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Reaction of trialkyl phosphites with α , β -unsaturated acids

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Abstract

1. The addition of trialkyl phosphites to α , β -unsaturated acids can proceed via the prior protonization of the trialkyl phosphites by the unsaturated acid. The dialkylphosphorous acids and unsaturated acid esters that are formed here react with each other to give the trialkyl esters of the corresponding β -phosphonocarboxylic acids. 2. Not excluded is the possibility that the above indicated reaction can also proceed simultaneously by the mechanism proposed by Kukhtin and Kamai, but without the formation of the cyclic phosphorane as the intermediate step. 3. Together with the trimethyl ester of β -phosphonopropionic acid, the cyclic anhydride of the methyl ester of β -phosphonopropionic acid is formed when trimethyl phosphite is reacted with acrylic acid. The cyclic anhydride is obtained in much larger amounts in the presence of acetic acid. The corresponding cyclic anhydride was isolated in the same manner when triethyl phosphite was reacted with methacrylic acid. © 1971 Consultants Bureau.

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