Amines: nomenclature, structure, basic character and identification

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

Result	Formula	Units or note
Classes	RNH2 primary, R2NH secondary, R3N tertiary (carbon groups on N)	count
Name pattern	alkane-e replaced by amine, locant lowest; N- prefix for groups on N	n/a (text)
Base reaction	R-NH2 + H2O giving R-NH3+ + OH-; Kb = [RNH3+][OH-] / [RNH2] Valid when: dilute aqueous solution of the amine at 298 K; water left out of Kb	mol per litre
pKb	pKb = -log Kb; smaller pKb means stronger base Valid when: compare bases at the same temperature, normally 298 K	dimensionless
pH of weak base	x = [OH-] from x^2 / (c - x) = Kb; pH = 14 - pOH Valid when: one weak base in water; Kw = 1e-14 at 298 K	dimensionless
Salt of weak base	Ka(cation) = Kw / Kb; pH about (pKa + pC) / 2 Valid when: salt of weak base with strong acid; small hydrolysis; no extra acid or base	dimensionless
Aqueous order (methyl)	(CH3)2NH > CH3NH2 > (CH3)3N > NH3 > C6H5NH2 Valid when: methyl amines in aqueous solution; the gas-phase order differs	n/a (basic strength)
Hinsberg	1 degree: sulfonamide soluble in KOH; 2 degree: insoluble; 3 degree: no reaction Valid when: excess benzenesulfonyl chloride in aqueous KOH	n/a (test result)
Carbylamine	RNH2 + CHCl3 + 3KOH giving RNC + 3KCl + 3H2O (foul smell) Valid when: primary amine only, with CHCl3 and alcoholic KOH on heating	n/a (test result)
Hofmann bromamide	RCONH2 + Br2 + 4NaOH giving RNH2 + Na2CO3 + 2NaBr + 2H2O (one carbon fewer) Valid when: primary amide with Br2 and NaOH; amine has one carbon fewer	n/a (equation)

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/organic-compounds-containing-nitrogen/amines-nomenclature-structu

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