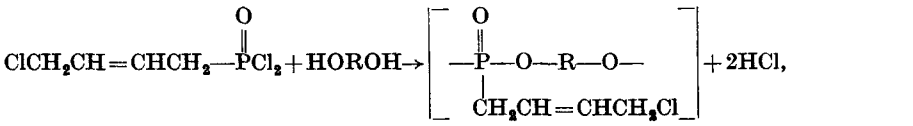
POLYCONDENSATION OF 4-CHLOROBUT-2-ENEPHOSPHINYL CHLORIDE WITH DIHYDROXY COMPOUNDS*

A. N. PUDOVIK and E. A. ISHMAYEVA

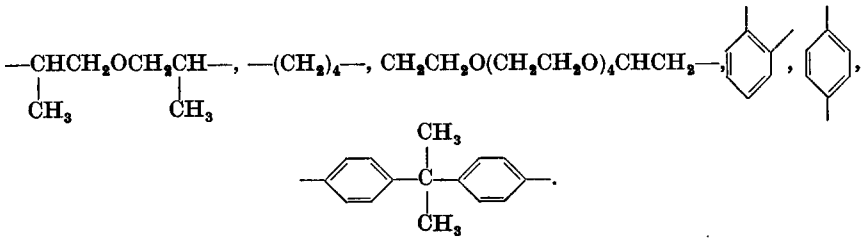
V. I. Ulyanov-Lenin State University, Kazan'

(*Received* 4 *July* 1964)

THE preparation of phosphorus-containing polyesters by polycondensation of the diacid chlorides of phosphinic acids with glycols and aromatic dihydroxy compounds has been described only recently [1–4], and is of considerable theoretical and practical interest. With aliphatic glycols viscous liquids are formed and with aromatic dihydroxy compounds the products are solid polymers. The radical attached to the phosphorus atom has a marked effect on the properties of the polyesters, particularly those obtained from aromatic dihydroxy compounds. So far comparatively few phosphorus-containig compounds have been used in polycondensation reactions, mainly the acid chlorides of methyl-, butyl-, chloromethyl-, vinyl-, phenyl-, phenoxy-, *p*-nitrophenoxy- and *p*-methoxyphenoxyphosphinic acids. We felt that would be of interest to extend this series to include 4-chlorobut-2-enephosphinyl chloride (CBPC), with a radical of four carbon atoms, containing a chlorine atom and a double bond. We felt that by dehydrochlorination of polyesters based on this acid chloride it would be possible to obtain polyesters containing butadiene radicals attached to phosphorus, which would be very reactive systems. We studied the polycondensation of CBPC with aliphatic glycols and aromatic dihydroxy compounds and found the effect of the nature of these compounds and of certain other factors on the rate of reaction:



where R = $-CH_2CH_2-$, $-CH_2CH_2OCH_2CH_2-$, $-CH_2CH(CH_3)-$,



* Vysokomol. soyed. 7: No. 5, 808–812, 1965.