

# EFFECT OF SOLVENT ON THE ESTERIFICATION BETWEEN 1,1,1-TRIFLUOROCHLOROETHANE AND ALKALINE ACETATE

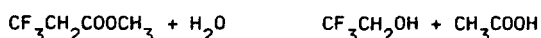
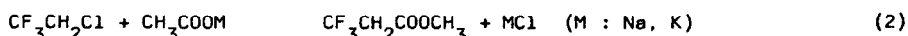
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2,2,2-trifluoroethanol ( $\text{CF}_3\text{CH}_2\text{OH}$ ) has found an increasing number of drug, chemical and engineering applications. It has been generally produced by reduction of trifluoroacetyl chloride (1) or acetolysis of 1,1,1-trifluoro-2-chloroethane followed by hydrolysis of 1,1,1-trifluoroethylacetate (2).



The authors investigated the process (2), especially, the effect of solvents on the acetolysis of  $\text{CF}_3\text{CH}_2\text{Cl}$ . The reaction between  $\text{CF}_3\text{CH}_2\text{Cl}$  and alkaline acetate was carried out in the presence of various solvents in the autoclave. Both the protic and aprotic solvents were examined.

When the protic solvent such as water or ethylene glycol was used, although the  $\text{CF}_3\text{CH}_2\text{OH}$  could be directly prepared, the reaction rate was low and resulted in low yield of product and moreover corrosive acetic acid which would damage the reaction vessel was simultaneously produced. On the other hand, when the polar aprotic solvent was employed, the reaction rate increased and high yield of esterification was attained, particularly, sulfolane, N-methyl-2-pyrrolidone and N,N-dimethylacetamide gave good result. The mechanism of esterification in these polar aprotic solvents will be also discussed.