The chemical potential of a substance \( B \) in a mixture of substances \( B, C \ldots \) is related to the Gibbs energy \( G \) of the mixture by:

\[
\mu_B = \left( \frac{\partial G}{\partial n_B} \right)_{T, p, n_{C \neq B}}
\]

where \( T \) is the thermodynamic temperature, \( p \) is the pressure and \( n_B, n_C, \ldots \) are the amounts of substance of \( B, C, \ldots \). For a pure substance \( B \), the chemical potential \( \mu_B^* \) is given by:

\[
\mu_B^* = \frac{G_B^*}{n_B} = G_m^*
\]

where \( G_m^* \) is the molar Gibbs energy, and where the superscript * attached to a symbol denotes the property of the pure substance. The superscript \( \Theta \) or \( \circ \) attached to a symbol may be used to denote a standard thermodynamic quantity.

**See also:** standard chemical potential

**Source:**
PAC, 1994, 66, 533 (Standard quantities in chemical thermodynamics. Fugacities, activities and equilibrium constants for pure and mixed phases (IUPAC Recommendations 1994)) on page 535
Green Book, 2nd ed., p. 49
PAC, 1996, 68, 957 (Glossary of terms in quantities and units in Clinical Chemistry (IUPAC-IFCC Recommendations 1996)) on page 966