

Errata

Table C3-2 Minimum Densities For Design Loads From Materials

Material	Density (lb/ft ³)	Density (kN/m ³)
Aluminum	170	27.0
Bituminous products		
Asphaltum	81	12.7
Graphite	135	21.2
Paraffin	56	8.8
Petroleum, crude	55	8.6
Petroleum, refined	50	7.9
Petroleum, benzine	46	7.2
Petroleum, gasoline	42	6.6
Pitch	69	10.8
Tar	75	11.8
Brass	526	82.6
Bronze	552	86.7
Cast-stone masonry (cement, stone, sand)	144	22.6
Cement, portland, loose	90	14.1
Ceramic tile	150	23.6
Charcoal	12	1.9
Cinder fill	57	9.0
Cinders, dry, in bulk	45	7.1
Coal		
Anthracite, piled	52	8.2
Bituminous, piled	47	7.4
Lignite, piled	47	7.4
Peat, dry, piled	23	3.6
Concrete, plain		
Cinder	108	17.0
Expanded-slag aggregate	100	15.7
Haydite (burned-clay aggregate)	90	14.1
Slag	132	20.7
Stone (including gravel)	144	22.6
Vermiculite and perlite aggregate, nonload-bearing	25–50	3.9–7.9
Other light aggregate, load-bearing	70–105	11.0–16.5
Concrete, reinforced		
Cinder	111	17.4
Slag	138	21.7
Stone (including gravel)	150	23.6
Copper	556	87.3
Cork, compressed	14	2.2

Table C3-2 (Continued)

Material	Density (lb/ft ³)	Density (kN/m ³)
Earth (not submerged)		
Clay, dry	63	9.9
Clay, damp	110	17.3
Clay and gravel, dry	100	15.7
Silt, moist, loose	78	12.3
Silt, moist, packed	96	15.1
Silt, flowing	108	17.0
Sand and gravel, dry, loose	100	15.7
Sand and gravel, dry, packed	110	17.3
Sand and gravel, wet	120	18.9
Earth (submerged)		
Clay	80	12.6
Soil	70	11.0
River mud	90	14.1
Sand or gravel	60	9.4
Sand or gravel and clay	65	10.2
Glass	160	25.1
Gravel, dry	104	16.3
Gypsum, loose	70	11.0
Gypsum, wallboard	50	7.9
Ice	57	9.0
Iron		
Cast	450	70.7
Wrought	480	75.4
Lead	710	111.5
Lime		
Hydrated, loose	32	5.0
Hydrated, compacted	45	7.1
Masonry, ashlar stone		
Granite	165	25.9
Limestone, crystalline	165	25.9
Limestone, oolitic	135	21.2
Marble	173	27.2
Sandstone	144	22.6
Masonry, brick		
Hard (low absorption)	130	20.4
Medium (medium absorption)	115	18.1
Soft (high absorption)	100	15.7
Masonry, concrete ^a		
Lightweight units	105	16.5
Medium weight units	125	19.6
Normal weight units	135	21.2
Masonry grout	140	22.0
Masonry, rubble stone		
Granite	153	24.0
Limestone, crystalline	147	23.1
Limestone, oolitic	138	21.7
Marble	156	24.5
Sandstone	137	21.5
Mortar, cement or lime	130	20.4
Particleboard	45	7.1
Plywood	36	5.7

Table C3-2 (Continued)

Material	Density (lb/ft ³)	Density (kN/m ³)
Riprap (not submerged)		
Limestone	83	13.0
Sandstone	90	14.1
Sand		
Clean and dry	90	14.1
River, dry	106	16.7
Slag		
Bank	70	11.0
Bank screenings	108	17.0
Machine	96	15.1
Sand	52	8.2
Slate	172	27.0
Steel, cold-drawn	492	77.3
Stone, quarried, piled		
Basalt, granite, gneiss	96	15.1
Limestone, marble, quartz	95	14.9
Sandstone	82	12.9
Shale	92	14.5
Greenstone, hornblende	107	16.8
Terra cotta, architectural		
Voids filled	120	18.9
Voids unfilled	72	11.3
Tin	459	72.1
Water		
Fresh	62	9.7
Sea	64	10.1
Wood, seasoned		
Ash, commercial white	41	6.4
Cypress, southern	34	5.3
Fir, Douglas, coast region	34	5.3
Hem fir	28	4.4
Oak, commercial reds and whites	47	7.4
Pine, southern yellow	37	5.8
Redwood	28	4.4
Spruce, red, white, and Sitka	29	4.5
Western hemlock	32	5.0
Zinc, rolled sheet	449	70.5