

Van der Waals Example for CO2

Tc 304.2 K
Pc 72.9 atm
R 0.08206 L-atm/K-mol
a= 3.606099507
b= 0.042802901

$$P = \frac{RT}{\hat{V} - b} - \frac{a}{\hat{V}^2}$$

P= 50 atm
T= 400 K
V_ideal 0.65648 L/mol
V_VDW 0.585021855
f(V)= 4.76177E-07

Non-Ideal!

SRK Example for CO2

Tc 304.2 K
Pc 72.9 atm
R 0.08206 L-atm/K-mol
a= 3.6539244
b= 0.029667547
omega= 0.225
m= 0.161455722
Tr= 1.314924392
alpha= 0.953189415

Non-Ideal!

$$P = \frac{RT}{\hat{V} - b} - \frac{a\alpha}{\hat{V}(\hat{V} + b)}$$

P= 50 atm
T= 400 K
V_ideal 0.65648 L/mol
V_SRK 0.577278192
f(V)= -4.74879E-07