

## Reactions of bis(chloromethyl) ethers of glycols with sodium alkoxides

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### Abstract

1. A study has been made of the chloromethylation of 1,2- and 1,3-propanediols, and this has resulted in the preparation of the two corresponding bis(chloromethyl) ethers, which have not been described previously. 2. A study has been made of the reactions of the bis(chloromethyl) ethers of ethylene glycol, 1,2- and 1,3-propanediols, 1,3-butanediol and 2-butynediol with the methoxide, ethoxide, isopropoxide, butoxide, and isobutoxide of sodium. These reactions have resulted in the preparation of the corresponding bis(alkoxymethyl) ethers of the glycols, and also the mono(isopropoxymethyl) and mono(isobutoxymethyl) ethers of ethylene glycol, the mono(butoxymethyl) ether of 1,2-propanediol, and the compound  $C_2H_9OCH_2OCH_2CH_2OCH_2OCH_2CH_2OCH_2OC_2H_9$ . 3. It has been established that in the reactions of all of the investigated bis(chloromethyl) ethers of glycols with sodium butoxide and with sodium isobutoxide, by-products, i.e., dibutoxymethane and diisobutoxymethane, are formed. Also, in the reactions of the bis(chloromethyl) ether of ethylene glycol with sodium isobutoxide and of the bis(chloromethyl) ether of 1,2-propanediol with sodium butoxide, not only the corresponding acetals and bis(alkoxymethyl) ethers were formed, but also the corresponding mono(alkoxymethyl) ethers of these glycols. As a result of the reaction of the bis(chloromethyl) ether of ethylene glycol with sodium butoxide, in addition to dibutoxymethane and the bis(butoxymethyl) ether of the glycol, the following compound was obtained:  $C_4H_9OCH_2OCH_2CH_2OCH_2OCH_2CH_2OCH_2OC_4H_9$ . 4. Hypotheses have been advanced in explanation of the formation of the acetals, monoethers of the glycols, and the substance  $C_4H_9OCH_2OCH_2CH_2OCH_2OCH_2CH_2OCH_2OC_4H_9$ . © 1953 Consultants Bureau, Inc.

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