

Alcohol Protecting Groups

Class	Protecting group	Structure	Introduction	Deprotection
Ether	Ac Acetate		Ac ₂ O OR Ac-Cl + base (Et ₃ N, NaH, ...)	OH⁻ (K ₂ CO ₃ , KOH, ...)
	Bn Benzyl		BnBr/Cl + base (NaH, ...)	cat. Pd/C, H₂ (catalytic hydrogenolysis)
	PMB Para-methoxybenzyl		PMB-Br/Cl + base (NaH, ...)	a) DDQ, CAN (oxidants) b) cat. Pd/C, H₂
	Tr or Trt Trityl / triphenylmethyl		Ph ₃ CCl + cat. DMAP (in pyridine)	a) H⁺ , H ₂ O (AcOH, HCO ₂ H or stronger acids) b) ZnBr₂ (Lewis acids)
	All Allyl		Allyl bromide + base (NaH, ...)	cat. Pd(0), nucleophile (e.g., amines like morpholine)
	Me Methyl		Mel + base (NaH, ...)	BBr₃ or TMSI (Lewis acids)
Silyl ether	TMS Trimethylsilyl		Silyl chloride + base (imidazole, pyridine, <i>i</i> Pr ₂ NEt, NEt ₃ ...) Alternatively, silyl triflate (more reactive)	a) F⁻ (TBAF, HF...) b) H⁺ , H ₂ O (PPTS, ...) c) OH⁻ (KOH, ...)
	TBS/TBDMS <i>t</i> -Butyldimethylsilyl			TBS: As TMS, but much more stable to base
	TIPS Triisopropylsilyl			TIPS: As TBS, but more stable to acid and base; needs harsher conditions
Acetal	MOM Methoxymethyl		MOM-Cl + base (<i>i</i> Pr ₂ NEt, NaH, ...)	H⁺ , H ₂ O (HCl, PPTS, ...)
	THP Tetrahydropyranyl		 (DHP) + H ⁺	H⁺ , H ₂ O (HCl, PPTS, ...)
	MEM 2-Methoxyethoxymethyl		MEM-Cl + base (<i>i</i> Pr ₂ NEt, NaH, ...)	a) ZnBr₂ (Lewis acids) Chelation by 2 nd O increases Lewis acid instability b) H⁺ , H ₂ O (TFA, PPTS)
	SEM 2-(Trimethylsilyl)ethoxymethyl		SEM-Cl + base (<i>i</i> Pr ₂ NEt, NaH, ...)	a) F⁻ (TBAF, HF, ...) b) H⁺ , H ₂ O (TFA, PPTS, ...)

Color: **Base** | **acid** (not all strictly need H₂O, can be anhydrous) | **fluoride** | **Lewis acid** | **transition metal catalysis** | **oxidant**