

# Particulate Encyclopedia Article

## Particulate

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# Particulate

An adjective describing anything that consists of, or relates to, particles. The term was formerly used in laboratory slang to stand for "particulate matter," but this use has nearly disappeared since its repudiation by the **Environmental Protection Agency** (EPA). The term particulate matter, which often means the particle content of a given volume of air, is used as a more inclusive variant of "particles."

Typical atmospheric particulate matter may comprise three populations of particles according to size. The smallest of these is found only near sources, since the particles rapidly aggregate to larger sizes. The upper size limit for these particles is near 0.1 micrometer (1 micrometer =  $1\ \mu\text{m}$  = 0.001 mm). Number concentrations can be quite high. This population is referred to as the nuclei mode of particles. The next larger size class, which begins at a diameter of about 0.1  $\mu\text{m}$  and extends to about 2.0  $\mu\text{m}$ , is called the accumulation mode, since once in the air it tends to remain for days; number concentrations have become low enough that **agglomeration** is slow, and settling velocities are very small. The sum of the nuclei mode and the accumulation mode is called the fine particles. These are characteristically formed by condensation from the gas phase, or by agglomeration of particles formed from the gas phase. The final particle population in air is called the coarse mode, or simply the coarse particles. These are of any size larger than about 2  $\mu\text{m}$  (about 1/10,000 inch), and are formed by mechanical grinding of larger masses of matter. Coarse particles are usually particles of local **soil** or rocks.