

Fluid Phase Equilibrium

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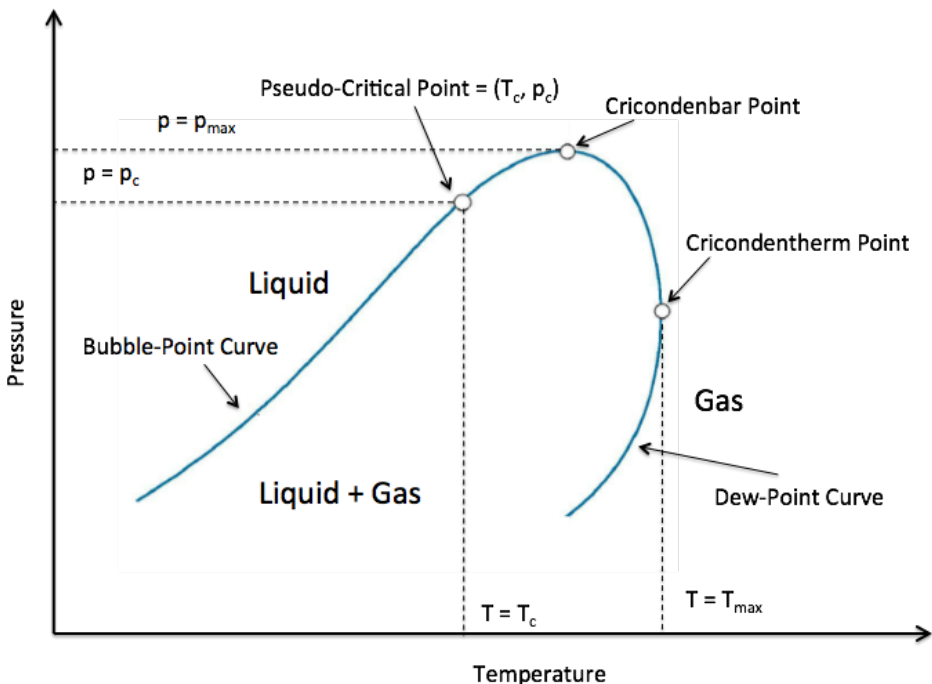
Synonym: Fluid Phase Equilibrium = Vapour Liquid Equilibrium (VLE)

A partial case of Phase Equilibrium with two fluid phases staying at Thermodynamic equilibrium.

In other words it's a state of thermodynamic equilibrium between the liquid and gas state of a Fluid Mixture.

The PT Diagram for Pure Substance will see Vapour Liquid Equilibrium (VLE) as a set of points along a smooth curve ending up with a Critical Point (T_c, p_c) (see Fig. 1).

The PT Diagram for Fluid Mixture will see Vapour Liquid Equilibrium (VLE) as a closed region (also called Vapour Liquid Envelope) bounded by Bubblepoint Curve and Dewpoint Curve with a junction at Pseudo-Critical Point (T_{pc}, p_{pc}) (see Fig. 2).

blocked URL	 The diagram shows Pressure on the vertical axis and Temperature on the horizontal axis. A blue curve represents the Vapour Liquid Envelope. The left side of the curve is the Bubble-Point Curve, and the right side is the Dew-Point Curve. The region to the left of the Bubble-Point Curve is labeled 'Liquid'. The region to the right of the Dew-Point Curve is labeled 'Gas'. The region between the two curves is labeled 'Liquid + Gas'. The peak of the curve is the Pseudo-Critical Point, labeled (T_c, p_c). A horizontal dashed line at $p = p_c$ intersects the curve at two points, with the left one being the Pseudo-Critical Point. A horizontal dashed line at $p = p_{max}$ is shown above the peak. The temperature at the Pseudo-Critical Point is $T = T_c$, and the temperature at the rightmost point of the curve is $T = T_{max}$. The peak is also labeled 'Cricondenbar Point' and the rightmost point is labeled 'Cricondentherm Point'.
Fig. 1. Schematic PT Diagram with Vapour Liquid Equilibrium curve and Critical Point.	Fig. 2. Schematic PT Diagram with Vapour Liquid Envelope and Pseudo-Critical Point.

See also

Natural Science / Physics / Thermodynamics / Thermodynamic system / Thermodynamic equilibrium / Phase Equilibrium

[State of matter] [Pure substance] [Mixtures] [Fluid Mixtures] [Phase]

[Dewpoint Curve] [Bubblepoint Curve] [Vapour Liquid Envelope]

[[Critical Point \(\$T_c\$, \$P_c\$ \)](#)][[ritical Temperature \$T_c\$](#)][[Critical Pressure \(\$p_c\$ \)](#)][[Cricondentherm](#)][[Cricondenbar](#)]