

A STUDY ON THE RECOVERY OF ALKALINE PERFLUOROSULFONATES

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Some industrial processings, i.e. alkylation processes with perfluorosulfonate esters, generate amounts often not negligible of alkaline perfluorosulfonates as by-products, in solution or solid form. This material is not always immediately reusable and can give rise to some problems of storage or dumping. A system has been studied in order to transform these alkaline salts in the corresponding esters that are used as alkylating agents, making possible in this way to recycle them in the same industrial process. For the obtainment of the esters the following processes have been experimented:

- formation of the corresponding perfluorosulfonyl chloride by the use of various chlorinating agents (PCl_5 , SOCl_2 , etc.);
- electrofluorination in anhydrous hydrogen fluoride in order to obtain the corresponding perfluorosulfonyl fluoride;
- formation of anhydrides;
- reactions of transesterification.

The alkaline perfluorosulfonates employed were the potassic salts of the perfluorobutansulfonic, perfluorooctansulfonic and perfluoro-p-ethylbenzensulfonic acids. The electrofluorination in anhydrous hydrogen fluoride was particularly interesting since, instead of the expected perfluorosulfonyl fluoride, the corresponding fluorocarbon has been produced.