mean free path, λ

The average distance a molecule travels between collisions. For a molecule, $\lambda = \{(2)^{1/2}\pi n d_m^2\}^{-1}$, where n is the number of molecules per unit volume and d_m is their mean diameter. For O_2 at one atmosphere and 25 °C, this distance is only 9.7×10^{-6} cm; at 10^{-6} atmospheres and 25 °C it is 9.7 cm. For an aerosol particle, the mean free path, λ_B in the Stokes region (see Stokes law) is given by: $\lambda_B = (3kT/m)^{1/2}mB$ where m is the mass of the particle, k is the Boltzmann constant (1.381×10^{-23} J K^{-1}), T is the temperature (K) and B is the mobility.

1990, *62*, 2201; G.B. 56