DuoSpan™ Loading Tables

Terms explained:

Point Load

Point load is the load applied to the centre point of the joist span, the load is applied through a 50x50mm section onto the joist.

UDL

UDL (Uniformly Distributed Load) is the load equally applied to a larger area, in this case it is the total load applied onto the joists through a 1x1m area.

Deflection criteria

Deflection is the amount of bending caused by the loading applied to the joists, for instances a deflection criteria of 1/360 means that there is an allowable 1mm of deflection over a 360mm span.

The spans of the DuoSpan joists have been calculated by structural engineers to comply with BS EN 1991-1-1:2002 based on deflection criteria, this has been confirmed by full scale testing.

The figures quoted are indicative, we recommend a structural engineer is consulted for your project. Figures quoted are tested at 15°C with no wind loading.

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Below is a section from the UK National Annex to Eurocode 1: Actions on structures.
Category A is specifically for areas for domestic & residential activities.
Category B is specifically for office areas.
Category C is specifically for areas where people may congregate.

Category	Example Use	UDL kN/m2	Point load kN
A1	All usage within self-contained dwelling units (a unit occupied by a single family or a modular student accommodation unit with a secure door and compromising not more than six single bedrooms and an internal corridor)	1.5	2
A5	Balconies in single family dwelling units and communal areas in blocks of flats with limited use (not more than three storeys in height and with not more than four self-contained dwelling units per staircase)	2.5	2
A6	Balconies in Hostels, Guest Houses, Residential Clubs & Communal Areas in Blocks of Flats with limited use	3	2
A7	Balconies in Hotels and Motels	4	2
B1	General Office Use	2.5	2.7
B2	General Office Use at Or Below Ground Level	3	2.7
C11	Areas with Tables, Public, Institutional and Communal Dining Rooms and Lounges, Cafes and Restaurants	2	3
C21	Assembly areas with fixed seating	4	3.6
C36	Light Duty One Person Walkways	3	2
C37	General Duty Regular Two-Way Pedestrian Traffic Walkways	5	3.6
C51	Assembly Areas Without Fixed Seating, Concert Halls, Bars, Places of Worship	5	3.6

DuoSpan joists with a single span or installed on joist supports (DuoLift)

DuoSpan joist size	Point load kN	Joist centres mm	UDL (kN/m^2)					
			1.5	2	2.5	3	4	5
DuoSpan 51mm Joist	0	400	1.441	1.324	1.238	1.17	1.069	0.996
	2	400	0.906	0.906	0.906	0.906	0.906	0.906
	0	300	1.580	1.453	1.285	1.285	1.175	1.095
	2	300	0.909	0.909	0.909	0.909	0.909	0.909
	2.5	300	0.731	0.731	0.731	0.731	0.731	0.731
	2.7	300	0.678	0.678	0.678	0.678	0.678	0.678
	3	300	0.611	0.611	0.611	0.611	0.611	0.611
	3.6	300	0.510	0.510	0.510	0.510	0.510	0.510
DuoSpan 99mm Joist	0	400	2.526	2.321	2.052	2.052	1.876	1.748
	2	400	1.820	1.820	1.820	1.820	1.820	1.820
	0	300	2.767	2.546	2.253	2.253	2.061	1.921
	2	300	1.828	1.828	1.828	1.828	1.828	1.828
	2.5	300	1.645	1.645	1.645	1.645	1.645	1.645
	2.7	300	1.587	1.587	1.587	1.587	1.587	1.587
	3	300	1.508	1.508	1.508	1.508	1.508	1.508
	3.6	300	1.381	1.381	1.381	1.381	1.381	1.381

Maximum unsupported joist span (m)

Deflection criteria:

| 51x68mm Joist: Point Load = 1/250 UDL = 1/360 | 99x68mm Joist: Point Load = 1/360 UDL = 1/360 | Cantilever: 1/180 |

DuoSpan joists when they are fixed to DuoSpan 136mm Beams, fixed with DuoSpan Hold-down clips on each side

DuoSpan joist size	Point load kN	Joist centres mm	UDL (kN/m^2)					
			1.5	2	2.5	3	4	5
DuoSpan 51mm Joist	0	400	1.648	1.508	1.405	1.326	1.209	1.125
	2	400	0.992	0.992	0.992	0.992	0.992	0.992
	0	300	1.754	1.656	1.544	1.458	1.330	1.238
	2	300	0.993	0.993	0.993	0.993	0.993	0.993
	2.5	300	0.889	0.889	0.889	0.889	0.889	0.889
	2.7	300	0.855	0.855	0.855	0.855	0.855	0.855
	3	300	0.812	0.812	0.812	0.812	0.812	0.812
	3.6	300	0.742	0.742	0.742	0.742	0.742	0.742
DuoSpan 99mm Joist	0	400	2.890	2.645	2.466	2.328	2.122	1.975
	2	400	1.911	1.911	1.911	1.911	1.911	1.911
	0	300	3.173	2.904	2.710	2.558	2.334	2.172
	2	300	1.909	1.909	1.909	1.909	1.909	1.909
	2.5	300	1.715	1.715	1.715	1.715	1.715	1.715
	2.7	300	1.654	1.654	1.654	1.654	1.654	1.654
	3	300	1.570	1.570	1.570	1.570	1.570	1.570
	3.6	300	1.436	1.436	1.436	1.436	1.436	1.436

Maximum unsupported joist span (m)

Deflection criteria:

| DuoSpan 51mm Joist: Point Load = 1/250 UDL = 1/360 | DuoSpan 99mm Joist: Point Load = 1/360 UDL = 1/360 | DuoSpan 51mm & 99mm Joist: Cantilever: 1/180 |

DuoSpan joists maximum cantilever

DuoSpan joist size	Point load kN	Joist centres mm	UDL (kN/m^2)						Maximum unsupported joist cantilever (m)
			1.5	2	2.5	3	4	5	
DuoSpan 51mm Joist	0	400	0.854	0.785	0.734	0.694	0.634	0.591	
	2	400	0.229	0.229	0.229	0.229	0.229	0.229	
	0	300	0.937	0.861	0.806	0.762	0.697	0.649	
	2	300	0.229	0.229	0.229	0.229	0.229	0.229	
	2.5	300	0.184	0.183	0.183	0.183	0.183	0.183	
	2.7	300	0.170	0.170	0.170	0.170	0.170	0.170	
	3	300	0.152	0.153	0.153	0.153	0.153	0.153	
	3.6	300	0.127	0.127	0.127	0.127	0.127	0.127	
DuoSpan 99mm Joist	0	400	1.640	1.509	1.412	1.336	1.222	1.139	
	2	400	0.657	0.657	0.657	0.657	0.657	0.657	
	0	300	1.502	1.382	1.293	1.223	1.119	1.043	
	2	300	0.658	0.658	0.658	0.658	0.658	0.658	
	2.5	300	0.589	0.589	0.589	0.589	0.589	0.589	
	2.7	300	0.561	0.561	0.561	0.561	0.561	0.561	
	3	300	0.534	0.534	0.534	0.534	0.534	0.534	
	3.6	300	0.491	0.491	0.491	0.491	0.491	0.491	

Deflection criteria:

DuoSpan 51mm Joist: Point Load = 1/250 UDL = 1/360	DuoSpan 99mm Joist: Point Load = 1/360 UDL = 1/360	DuoSpan 51mm & 99mm Joist: Cantilever: 1/180

DuoSpan 136mm Beam with DuoSpan 99mm Joists over, fixed with DuoSpan Hold-down Clips on each side

Point load	Beam Span (m)	Equivalent UDL kN/m2					
		1.5	2	2.5	3	4	5
0	1.932	2.208	1.656	1.325	1.104	0.828	0.662
2		1.911	1.656	1.325	1.104	0.828	0.662
2.5		1.72	1.656	1.325	1.104	0.828	0.662
2.7		1.65	1.65	1.325	1.104	0.828	0.662
3		1.57	1.57	1.325	1.104	0.828	0.662
3.6		1.44	1.44	1.325	1.104	0.828	0.662
0	1.842	2.547	1.911	1.528	1.274	0.955	0.764
2		1.911	1.911	1.528	1.274	0.955	0.764
2.5		1.72	1.72	1.528	1.274	0.955	0.764
2.7		1.65	1.65	1.528	1.274	0.955	0.764
3		1.57	1.57	1.528	1.274	0.955	0.764
3.6		1.44	1.44	1.44	1.274	0.955	0.764
0	1.764	2.903	2.177	1.742	1.451	1.089	0.871
2		1.911	1.911	1.742	1.451	1.089	0.871
2.5		1.72	1.72	1.72	1.451	1.089	0.871
2.7		1.65	1.65	1.65	1.451	1.089	0.871
3		1.57	1.57	1.57	1.451	1.089	0.871
3.6		1.44	1.44	1.44	1.44	1.089	0.871
0	1.695	3.173	2.455	1.964	1.637	1.228	0.982
2		1.911	1.911	1.911	1.637	1.228	0.982
2.5		1.72	1.72	1.72	1.637	1.228	0.982
2.7		1.65	1.65	1.65	1.637	1.228	0.982
3		1.57	1.57	1.57	1.57	1.228	0.982
3.6		1.44	1.44	1.44	1.44	1.228	0.982

Maximum beam spacing (m)

Beam Span (m)	Equivalent UDL kN/m2					
	1.5	2	2.5	3	4	5
1.633	3.173	2.744	2.195	1.829	1.372	1.097
	1.911	1.911	1.911	1.829	1.372	1.097
	1.72	1.72	1.72	1.72	1.372	1.097
	1.65	1.65	1.65	1.65	1.372	1.097
	1.57	1.57	1.57	1.57	1.372	1.097
	1.44	1.44	1.44	1.44	1.372	1.097
1.578	3.173	2.904	2.434	2.028	1.521	1.217
	1.911	1.911	1.911	1.911	1.521	1.217
	1.72	1.72	1.72	1.72	1.521	1.217
	1.65	1.65	1.65	1.65	1.521	1.217
	1.57	1.57	1.57	1.57	1.521	1.217
	1.44	1.44	1.44	1.44	1.44	1.217
1.528	3.173	2.904	2.680	2.233	1.675	1.340
	1.911	1.911	1.911	1.911	1.675	1.340
	1.72	1.72	1.72	1.72	1.675	1.340
	1.65	1.65	1.65	1.65	1.65	1.340
	1.57	1.57	1.57	1.57	1.57	1.340
	1.44	1.44	1.44	1.44	1.44	1.340

Maximum beam spacing (m)

Please note all these figures are based upon deflection criteria only.

These figures shown here are indicative only.
Bending Restraints; Please note these lengths need to be confirmed when precise self-weight loads are calculated.

All the designs assume that the joists and beam are adequately restrained by noggins so that buckling does not occur.