

Grunwald–Winstein equation

The linear free energy relation:

$$\log(k_s/k_0) = mY$$

expressing the dependence of the rate of solvolysis of a substrate on ionizing power of the solvent. The rate constant k_0 applies to the reference solvent (ethanol–water, 80:20, v/v) and k_s to the solvent s , both at 25 °C. The parameter m is characteristic of the substrate and is assigned the value unity for *tert*-butyl chloride. The value Y is intended to be a quantitative measure of the ionizing power of the solvents. The equation was later extended to the form:

$$\log(k_s/k_0) = mY + lN$$

where N is the *nucleophilicity* of the solvent and l its susceptibility parameter. The equation has also been applied to reactions other than solvolysis.

See also *Dimroth–Reichardt E_T parameter, polarity, Z -value.*

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