# Cross-phase fluid exchange @model

Given

a mixture of fluid components $C = \{1...n\}$ with total mass of each component $m_C$ (assumed to stay constant during dynamic processes)

and

fluid phases ( $\alpha = \{1...m\}$) sharing the same volume under pressure $p$ and temperature $T$

then in thermodynamic equilibrium the total mass of C-component will decompose into a sum of fluid components:

(1) $$m_C = \sum_{\alpha} m_{C\alpha}(p,T)$$

where

| | |
|---|---|
| $m_{C\alpha}(p,T)$ | mass of C-component in $\alpha$-phase as a function of pressure $p$ and temperature $T$ |

This may alternatively rearranaged as:

(2) $$m_C = \sum_{\alpha} R_{C\alpha}(p,T) m_{\alpha}(p,T)$$

where

| | |
|---|---|
| $R_{C\alpha}(p,T)$ | cross-phase exchange coefficient of C-component in $\alpha$-phase as a function of pressure $p$ and temperature $T$ |
| $m_{\alpha}(p,T)$ | total mass of $\alpha$-phase as a function of pressure $p$ and temperature |

## See Also

Petroleum Industry / Upstream / Subsurface E&P Disciplines / Fluid (PVT) Analysis

Cross-phase fluid exchange