

Mixtures

Solution: a homogeneous mixture where the different particle types are uniformly distributed among each other, down to the molecular level. There is only one phase of matter. The particles do not settle out. Light passes through a solution i.e. solutions are transparent. The components of a solution can be separated by heating, cooling, crystallization.

Suspension: a heterogeneous mixture where the different particle types are not evenly distributed - there are groups of one particle type, which can often be seen with the naked eye. Suspensions can be shaken to distribute the particles, but eventually settle out. e.g. clay particles in water; oil and water. Suspensions can be separated using gravity or flotation, sieving or filtration.

Colloid: between a solution and a suspension - the different particle types are not evenly distributed, but are in groups small enough that they do not settle out. (Colloids are called heterogeneous or homogeneous, depending on who defines it). e.g. milk is a mixture of fat droplets in water. Light does not pass through a colloid, as the particle groups are large enough to reflect light. There are several different kinds of colloids, depending on the phases of matter of the particles and the medium they are dispersed in:

		Colloidal particle		
		Gas	Liquid	Solid
Dispersing medium	Gas	-	Liquid Aerosol e.g. fog	Solid Aerosol e.g. smoke
	Liquid	Foam e.g. whipped cream, soap suds	Emulsion e.g. milk, mayonnaise, hand cream	Sol e.g. paint, pigmented ink
	Solid	Solid Foam e.g. styrofoam, pumice, marshmallow	Gel e.g. butter, jelly, gelatin, cheese	Solid Sol e.g. cranberry glass