P-36

REACTIONS OF VINILYDENE FLUORIDE-HEXAFLUOROPROPENE COPOLYMERS

Piergiorgio Bonardelli, Maurizio Pianca, Graziella Chiodini and Giovanni Moggi*

Montefluos C.R.S., Via Bonfadini 148, I-20138 Milan (Italy)

The alkaline dehydrofluorination of Vinylidene Fluoride (VDF) - Hexafluoropropene (HFP) copolymers in dimethylacetamide has been reported by Schmiegel [1]. Basing on the reduction of ^{19}F NMR signals related to HFP-VDF-HFP sequences and the apprearance of small low-field resonances attributed to allilic CF_3, he suggested that the reaction takes place at HFP-VDF-HFP sequences, to give conjugated dienes and α, β unsaturated ketones deriving from OH^- addition to dienes.

This communication presents a study of the dehydrofluorination of VDF-HFP copolymers in THF, by alcoholic KOH. The reaction has been followed by analysis of the fluoride ion in solution. The intrisinc viscosity of the polymer did not change after elimination of up to 7.9×10^{-4} moles F^- per g polymer. Higher reaction extents resulted in a decrease of intrinsic viscosity, suggesting polymer chain degradation.

The reation products exhibit IR absorptions at 1720, 1684 and 1638 cm^{-1}, that can be attributed to isolated double bonds and/or carbonil groups. No IR bands indicate conjugation, that is also not evidenced by UV spectra.

^{19}F NMR spectra are similar to those reported by Schmiegel, but show a larger variety of new CF_3 signals, both in the low-field and the usual CF_3 regions.

The Tg of the unsaturated polymers and the reation of these products with phenate anions have also been studied.

1 W.W. Schmiegel, Kautsch. Gummi Kunstst., 31, 137, (1978).