



Vapor ideal

$$\hat{f}_i^L = \hat{f}_i^V$$

@ Equilibrium

$$\hat{f}_i^V(T, p, \{x_i\})$$

$$= \hat{\phi}_i y_i P = y_i P$$

↑  
TOTAL  
pressure

$$p = K_H x_i$$

$$\gamma_i = \frac{\hat{f}_i^L}{X_i f_i^{\text{ref}}} = \frac{X_i P_i^{\text{sat}}(T)}{X_i P_i^{\text{sat}}(T)} \quad \gamma_i \rightarrow 1$$

$$a_i = \gamma_i X_i \quad \gamma_i \rightarrow 1$$

$$\text{if } f_i^{\text{ref}} = P_i^{\text{sat}}(T)$$

RL Standard/reference state

$$\gamma_i^{\text{RL}}(T, P, \{x\}) \rightarrow 1$$

$$X_i \rightarrow 1$$

$$a_i = X_i$$


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Solute : Sparingly Soluble  
 ( $O_2, N_2$  in  $H_2O$ )

~~XXXX~~  
 $\sqrt{\text{solute}}$

$$\gamma_i^{HL} = \frac{f_c^L}{X_i f_i^{ref}} = \frac{X_i K_H}{X_i K_H} = 1 \quad \leftarrow$$

$$\gamma_i^{AL} = \gamma_{\text{solute}}^{AL} \longrightarrow 1 \quad \text{as } X_{\text{solute}} \rightarrow 0$$

$$a_{\text{solute}} \longrightarrow \gamma_{\text{solute}} X_{\text{solute}} \quad X_{\text{solute}} \rightarrow 0$$

$$\longrightarrow X_{\text{solute}}$$