

partition ratio, K_D

The ratio of the concentration of a substance in a single definite form, A, in the extract to its concentration in the same form in the other phase at equilibrium, e.g. for an aqueous/organic system:

$$(K_D)_A = \frac{[A]_{\text{org}}}{[A]_{\text{aq}}}$$

Notes:

1. K_D is sometimes called the distribution constant; this is a good synonym. The terms distribution coefficient, distribution ratio, partition constant and extraction constant should not be used as synonyms for partition ratio.
2. The use of the inverse ratio (aqueous/organic) may be appropriate in certain cases, e.g. where the organic phase forms the feed but its use in such cases should be clearly specified. The ratio of the concentration in the denser phase to the less dense phase is not recommended as it can be ambiguous.
3. If the pure solvent and infinitely dilute feed are taken as the standard states, $K_D \rightarrow K_D^\circ$ as the total concentration of dissolved materials decreases.

Source:

PAC, 1993, 65, 2373 (*Nomenclature for liquid-liquid distribution (solvent extraction) (IUPAC Recommendations 1993)*) on page 2385