

Some problem terms used differently in Geology and Civil Engineering		
Concept	Geology	Civil Engineering
Cementation	Binding together of particles of a soil or sediment by precipitated minerals	Injection of cementing agents into permeable or fissured soil or rock to reduce fluid flow or improve strength
Clay	Rock or mineral fragment < 4 μm; in soil science, the limit is 2 μm, the size below which all particles are <i>clay minerals</i>	Plastic material consisting mainly of particles finer than 2 μm
Compaction	Volume reduction from overburden pressure	Densification by mechanical means
Consolidation	Lithification of a sediment by compaction or cementation	Gradual reduction of soil void ratio from dissipation of excess pore pressure (owing to an increase in effective stress) and in a squeezing of fluids from the soil pores
Dike	A tabular igneous rock cutting across the planar structures of the surrounding rocks	Artificial wall or embankment of earth or rock fill
Grade	In mining, metal content of an orebody	Degree of inclination of an engineering structure
Graded	Vertical trend in grain size in a bed or bedding sequence. <i>Normally graded</i> is fining-up <i>Reverse graded</i> is coarsening-up	Possessing a range of grain sizes
Grain-size units	$\Phi = -\log_2(\text{mm})$	US standard sieve mesh sizes; mm
Grain-size distribution	<i>Sorting</i> : the degree of similarity of grain sizes of a sediment	<i>Gradation</i> : the frequency distribution of sizes of a granular material
Grain-size distribution parameters	<i>Inclusive graphic standard deviation</i> : $SD = (\Phi_{84} - \Phi_{16})/4 + (\Phi_{95} - \Phi_5)/6.6$	<i>Coefficient of uniformity</i> : $C_U = D_{60}/D_{10}$ <i>Coefficient of gradation (or concavity)</i> : $C_C = (D_{30})^2 / (D_{60} * D_{10})$
Grain-size distribution quality designators	Poorly-sorted = wide range of grain sizes	Well-graded = wide range of coarser grain sizes
Grain size distribution qualifiers	< 0.35 Φ very well sorted 0.35-0.50 Φ well sorted 0.51-0.70 Φ moderately well sorted 0.71-1.00 Φ moderately sorted 1.01-2.00 Φ poorly sorted 2.01-4.00 Φ very poorly sorted >4.00 Φ extremely poorly sorted	Well-graded: <5 % fines; $C_U > 6$ (sand) or 4 (gravel) $1 < C_C < 3$ Poorly graded: not meeting the C_U and/or C_C requirements May be uniformly graded or

		gap graded
Moisture content	Weight water/total weight x 100 (also used by environmental engineers)	Weight water/dry weight x 100 (used by geotechnical engineers)
Permeability units	Geologists and engineers in the petroleum industry will use <i>darcys</i> as the unit of intrinsic permeability	Hydrogeologists and civil engineers will use cm^2 for intrinsic permeability or cm/sec for hydraulic conductivity
Pore space	<i>Porosity</i> : Volume of pores/total volume x 100. In hydrogeology, expressed as a decimal	<i>Void ratio</i> : Volume of voids/volume of solids (expressed as a decimal, not a percent)
Rock	Naturally formed consolidated material formed of one or more minerals and having a degree of chemical consistency	Any natural material that requires drilling and blasting or similar methods of brute force for excavation
Sand	A detrital particle between 1/16 mm (0.062 mm) and 2 mm. US soil scientists use 0.05 to 2 mm	A soil particle retained on U. S. standard sieve no. 200 (0.074 mm) and passing sieve no. 4 (4.76 mm)
Silt	A detrital particle between 1/256 mm (0.004 mm) and 1/16 mm (0.062 mm). US soil scientists use 0.002 to 0.05 mm.	Nonplastic or slightly plastic material exhibiting little or no strength when air-dried consisting mainly of particles passing U. S. standard sieve no. 200 (0.075 mm) yet > 0.002 mm
Soil	Unconsolidated earthy materials over bedrock supporting or capable of supporting plant life (includes only <u>in situ</u> material)	Uncemented aggregate of mineral grains and decayed organic matter down to solid rock, along with the liquid and gas that occupy the interparticle spaces (includes <u>in situ</u> and transported material); the corresponding term in geologic usage is <i>regolith</i>
Soft	Commonly refers to rocks of sedimentary origin. <i>Soft-rock vs. hard-rock geology</i>	Refers to a cohesive soil that can be molded by slight pressure. The opposite term is <i>stiff</i> (not commonly used in geology). Non-cohesive soils would be termed <i>loose</i> or <i>dense</i>