

Functional Group Properties

Group	Polarity	Hydrogen Bonds	Water Solubility	Acid/Base	Reactions	Polymer Biopolymer
Alkyl (hydrocarbon)	Nonpolar	No	Low; Longer, lower	No	Addition (Alkenes)	PE PP PS Rubber Lipids
Alkyl Halide (F* Cl Br I)	Polar (geometry)	No	Low	No	Elimination Substitution	PVC Teflon Saran
Alcohol	Polar	Yes donor acceptor	High	No	Condensation (+ acid = ester)	PVA Carbohydrates (starch cellulose)
Amine	Polar	Yes donor acceptor	Medium to high	Base	Condensation (+ acid = amide)	Amino acids Proteins Nucleic Acid
Aldehyde	Moderately polar	Yes acceptor	Medium to low	No	Addition	Carbohydrates
Ketone	Slightly Polar	Yes acceptor	Medium to low	No	Addition	Carbohydrates Lipids
Carboxylic Acid	Polar	Yes donor acceptor	Medium to high	Acid	Condensation (esters amides)	Amino acids Proteins
Ester	Moderately polar	Yes acceptor	Low	No	Hydrolysis	Polyester Lipids Nucleic Acid (phosphoester)
Amide	Polar	Yes donor acceptor	Medium to high	No	Hydrolysis	Nylon Kevlar Proteins Nucleic Acid