

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	70–105	11.0–16.5	Masonry, rubble stone		
Concrete, reinforced			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