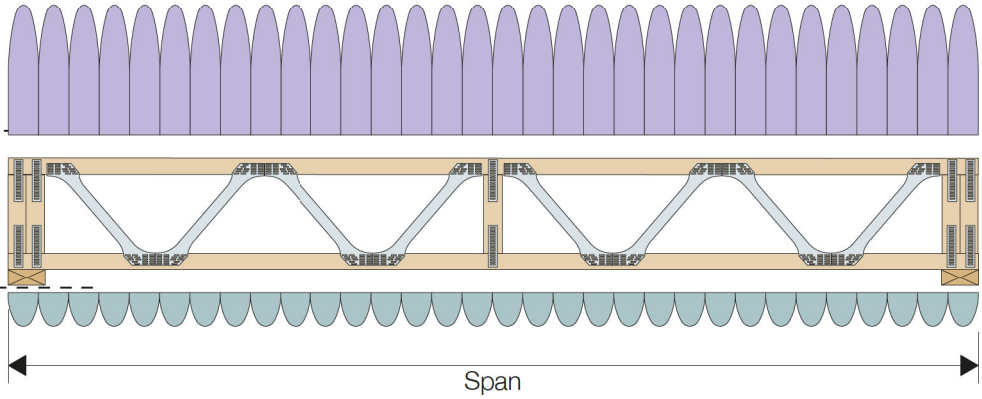
Load and Span Description

Top Chord UDL

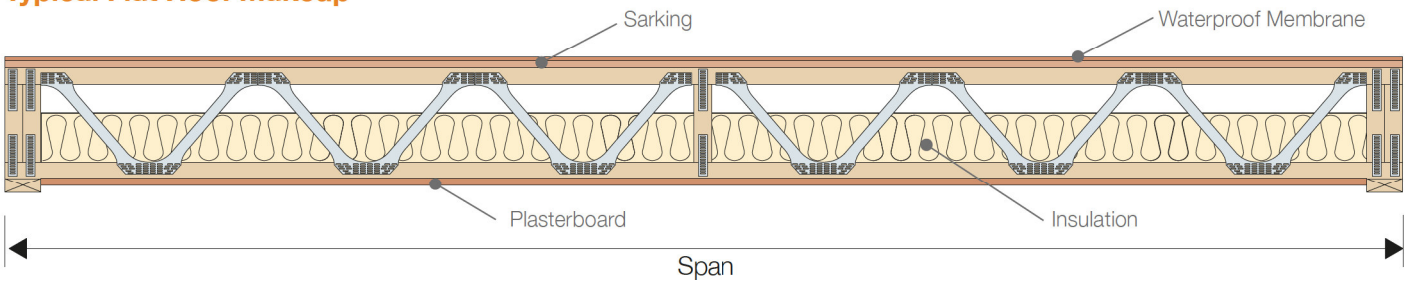
(Floor: LL + DL + Partition)

Bottom Chord UDL

(Ceiling: DL)



Typical Flat Roof Makeup



Roof Load Criteria

Spans are calculated based on the following applied loads

	BS	EC5
Top chord (Dead)	300 N/m²	300 N/m²
Top chord (Imposed)	750 N/m²	600 N/m²
Bottom chord (Dead)	200 N/m²	200 N/m²

General Notes:-

1. Maximum span assumes 100mm wide bearing with the support condition SC2, maximum span of the joist taken over the bearing.
2. The roof joists are designed for Service Class 2.
3. Top Chord laterally restrained by suitably fixed sarking.
4. Strongbacks to be positioned mid-span and fixed to the bottom chord of joist to act as a restraint to the bottom chord, 9mm plywood to run parallel to strongback, nailed to opposite side of column. Plywood to match full depth of column, to be located at each end of strongback and to cover at least 3 joists at 6 metre intervals.
5. Support conditions and web direction/orientation can affect the spanning capacity of a joist.

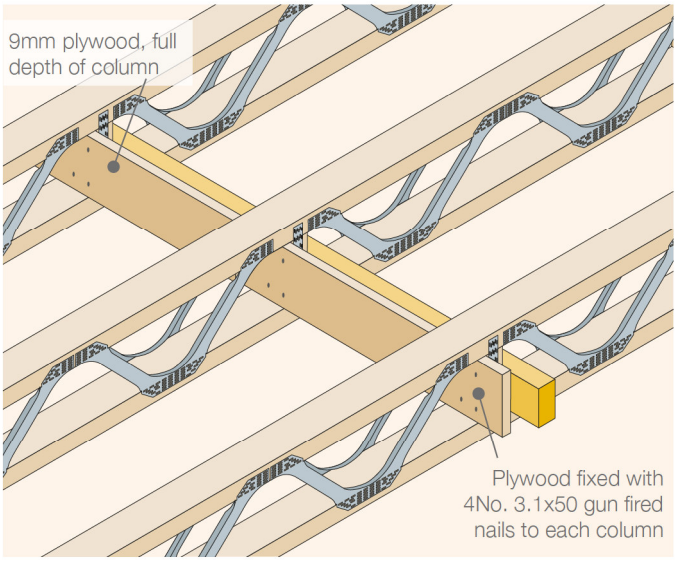
BS applicable notes:-

6. Imposed snow load in accordance with BS 6399-3.
7. Man point load for access limited to roofs for normal maintenance and repair only in accordance with BS 5268-3.
8. Deflection limited to span x 0.003, for roof member with plasterboard in accordance with BS 5268-2.
9. The joists are part of a load distribution system, with a load sharing factor of 1.1, in accordance with BS 5268-2.
10. Flat roof pressure coefficients in accordance with BS 6399-2.

EC5 applicable notes:-

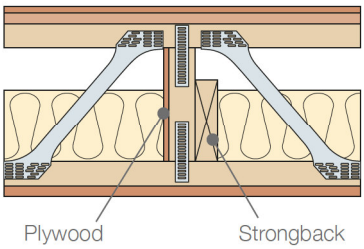
6. UK - Characteristic snow load sk for Zone 4 at an altitude of 100m, NA to BS EN 1991-1-3:2003, NA.2.8.
7. Ireland - Characteristic snow load sk for Zone 4 at an altitude of 100m, NA+A1 to I.S. EN 1991-1-3:2003, NA. I.
8. UK - Access limited to roofs for normal maintenance and repair only, imposed loads qk = 0.6kN/m² and Qk = 0.9kN, Table NA.7, NA to BS EN 1991-1-1:2002.
9. Ireland - Access limited to roofs for normal maintenance and repair only, imposed loads qk = 0.6kN/m² and Qk = 1.0kN, Table NA.4, NA:2013 to I.S EN 1991-1-1:2002.
10. UK - Net final deflection, wnet,fin, limited to l/250, for roof member with plasterboard, NA.2.6 Table NA.5,NA to BS EN 1995-1-1:2004.
11. Ireland - Net final deflection, wnet,fin, limited to l/250, for roof member with plasterboard, Table NA.3, NA:2010+A1:2003 to I.S. EN 1995-1-1:2005.
12. UK - The joists are part of a load distribution system, with a ksys factor of 1.1, BS EN 1995-1-1:2004, clause 6.6 (2).
13. Ireland - The joists are part of a load distribution system, with a ksys factor of 1.1, I.S. EN 1995-1-1:2005, clause 6.6 (2).
14. UK - Flat roof pressure coefficients from Table NA.5, NA to BS EN 1991-1- 4:2005, NA.2.28.
15. Ireland - Flat roof pressure coefficients to NA to I.S. EN 1991-1-4:2005.

Roof Bottom Chord Restraint Detail



Strongback located on the bottom chord of easi-joist®

Note: Plywood to be placed at 6m intervals, fixed to a minimun of 3 easi-joists® and located at each end of the strongback.



Roof Loading

Spans are calculated based on the following applied load:-

	BS	EC5
Top Chord il:	0.75 kN/m²	0.60 kN/m²
Top Chord dl:	0.30 kN/m²	0.30 kN/m²
Bottom Chord dl:	0.20 kN/m²	0.20 kN/m²
Total Load	**1.25 kN/m²**	**1.10 kN/m²**