Diphosphetanes from Monomeric Alkylidene Phosphines

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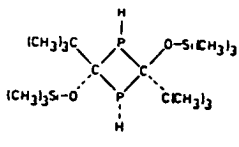
Bis(trimethylsilyl)phosphines react with acyl chlorides (1), dimethylformamide, benzophenone (2) or carbon disulfide (3) to give [1-(trimethylsiloxy)alkylidene]-, [dimethylaminomethylidene]-, [diphenylmethylidene]-, and [bis(trimethylsilylsulfano)methylidene]phosphines. If the P=C group of these compounds is not shielded sufficiently by bulky substituents, dimerization occurs. Usually 1,3-diphosphetanes are found (4); [1-(trimethylsiloxy)benzylidene]phosphines, however, form 1,2-diphosphetanes. As shown by X-ray structure determinations on characteristic derivatives the molecules (1-4) show different point symmetry; the (E)- or (Z)-arrangement of substituents shown by the monomers is still detectable in the dimers.



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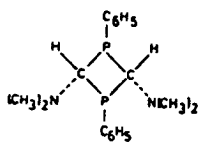

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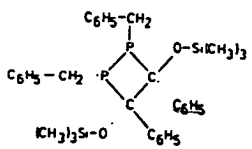

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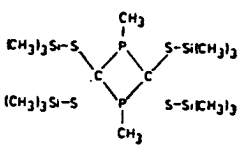

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(1) G. Becker, M. Rößler and W. Uhl, Z. anorg. allg. Chem. 473, 7 (1981).
(2) G. Becker and O. Mundt, Z. anorg. allg. Chem. 462, 130 (1980).
(3) G. Becker, G. Gresser and W. Uhl, Z. anorg. allg. Chem. 463, 144 (1980).
(4) G. Becker and W. Uhl, Z. anorg. allg. Chem. im Druck.