

STUDIES ON THERMAL AND RADIATIVE DEGRADATION OF UNPLASTICIZED POLYVINYL CHLORIDE

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Abstract. *The paper studies the degradation of Unplasticized Polyvinyl Chloride (UPVC) due to the influence of the temperature and nuclear γ radiations in the domain 0-50 Mrad. Differential Scanning Calorimetry (DSC) studies were performed to determine the degradation of PVC for temperatures ranging between 0 and 160°C. We determined the glass transition domain in order to emphasize the changes due to temperature and nuclear γ radiations. Measurements of electrical characteristics and mechanical characteristics for UPVC and Plasticized Polyvinyl Chloride (PPVC) have allowed a comparative study. Thermal degradation was manifested by the increase of the glass transition temperature due to the emission of additives (particularly phthalates). In the case of the dose of 5.44 Mrad of nuclear gamma radiations, important changes occur in UPVC. The degradation caused by irradiation with doses of 16.0 and 50.0 Mrad have been emphasized.*

Keywords: Unplasticized and Plasticized PVC, additives, degradation, temperature, γ radiations.

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