

Scavengers for Electrophiles

Which compounds to scavenge?

Carbonyls	→	PS-TsNHNH ₂ PS-Trisamine MP-Trisamine Si-Tosyl Hydrazine Si-Triamine Si-Trisamine
Alkylating Agents	→	Alkyl halides, Mesylates, Tosylates, α-bromoesters, α-bromoketones → PS-Thiophenol PS-Triphenylphosphine Si-Thiol
Acid Chlorides	→	PS-Trisamine MP-Trisamine PS-NH ₂ Si-Tosyl Hydrazine Si-Triamine Si-Trisamine
Sulfonyl Chlorides	→	PS-Trisamine MP-Trisamine PS-DMAP PS-NH ₂ PS-TsNHNH ₂ Si-Tosyl Hydrazine Si-Triamine Si-Trisamine
Isocyanates	→	PS-Triamine MP-Trisamine PS-NH ₂ Si-Tosyl Hydrazine Si-Triamine Si-Trisamine
Epoxides	→	PS-Thiophenol Si-Thiol
Oxophilic inorganic, organometallic complexes Lewis Acids, e.g., Ti(IV), Sn(IV)	→	PS-DEAM
Pd(II), Pd(0), Pt, Cu	→	MP-TMT PS-TBD Si-Thiol Si-Trisamine Si-Triamine

Scavengers for Nucleophiles

Which compounds to scavenge?

Alcohols	→	PS-TsCl(HL)
Amines	→	Primary, Secondary → PS-Isocyanate MP-Isocyanate MP-TsOH(65) PS-TsCl(HL) Si-TsOH (SCX-3) Si-Propylsulfonic Acid (SCX-2)
		Selective for Primary → PS-Benzaldehyde
		Anilines (Aromatic) → PS-TsCl(HL) MP-TsOH(65) PS-Isocyanate MP-Isocyanate Si-TsOH (SCX-3) Si-Propylsulfonic Acid (SCX-2)
Hydrazines	→	PS-Benzaldehyde PS-TsCl(HL)
Enolates	→	PS-Benzaldehyde
Thiols/Thiolates	→	PS-Isocyanate MP-Isocyanate PS-Thiophenol Si-Thiol
Alkoxides	→	PS-TsCl(HL) PS-Isocyanate MP-Isocyanate
Reducing Agents	→	PS-Benzaldehyde
Acids/Acidic Phenols	→	HOBt → MP-Carbonate Pentafluorophenol 4-Nitrophenol Carboxylic Acid Phenol Boronic acid PS-Trisamine MP-Trisamine PS-TsNHNH ₂ Si-Carbonate Si-Tosyl Hydrazine Si-Triamine Si-Trisamine

Solid-Supported Reagents

What type of reagent? What application?

Recommended solid-supported reagent

Acids and Bases

- Basic Quenching, Neutralize Ammonium Salts → MP-Carbonate
Si-Carbonate
- Acid Quenching → PS-DIEA
PS-DMAP
- Strong Tertiary Amine Base
(e.g. mesylate formation) → PS-DIEA
- Tertiary Amine Base
(e.g. formation of amides, sulonamides, carbamates) → PS-NMM
- Strong Base
(e.g. alkylation of phenols, amines, activated methylene
compounds; esterification of carboxylic acids) → PS-TBD
- Amine Purification → MP-TsOH(65)
Si-TsOH (SCX-3)
Si-Propylsulfonic acid (SCX-2)

Coupling Agents

- Amide Synthesis → PS-Carbodiimide
PS-HOBt(HL)
PS-HOBt(HL)/ACTU
PS-DIEA
PS-DMAP
- Activated Ester Formation → PS-HOBt(HL)/ACTU

Protecting Group Cleavage

- BOC cleavage → Si-TsOH (SCX-3)
Si-Propylsulfonic acid (SCX-2)
MP-TsOH(65)
- BSMOC, FMOC → PS-Trisamine
MP-Trisamine
Si-Trisamine
Si-Triamine

Reducing Agents

- Carbonyl Reduction → MP-BH₄
- Reductive Amination → MP-CNBH₃
MP-BH(OAc)₃
MP-BH₄ (with Ti(OiPr)₄)

What type of reagent? What application?

Recommended solid-supported reagent

Oxidizing Agents

- Alcohols to Aldehydes → MP-TsO-TEMPO

Electrophilic Activation

- Halogenation
(Chlorination, bromination, iodination) → PS-Triphenylphosphine
- Phenylether Formation
(i.e. Mitsunobu reaction) → PS-Triphenylphosphine
- Thioester Active Intermediate → PS-Thiophenol
- Alcohol Activation (tosylation) → PS-TsCl
- Acid and Sulfonyl Chloride Activation → PS-DMAP

Nucleophilic Activation

- Carbon-Carbon Bond
(e.g. Wittig reaction) → PS-Triphenylphosphine
- Sulfonyl Hydrazone Formation
(e.g. Hurd-Mori thiadiazole synthesis) → PS-TsNHNH₂
Si-Tosyl-Hydrazine

Catalysts

- Acids → MP-TsOH(65)
Si-TsOH (SCX-3)
Si-Propylsulfonic acid (SCX-2)
- Acyl Transfer → PS-DMAP
- C-C Coupling → PS-PPh₃-Pd

