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Interaction of Cyclohexanediimines with Phosphorus (III) Chlorides

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Interaction of Cyclohexanediimines with Phosphorus (III) Chlorides

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It is known that reactions of phosphorohalidites with linear α -dimines proceed accordingly [1+4]-cycloaddition mechanism and give rise to 1,3,2-diazaphosphol-4-enes. We have found that 1,2-cyclohexane-dimines (1) react with alkyldichlorophosphines in the absence of base also resulting in the formation of products of 1,3,2-diazaphosphol-4-ene structure (2, 3).

$$\begin{array}{c}
NR \\
NR
\end{array}
+ EtPCl_2$$

$$\begin{array}{c}
NR \\
P
\end{array}$$

$$\begin{array}{c}
NR \\
P
\end{array}$$

$$\begin{array}{c}
NR \\
Cl
\end{array}$$

$$\begin{array}{c}
H_2O, 2B \\
-2B \ HCl
\end{array}$$

$$\begin{array}{c}
NR \\
P
\end{array}$$

$$\begin{array}{c}
NR \\
P
\end{array}$$

$$\begin{array}{c}
NR
\end{array}$$

$$\begin{array}{c}
O
\end{array}$$

On contrast interaction of cyclohexanediimines (1) with phosphorochloridites in the presence of base produce 1,3,2-diazaphospholanes containing cyclohexadiene fragment (4).

$$\begin{array}{c|c}
NR & + R'PCl_2 & 2B: \\
NR & R' = Cl, AlkO, Alk_2N & (4)
\end{array}$$