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Relative Viscosity

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Potential competing interests: No potential competing interests to declare.

The **relative viscosity** is the ratio of the **dynamic viscosity** (η)[1] of a **dilute** solution of solute (electrolyte, non electrolyte, polymer, etc[2][3]), and of the pure solvent (η_0) at the same temperature and pressure. ($\eta_{rel} = \eta / \eta_0$). It's a **dimensionless** property.

In laboratory practice, the relative viscosity (η_{rel}) can be expressed as follows:

$[\eta_{rel} = \rho(Ct - E/t^2)/\rho_0(Ct_0 - E/t_0^2)]$, where ρ the density ($g \cdot cm^{-3}$), C represents the capillary tube or cell calibration constant($cSt \cdot s^{-1}$), E is the kinetic energy correction constant($cSt \cdot s^{-2}$) and t is **flow time** (s).

In the case of **electrolyte solution**, we can use the **Jones-Dole** equation: ($\eta_{rel}=1+Ac^{1/2}+Bc$).

References

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2. ^*Noureddine Ouerfelli. (2024). Viscosity of polymer solutions. doi:10.32388/foydkd.*
3. ^*Noureddine Ouerfelli. (2024). Viscosity of electrolyte solutions. doi:10.32388/ezlg62.*