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Synthesis of Polyphosphazenes from P-Trichloro-N-Dichlorophosphoryl Monophosphazene $\text{Cl}_3\text{P}=\text{N}-\text{P}(\text{O})\text{Cl}_2$

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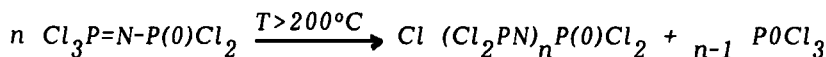
SYNTHESIS OF POLYPHOSPHAZENES FROM P-TRICHLORO-N-DICHLOROPHOSPHORYL MONOPHOSPHAZENE $\text{Cl}_3\text{P}=\text{N}-\text{P}(\text{O})\text{Cl}_2$

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The polycondensation of P-Trichloro-N-dichlorophosphoryl monophosphazene $\text{Cl}_3\text{P}=\text{N}-\text{P}(\text{O})\text{Cl}_2$ has been studied. This last develops according to the reaction



The monomer purity and the operating conditions play a great role on the obtention of linear polychlorophosphazenes. This reaction has been followed by ^{31}P NMR. Thus, we can state its mechanism and compare the reactivities of the monomer and oligomers.

The catalytic or inhibitant effects of some products are proved.

The polychlorophosphazenes obtained by this method have been substituted. Chromatographic and viscosimetric studies permit the MarkHouwing relation of polydiphenoxy and aryloxyphosphazenes in the solvent at 30°C to be obtained.

A polyphosphazenes pilot plant which operates on this manufacturing process his now used by ATOCHEM in MONT (Pyénées Atlantiques FRANCE). The results obtained lead the prediction of an industrial exploitation of this process.