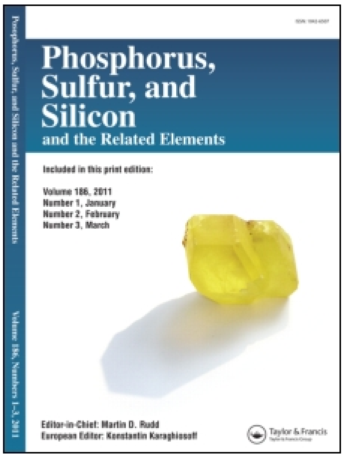

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On the Reactivity of P Trichloro N Dichlorophosphor-Yl-Mdnophosphazene $Cl_3P=N-P(O)Cl_2$

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ON THE REACTIVITY OF P TRICHLORO N DICHLOROPHOSPHORYL-MONOPHOSPHAZENE $Cl_3P=N-P(O)Cl_2$

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In this poster we give the results of some reactions of P trichloro N dichlorophosphoryl monophosphazene $Cl_3P=N-P(O)Cl_2$ (I) with inorganic and organic nucleophilic reagents.

(I) reacts with N_2O_4 or better with N_2O_3 in the liquid state at low temperature to give the compound $|N[P(O)Cl_2]_2|^- NO^+$. Its stability is low, and it reacts rapidily to give polymers with simultaneous NOCl elimination.

(I) reacts with the amines - pyrrolidine and bis-chloroethylamine to give the derivatives R_mCl_{2-m} (O) $P-N=PCl_{3-n}$ R_n with n=1, m=o and 1 ; n=2, m=o and 1 ; n=3, m=2 for $R=\overline{N(CH_2)_3\ CH_2}$ and n=o, m=1 ; n=1, m=o and 1 ; n=2, m=o ; n=3, m=1 and 2 for R= $N(CH_2\ CH_2Cl)_2$.

In order to introduce an insaturated substituant in (I), the reactions with sodium propenolate, allyloxytrimethylsilane, orthoallylphenol, and allylamine have been studied.

With the first two reagents, at room temperature, the main product in $HN[P(O)Cl_2]_2$ with the derivative $|Cl_2(O)P|_2-N-CH_2-CH=CH_2$ - At low temperature in CH_2Cl_2 the main product is $Cl_2(O)P-N=PCl_2(OCH_2-CH=CH_2)$

At low temperature in diethylether $Cl_2(O)P-N=PCl_2(O\ C_2\ H_5)$ and allylethylether appear. The involvement of the cation $|CH_2 \overset{\cdots}{-} CH \overset{\cdots}{-} CH_2|^+$ explains these last two reactions. With orthoallylphenol we obtain the mono substituted derivative $Cl_2(O)P-N=PCl_2(OC_6H_4CH_2CH=CH_2)$ with a yield of about 70 %, and with allylamine we also obtain the compound $Cl_2(O)\ P-N=PCl_2\ NH\ CH_2\ CH=CH_2$.

In this last case it is possible with an excess of allylamine to completely substitute (I).

All cited derivatives have been characterised by ^{31}P, ^{1}H, ^{13}C, ^{15}N NMR and sometimes by mass spectrometry and IR spectroscopy.