

SOME ASPECTS OF THE CHEMISTRY OF CHLOROFLUORO-OLEFINS WHICH CONTAIN ALLYLIC CHLORINE ATOMS

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Routes to perfluoroallyl chloride, $\text{CF}_2\text{:CF.CF}_2\text{Cl}$, and to cis- and trans-1-chloro-hexafluoro-2-trifluoromethyl(but-2-ene), $(\text{CF}_2\text{Cl})(\text{CF}_3)\text{C:CF.CF}_3$ are reported, and their susceptibility to attack by nucleophiles discussed; the allylic chlorine atoms in these olefins are the controlling factor in determining the products obtained.

The conversion of 3-chloropentafluoropropene into a series of perfluoroallyl derivatives of general formula $\text{R.CF}_2\text{.CF:CF}_2$ [$\text{R} = (\text{CF}_3)_3\text{C-}$, $\text{CF}_3\text{O-}$, $\text{C}_6\text{F}_5\text{-}$, I- , MeO- , etc.] is described, and the further chemistry of 3-chloropentafluoropropene and its derivatives outlined.

Water reacts rapidly with $(\text{CF}_2\text{Cl})(\text{CF}_3)\text{C:CF.CF}_3$ to give $\text{CF}_2\text{:C}(\text{CF}_3)\text{.CFCl.CF}_3$ or $\text{CF}_3\text{.CO.CH}_2\text{.CF}_3$. Methanol affords $\text{CF}_2\text{:C}(\text{CF}_3)\text{.CFOMe.CF}_3$ and $(\text{MeOCF}_2)(\text{CF}_3)\text{C:CF.CF}_3$ as initial products, with subsequent secondary products such as $\text{CF}_3\text{.CFOMe.CH}(\text{CF}_3)\text{.CF}_2\text{OMe}$, $(\text{CF}_3)(\text{MeO})\text{C:C}(\text{CF}_3)\text{.CF}_2\text{OMe}$, $\text{MeO.CF:C}(\text{CF}_3)\text{.CFOMe.CF}_3$, $(\text{CF}_3)(\text{MeO})\text{CF.CH}(\text{CF}_3)\text{.CO}_2\text{Me}$, and $(\text{CF}_3)(\text{MeO})\text{C:C}(\text{CF}_3)\text{.CO}_2\text{Me}$. The influence of allylic chlorine and of reaction time on the formation of these products, and mechanistic pathways for their formation are considered.