EngineeringRise

Purification techniques

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Retardation factor	Rf = (distance moved by compound) / (distance moved by solvent front), both from the starting line Valid when: both distances measured from the starting line, same plate and solvent	dimensionless, between 0 and 1
Spot position	distance of spot from starting line = Rf x (distance of solvent front) Valid when: Rf known for the same plate and solvent; distance from starting line	cm
Separation of two spots	separation = (Rf2 - Rf1) x (distance of solvent front) Valid when: both spots on one plate; front distance from starting line	cm
Crystallisation recovery	mass crystallised = (solubility hot - solubility cold) x volume / 100 Valid when: saturated hot solution; impurity stays dissolved; solubility in g per 100 mL	g (with solubility in g per 100 mL)
Differential extraction	several small portions of solvent extract more than one large portion of the same total volume	not applicable
Choice of distillation	gap of about 40 K or more: simple; small gap: fractional; decomposes near its boiling point: reduced pressure	K
Sublimable solids to recall	naphthalene, camphor, anthracene, iodine, ammonium chloride	not applicable

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/purification-and-characterisation-of-organic-compounds/purification-te

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