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Preparation of Organic-Inorganic Polymers: Reaction of Functionalized Cyclotriphosphazenes with Diisocyanates

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$$\begin{array}{c}
 \text{C}_6\text{H}_5\text{O}-\text{P}(\text{OC}_6\text{H}_3(\text{OH})_2)_2 \\
 \text{C}_6\text{H}_5\text{O}-\text{N}=\text{P}(\text{OC}_6\text{H}_5)_2 \\
 \text{C}_6\text{H}_5\text{O}-\text{P}(\text{OC}_6\text{H}_5)_2 \\
 \text{C}_6\text{H}_5\text{O}-\text{N}=\text{P}(\text{OC}_6\text{H}_5)_2
 \end{array}
 + \text{OCN-R-NCO} \longrightarrow \left[\text{O}-\text{C}_6\text{H}_3(\text{OC}_6\text{H}_5)_2-\text{O}-\text{C}(=\text{O})-\text{NH}-\text{R}-\text{NH}-\text{C}(=\text{O}) \right]_n$$

2,4 TDI (R = CH₃C₆H₃)
 1,6 HDI (R = (CH₂)₆)

4 and 5
 T = N₃P₃(OPh)₅

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