Acetals and Ketals

Cyclic acetals and ketals are the most useful carbonyl (aldehyde or ketone) protecting groups. Common diols used to form ketals are shown below in order of their relative rate of formation.

1,3-dioxanes cleave faster than 1,3-dioxolanes.

Acetals and ketals are easily formed and cleaved.

In general, saturated ketones can be selectively protected in the presence of α,β-unsaturated ketones.


Conditions have also been developed to reverse this selectivity:


Carboxylic Acid Protecting Groups
Esters

Ester protecting groups are analogous to the carbamate protecting groups used to protect amines.

Orthoesters

![Orthoesters Reaction]

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