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## **$\beta$ -Keto phosphonic esters Communication 3. Structures of the products of the reaction of some halo ketones with triethyl phosphite and with sodium diethyl phosphite**

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### **Abstract**

1. Reaction of triethyl phosphite with chloro- and bromo-acetones\* and 1-bromo-2-butanone gives the corresponding  $\beta$ -keto phosphonic esters. 2. The products obtained by methylating the potassium derivatives of diethyl acetylphosphonate and of diethyl 1-methylacetylphosphonate with methyl iodide are  $\alpha$ -keto phosphonic esters. 3. Reaction of sodium diethyl phosphite with chloro- and bromo-acetones and 3-bromo-2-butanone gives epoxy phosphonic esters. The structures of these were proved by confirmatory synthesis and by analysis of their Raman spectra. 4. In spite of Kreutzkamp and Kayser's results, reaction of sodium diethyl phosphite with chloro- or bromoacetone does not give an unsaturated ester (diethyl isopropenyl phosphate); the products are diethyl epoxy-1-methylethylphosphonate and diethyl acetylphosphonate. 5. The product of the reaction of 5-chloro-2-pentanone with sodium diethyl phosphite is diethyl tetrahydro-2-methyl-2-furylphosphonate. © 1959 Consultants Bureau Inc.

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