

Grunwald–Winstein equation

The linear free energy relation:

$$\log_{10}\left(\frac{k_s}{k_0}\right) = m Y$$

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:

$$\log_{10}\left(\frac{k_s}{k_0}\right) = m Y + l N$$

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

Source:

PAC, 1994, 66, 1077 (*Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994)*) on page 1118