

$$\textcircled{1} \quad D_{AB} = \frac{0.001858 \quad T^{3/2} \left[\frac{1}{M_A} + \frac{1}{M_B} \right]^{1/2}}{P \quad \sigma_{AB}^2 \quad \Omega_D}$$

$$\Omega_D = f \left(\frac{kT}{E_{AB}} \right)$$

$$E_{AB} = (E_A E_B)^{1/2}$$

Ω_D contributes for molecular interaction which is missing in equation derived from kinetic theory of gases

$E_A, E_B \rightarrow$ Lennard Jones Parameters

$\textcircled{2}$ Factors affecting phase diffusivity in gas phase

\rightarrow Temperature

\rightarrow Pressure

\rightarrow Molecular wt.

\rightarrow Any other parameters which affect intermolecular force or non-ideality such as chemical nature ($M_i, \sigma_i, \epsilon_i$)

$\textcircled{3}$ Kinetic Theory
Fowler

$$D_{AB} \propto T^{3/2}$$

$$D_{AB} \propto T^{1.75}$$

But Chupman Ω_D is also related to temperature

$$\frac{D_{AB_1}}{D_{AB_2}} = \left(\frac{T_1}{T_2} \right)^{1.5} \left(\frac{P_2}{P_1} \right) \left(\frac{\Omega_{D_2}}{\Omega_{D_1}} \right)$$

It ranges from 1.5 to 1.75