

## Floor Design Criteria

BCI® Joists are designed for floor applications using the principles of BS5268–2:2002 and the joist properties contained in BBA Certificate 99/3620. In general, it can be assumed that floors in modern centrally heated buildings will achieve a Service Class 1 moisture condition. Uniformly distributed dead and imposed loads will be assumed across the whole floor unless otherwise directed. Imposed loads will be selected from the examples tabulated below depending on the intended use of the floor. Dead loads can be taken from the schedule of material weights tabulated below.

Schedule of Material Dead Weights			
Floor Decking	kN/m <sup>2</sup>	Ceiling Finishes	kN/m <sup>2</sup>
18mm Chipboard	0.13	5mm Plaster Skim	0.05
22mm Chipboard	0.16	15mm Plasterboard	0.11
18mm T&G Boarding	0.10	12.5mm Plasterboard	0.09
22mm T&G Boarding	0.12	12.5mm Firecheck P/board	0.11
15mm OSB	0.11	<b>Partition Loads</b>	<b>kN/m<sup>2</sup></b>
18mm OSB	0.13	12.5mm Plasterboard on timber studwork	0.29
15mm Plywood	0.10	<b>Insulation</b>	<b>kN/m<sup>2</sup></b>
19mm Plywood	0.12	Rock Wool (25mm)	0.01
18mm Particleboard <sup>/1</sup>	0.22	Glass Fibre (50mm)	0.01
22mm Particleboard <sup>/1</sup>	0.27		
16mm S.W. Boarding	0.08		
19mm S.W. Boarding	0.09		
12.5mm Sound Resistant P/board	0.11		
19mm Gypsum Plank	0.14		

<sup>/1</sup> Particleboard refers to cement bonded particleboard Type T1 Flooring.

Standard Imposed Load Allowances	
Intended Room Usage	kN/m <sup>2</sup>
Domestic Floors	1.5
Office Floors	2.5
Computer Rooms	3.5
Storage Rooms	2.4/m height of storage
Gymnasium	5.0
Stationery Stores	4.0/m height of storage
Balconies	Same as rooms to which they give access (min 1.5 for domestic use, 4.0 for public / office use)
Billiard Rooms	2.0
Areas with Fixed Seating	4.0
Concert Halls	5.0
Bedrooms in Hotels/Motels	2.0
Dining Rooms/Lounges Cafes	2.0

<sup>/1</sup> Taken from BS6399:Part1:1996

BS6399:Part 1 recommends that the loads for all permanent partitions are applied in the given locations as dead loads. In practice, a standard dead load of 0.75kN/m<sup>2</sup> is generally assumed which makes allowance for a standard floor construction (22mm chipboard decking + 15mm plasterboard ceiling), supporting internal non load-bearing partitions above. Exceptionally, this may be reduced to 0.5kN/m<sup>2</sup> where no partition walls are known to exist, or increased to a higher value where a heavier form of construction is used.

The minimum stiffness permitted for floors in BS5268-2:2002 is defined by the deflection being limited to 0.3% of the span or 14mm, whichever is the lesser. Boise recommends that BCI® Joists are designed to higher stiffness criteria in order to provide superior floor performance. NHBC technical standards require that the maximum deflection is limited to 12mm. Floor performance can be enhanced consistently in practice if the decking is glued to the joist platform, as highlighted by the factors affecting floor performance. This step is also recommended as a basis for ensuring superior floor performance in practice.

