Molar volume = Vm

@wikipedia

Volume occupied by one mole of a substance (chemical element or chemical compound) at a given pressure p and temperature T:

(1) $$V_m(p,T) = \frac{V}{\nu} = \frac{M}{\rho} = \frac{1}{\rho_m} = \frac{N_A}{n}$$

where

V	volume	M	molar mass of a substance	n	Molecular Concentration
ν	amount of substance	ρ	density of a substance	N_A	Avogadro constant (6.022140758(62) · 10^{23} mol^{1})

SI Unit	Oil Metric Unit	Oil Field Unit
m^3/ mol	m^3/ mol	m^3/ mol

Molar volume V_m is directly related to the average intermolecular distance V_m and in case of isotropic substance: $V_m = N_A \cdot d^3$.

Molar volume V_m is inverse to Molar Density ρ_m :

(2) $$V_m = \frac{1}{\rho_m}$$

In case of fluid which satisfies Real Gas EOS @model the Molar volume V_m can be expressed in terms of Z-factor $Z(p,T)$:

(3) $$V_m = \frac{ZRT}{p}$$

where

T	temperature
p	pressure
R	gas constant

Molar volume of the mixture is:

(4) $$V_m(p,T) = \frac{M}{\rho_f} = \frac{\sum_k M_k \cdot x_k}{\rho_f}$$

where

M_k	molar mass of the k-th mixture component
x_k	mole fraction of the k-th mixture component

ρ_f	mixture density

See also

Natural Science / Physics / Molecular Physics

[Molar Density]