

Class 12 Organic Chemistry — Important Named Reactions Cheat Sheet

A companion download to the Cogniks blog post: "NCERT Class 12 Chemistry: Organic Chemistry Reaction Mechanisms Made Simple" — cogniks.com

Haloalkanes & Haloarenes

Reaction	Reactant + Reagent / Conditions	Product	One-Line Note
Wurtz Reaction	$2 \text{ R-X} + 2 \text{ Na}$, dry ether	R-R (higher alkane)	Prepares symmetrical higher alkanes
Finkelstein Reaction	R-Cl / R-Br + NaI, dry acetone	R-I	Halogen exchange reaction
Swarts Reaction	R-Cl / R-Br + AgF / Hg_2F_2 / CoF_2 / SbF_3	R-F	Prepares alkyl fluorides

Alcohols, Phenols & Ethers

Reaction	Reactant + Reagent / Conditions	Product	One-Line Note
Williamson Ether Synthesis	$\text{R-X} + \text{R'-ONa}$	R-O-R'	$\text{S}_{\text{N}}2$; best with 1° halides
Kolbe's Reaction	Sodium phenoxide + CO_2 , then H^+	Salicylic acid	Electrophilic substitution on the ring
Reimer-Tiemann Reaction	Phenol + CHCl_3 + NaOH	Salicylaldehyde	Adds -CHO ortho to -OH

Aldehydes, Ketones & Carboxylic Acids

Reaction	Reactant + Reagent / Conditions	Product	One-Line Note
HVZ Reaction	Carboxylic acid (with $\alpha\text{-H}$) + Cl_2/Br_2 + red P	α -halo carboxylic acid	Halogenation at the α carbon
Cannizzaro Reaction	Aldehyde with no $\alpha\text{-H}$ + conc. NaOH	Alcohol + carboxylate salt	Self redox (disproportionation)
Aldol Condensation	Aldehyde/ketone with $\alpha\text{-H}$ + dilute NaOH	β -hydroxy carbonyl $\rightarrow$ α,β -unsaturated carbonyl (on heating)	Forms a new C-C bond
Clemmensen Reduction	Carbonyl compound + Zn-Hg / HCl	Alkane ($\text{C=O} \rightarrow \text{CH}_2$)	Reduction in acidic medium
Wolff-Kishner Reduction	Carbonyl compound + NH_2NH_2 , KOH / ethylene glycol, heat	Alkane ($\text{C=O} \rightarrow \text{CH}_2$)	Reduction in basic medium
Haloform Reaction	Methyl ketone / acetaldehyde + X_2 + NaOH	Haloform (CHX_3) + carboxylate salt	Test for the $\text{CH}_3\text{-CO-}$ group

Amines

Reaction	Reactant + Reagent / Conditions	Product	One-Line Note
Gabriel Phthalimide Synthesis	Phthalimide + KOH, then R-X, then hydrolysis	1° amine (R-NH_2)	Gives pure primary amines only
Hofmann Bromamide Degradation	Amide + Br_2 + NaOH	1° amine, one carbon fewer	Converts an amide to an amine
Diazotisation	Aromatic 1° amine + NaNO_2 / HCl, $0-5^\circ\text{C}$	Diazonium salt	Key intermediate for azo dyes
Carbylamine Reaction (Test)	1° amine + CHCl_3 + alcoholic KOH, heat	Isocyanide (foul smell)	Distinguishes 1° from $2^\circ/3^\circ$ amines

Based on the CBSE Class 12 Chemistry syllabus (2026-27, rationalised). Cyanide/isocyanide preparation reactions have been removed from the current Amines unit — always cross-check against your current NCERT textbook. © Cogniks — cogniks.com