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CATALYTICAL FLUORINATION WITH HF OF 1,2-DICHLOROTETRAFLUOROETHANE AND OF 1,1-DICHLOROTETRAFLUOROETHANE

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The catalytic fluorination in a gaseous phase with HF on Cr_2O_3 of CCl_2F_2 - CClF_2 (A) and of $\text{CCl}_2\text{F}-\text{CF}_3$ (B) was investigated in view of defining the influences of the operating parameters temperature, contact time and reagents ratio on the general reaction trend; the work aimed at identifying optimum operating conditions to obtain chloropentafluoroethane (C). The tests were carried out on the basis of a statistical program and the mathematical elaboration of the experimental data allowed the definition of the relationships by which it is possible to foresee conversions of A and B, yield of C and concentrations of the reaction products such as $\text{C}_2\text{Cl}_3\text{F}_3$, C_2ClF_5 and C_2F_6 in terms of the above parameters.

The curves and the response surfaces, representing the trend of the quoted dependent variables, were thus obtained.

Moreover, the level maps for A and B conversions, for yields in C and for C per cent in the organic product were represented.

The experiment on the whole evidenced that the reactivity of isomer A is higher than that of isomer B and that the above quoted dependent variables are affected appreciably by temperature and to a lower extent by contact time and reagents ratio.