Tetra Butyl Ammonium Fluoride: TBAF

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Tetra butyl ammonium fluoride (TBAF) has been used widely as a reagent for the efficient cleavage of various silyl protecting groups from O-silylated nucleosides\(^1\),\(^2\) and pyrophosphates,\(^3\) as well as N-silyl,\(^4\) and S-silyl derivatives.\(^5\) These reactions are carried out under very mild conditions in excellent yields.

**Preparation:** Aqueous HF is passed through an amberlite IRA 410 OH column, followed by an aqueous solution of tetra-butylammonium bromide. After the resin is washed with H\(_2\)O, the combined H\(_2\)O fractions are repeatedly evaporated until no water is present. TBAF is collected as an oil in quantitative yield.

**Abstracts**

Silyl ethers can be converted to esters in one pot when they are treated with TBAF, followed by exposure to acyl chlorides\(^6\),\(^7\) or anhydride\(^8\) in the presence of a base.

The anions generated in situ by desilylation of silylacetylenes,\(^9\),\(^10\) allylsilanes,\(^11\),\(^13\) propargylsilanes\(^14\) and other silane derivatives can undergo nucleophilic addition to ketones and aldehydes.\(^15\)

\(N\)-tert-Butyloxy carbonyl groups can be removed by using TBAF in refluxing THF.\(^16\)

Under phase transfer conditions, selective mono- and dialkylation of malononitrile have been achieved by using neat TBAF with potassium carbonate or potassium tert-butoxide.\(^17\)
References