

Table C3-1 Minimum Design Dead Loads^a

Component	Load (psf)
CEILINGS	
Acoustical fiber board	1
Gypsum board (per 1/8-in. thickness)	0.55
Mechanical duct allowance	4
Plaster on tile or concrete	5
Plaster on wood lath	8
Suspended steel channel system	2
Suspended metal lath and cement plaster	15
Suspended metal lath and gypsum plaster	10
Wood furring suspension system	2.5
COVERINGS, ROOF, AND WALL	
Asbestos-cement shingles	4
Asphalt shingles	2
Cement tile	16
Clay tile (for mortar add 10 psf)	
Book tile, 2-in.	12
Book tile, 3-in.	20
Ludowici	10
Roman	12
Spanish	19
Composition:	
Three-ply ready roofing	1
Four-ply felt and gravel	5.5
Five-ply felt and gravel	6
Copper or tin	1
Corrugated asbestos-cement roofing	4
Deck, metal, 20 gage	2.5
Deck, metal, 18 gage	3
Decking, 2-in. wood (Douglas fir)	5
Decking, 3-in. wood (Douglas fir)	8
Fiberboard, 1/2-in.	0.75
Gypsum sheathing, 1/2-in.	2
Insulation, roof boards (per inch thickness)	
Cellular glass	0.7
Fibrous glass	1.1
Fiberboard	1.5
Perlite	0.8
Polystyrene foam	0.2
Urethane foam with skin	0.5
Plywood (per 1/8-in. thickness)	0.4
Rigid insulation, 1/2-in.	0.75
Skylight, metal frame, 3/8-in. wire glass	8
Slate, 3/16-in.	7
Slate, 1/4-in.	10
Waterproofing membranes:	
Bituminous, gravel-covered	5.5
Bituminous, smooth surface	1.5
Liquid applied	1
Single-ply, sheet	0.7
Wood sheathing (per inch thickness)	3
Wood shingles	3
FLOOR FILL	
Cinder concrete, per inch	9

Continued

Table C3-1 (Continued)

Component		Load (psf)			
Lightweight concrete, per inch		8			
Sand, per inch		8			
Stone concrete, per inch		12			
FLOORS AND FLOOR FINISHES					
Asphalt block (2-in.), 1/2-in. mortar		30			
Cement finish (1-in.) on stone-concrete fill		32			
Ceramic or quarry tile (3/4-in.) on 1/2-in. mortar bed		16			
Ceramic or quarry tile (3/4-in.) on 1-in. mortar bed		23			
Concrete fill finish (per inch thickness)		12			
Hardwood flooring, 7/7-in.		4			
Linoleum or asphalt tile, 1/4-in.		1			
Marble and mortar on stone-concrete fill		33			
Slate (per mm thickness)		15			
Solid flat tile on 1-in. mortar base		23			
Subflooring, 3/4-in.		3			
Terrazzo (1-1/2-in.) directly on slab		19			
Terrazzo (1-in.) on stone-concrete fill		32			
Terrazzo (1-in.), 2-in. stone concrete		32			
Wood block (3-in.) on mastic, no fill		10			
Wood block (3-in.) on 1/2-in. mortar base		16			
FLOORS, WOOD-JOIST (NO PLASTER)					
DOUBLE WOOD FLOOR					
Joint sizes (in.)	12-in. spacing (1b/ft ²)	16-in. spacing (1b/ft ²)	24-in. spacing (1b/ft ²)		
2 × 6	6	5	5		
2 × 8	6	6	5		
2 × 10	7	6	6		
2 × 12	8	7	6		
FRAME PARTITIONS					
Movable steel partitions		4			
Wood or steel studs, 1/2-in. gypsum board each side		8			
Wood studs, 2 × 4, unplastered		4			
Wood studs, 2 × 4, plastered one side		12			
Wood studs, 2 × 4, plastered two sides		20			
FRAME WALLS					
Exterior stud walls:					
2 × 4 @ 16-in., 5/8-in. gypsum, insulated, 3/8-in. siding		11			
2 × 6 @ 16-in., 5/8-in. gypsum, insulated, 3/8-in. siding		12			
Exterior stud walls with brick veneer		48			
Windows, glass, frame, and sash		8			
Clay brick wythes:					
4 in.		39			
8 in.		79			
12 in.		115			
16 in.		155			
Hollow concrete masonry unit wythes:					
Wythe thickness (in inches)		4	6	8	10
Density of unit (105 pcf)					12
No grout		22	24	31	37
48 in. o.c.			29	38	47
40 in. o.c.	grout		30	40	49
32 in. o.c.	spacing		32	42	52
24 in. o.c.			34	46	57
16 in. o.c.			40	53	66
Full grout			55	75	95

Minimum Design Dead Loads

Table C3-1 (Continued)

Component	Load (psf)				
Density of unit (125 pcf)					
No grout	26	28	36	44	50
48 in. o.c.		33	44	54	62
40 in. o.c. grout		34	45	56	65
32 in. o.c. spacing		36	47	58	68
24 in. o.c.		39	51	63	75
16 in. o.c.		44	59	73	87
Full grout		59	81	102	123
Density of unit (135 pcf)					
No grout	29	30	39	47	54
48 in. o.c.		36	47	57	66
40 in. o.c. grout		37	48	59	69
32 in. o.c. spacing		38	50	62	72
24 in. o.c.		41	54	67	78
16 in. o.c.		46	61	76	90
Full grout		62	83	105	127
Solid concrete masonry unit wythes (incl. concrete brick):					
Wythe thickness (in mm)	4	6	8	10	12
Density of unit (105 pcf)	32	51	69	87	105
Density of unit (125 pcf)	38	60	81	102	124
Density of unit (135 pcf)	41	64	87	110	133

Component	Load (kN/m ²)
CEILING	
Acoustical fiber board	0.05
Gypsum board (per mm thickness)	0.008
Mechanical duct allowance	0.19
Plaster on tile or concrete	0.24
Plaster on wood lath	0.38
Suspended steel channel system	0.10
Suspended metal lath and cement plaster	0.72
Suspended metal lath and gypsum plaster	0.48
Wood furring suspension system	0.12
COVERINGS, ROOF, AND WALL	
Asbestos-cement shingles	0.19
Asphalt shingles	0.10
Cement tile	0.77
Clay tile (for mortar add 0.48 kN/m ²)	
Book tile, 51 mm	0.57
Book tile, 76 mm	0.96
Ludowici	0.48
Roman	0.57
Spanish	0.91
Composition:	
Three-ply ready roofing	0.05
Four-ply felt and gravel	0.26
Five-ply felt and gravel	0.29
Copper or tin	0.05
Corrugated asbestos-cement roofing	0.19
Deck, metal, 20 gage	0.12
Deck, metal, 18 gage	0.14
Decking, 51-mm wood (Douglas fir)	0.24
Decking, 76-mm wood (Douglas fir)	0.38
Fiberboard, 13 mm	0.04

Continued

Table C3-2 Minimum Densities for Design Loads from Materials

Material	Density (lb/ft ³)	Density (kN/m ³)	Material	Density (lb/ft ³)	Density (kN/m ³)
Aluminum	170	27	Soil	70	11.0
Bituminous products			River mud	90	14.1
Asphaltum	81	12.7	Sand or gravel	60	9.4
Graphite	135	21.2	Sand or gravel and clay	65	10.2
Paraffin	56	8.8	Glass	160	25.1
Petroleum, crude	55	8.6	Gravel, dry	104	16.3
Petroleum, refined	50	7.9	Gypsum, loose	70	11.0
Petroleum, benzine	46	7.2	Gypsum, wallboard	50	7.9
Petroleum, gasoline	42	6.6	Ice	57	9.0
Pitch	69	10.8	Iron		
Tar	75	11.8	Cast	450	70.7
Brass	526	82.6	Wrought	480	75.4
Bronze	552	86.7	Lead	710	111.5
Cast-stone masonry (cement, stone, sand)	144	22.6	Lime		
Cement, portland, loose	90	14.1	Hydrated, loose	32	5.0
Ceramic tile	150	23.6	Hydrated, compacted	45	7.1
Charcoal	12	1.9	Masonry, ashlar stone		
Cinder fill	57	9.0	Granite	165	25.9
Cinders, dry, in bulk	45	7.1	Limestone, crystalline	165	25.9
Coal			Limestone, oolitic	135	21.2
Anthracite, piled	52	8.2	Marble	173	27.2
Bituminous, piled	47	7.4	Sandstone	144	22.6
Lignite, piled	47	7.4	Masonry, brick		
Peat, dry, piled	23	3.6	Hard (low absorption)	130	20.4
Concrete, plain			Medium (medium absorption)	115	18.1
Cinder	108	17.0	Soft (high absorption)	100	15.7
Expanded-slag aggregate	100	15.7	Masonry, concrete ^a		
Haydite (burned-clay aggregate)	90	14.1	Lightweight units	105	16.5
Slag	132	20.7	Medium weight units	125	19.6
Stone (including gravel)	144	22.6	Normal weight units	135	21.2
Vermiculite and perlite aggregate, nonload-bearing	25-50	3.9-7.9	Masonry grout	140	22.0
Other light aggregate, load-bearing			Masonry, rubble stone		
Concrete, reinforced	70-105	11.0-16.5	Granite	153	24.0
Cinder	111	17.4	Limestone, crystalline	147	23.1
Slag	138	21.7	Limestone, oolitic	138	21.7
Stone (including gravel)	150	23.6	Marble	156	24.5
Copper	556	87.3	Sandstone	137	21.5
Cork, compressed	14	2.2	Mortar, cement or lime	130	20.4
Earth (not submerged)			Particleboard	45	7.1
Clay, dry	63	9.9	Plywood	36	5.7
Clay, damp	110	17.3	Riprap (not submerged)		
Clay and gravel, dry	100	15.7	Limestone	83	13.0
Silt, moist, loose	78	12.3	Sandstone	90	14.1
Silt, moist, packed	96	15.1	Sand		
Silt, flowing	108	17.0	Clean and dry	90	14.1
Sand and gravel, dry, loose	100	15.7	River, dry	106	16.7
Sand and gravel, dry, packed	110	17.3	Slag		
Sand and gravel, wet	120	18.9	Bank	70	11.0
Earth (submerged)			Bank screenings	108	17.0
Clay	80	12.6	Machine	96	15.1
			Sand	52	8.2
			Slate	172	27.0

Minimum Design Dead Loads

Table C3-2 (Continued)

Material	Density (lb/ft ³)	Density (kN/m ³)	Material	Density (lb/ft ³)	Density (kN/m ³)
Steel, cold-drawn	492	77.3	Sea	64	10.1
Stone, quarried, piled			Wood, seasoned		
Basalt, granite, gneiss	96	15.1	Ash, commercial white	41	6.4
Limestone, marble, quartz	95	14.9	Cypress, southern	34	5.3
Sandstone	82	12.9	Fir, Douglas, coast region	34	5.3
Shale	92	14.5	Hem fir	28	4.4
Greenstone, hornblende	107	16.8	Oak, commercial reds and whites	47	7.4
Terra cotta, architectural			Pine, southern yellow	37	5.8
Voids filled	120	18.9	Redwood	28	4.4
Voids unfilled	72	11.3	Spruce, red, white, and Sitka	29	4.5
Tin	459	72.1	Western hemlock	32	5.0
Water			Zinc, rolled sheet	449	70.5
Fresh	62	9.7			

^aTabulated values apply to solid masonry and to the solid portion of hollow masonry.