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## Alkylidenephosphines and Diphosphetanes

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## Alkylidenephosphines and Diphosphetanes

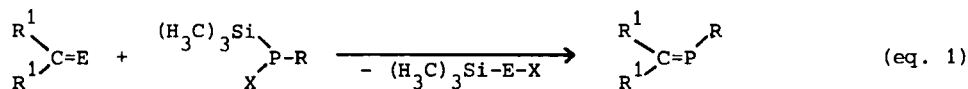
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In studies of the reactivity and thermal stability of various alkylidenephosphines prepared from benzophenone and organylbis(trimethylsilyl)phosphines via a NaOH-catalyzed elimination of hexamethyldisiloxane (eq. 1a), detailed analy-

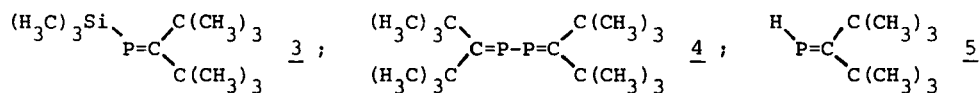


eq. 1a:  $\text{R}^1 = \text{H}_5\text{C}_6$ ;  $\text{E} = \text{O}$ ;  $\text{X} = (\text{H}_3\text{C})_3\text{Si}$

eq. 1b:  $\text{R}^1 = (\text{H}_3\text{C})_3\text{C}$ ;  $\text{E} = \text{S}$ ;  $\text{X} = \text{Li} \cdot 2\text{THF}$

ses of nmr-spectra and x-ray structure determinations prove the methyl derivative 1a to dimerize to an 1,3-diphosphetane (2a), whereas from the iso-propyl compound 1b the 1,2-diphosphetane 2b is obtained [1]. This observation confirms our hypothesis that the formation of 1,2- or 1,3-diphosphetanes is determined by the steric requirements of the substituent at phosphorus.

Alkylidenephosphines with two bulky substituents at the carbon atom of the  $\text{P}=\text{C}$  moiety as e.g. two tert-butyl groups remain monomeric. These compounds are readily prepared from di(tert-butyl)thioketone and a lithium organyltrimethylsilylphosphide (eq. 1b). With lithium bis(trimethylsilyl)phosphide a mixture of [di(tert-butyl)methylidene]trimethylsilylphosphine (3), tris(trimethylsilyl)phosphine, and the structurally characterized 2,3-diphospha-1,3-butadiene 4 is obtained.



Treatment of compound 3 with methanol yields di(tert-butyl)methylidenephosphine 5 which dimerizes via a P-H addition of one molecule to the  $\text{P}=\text{C}$  group of a second one.

[1] G. Becker, B. Becker, W. Becker: Z. anorg. allg. Chem., in press.