

Effects of Lanthanum Carboxylates in the Thermal Treatment of PVC

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ABSTRACT: The degradation of powdered PVC containing La-stearate and La-laurate as thermal stabilizers has been studied. Thermal treatment was carried out at 180° in the presence of air. Thermal stabilities of mixtures have been studied on the basis of evolved hydrogen chloride determined potentiometrically. The stabilization rule of the studied carboxylates was compared with that of previously studied stabilizers.

INTRODUCTION

Efficient stabilization of PVC is a vital condition for practical uses of this polymer. During thermo-oxidative degradation HCl gas liberated from the polymeric chains⁽¹⁻⁴⁾. The generally accepted concepts of thermal stabilization of PVC by carboxylates is explained in terms of substitution reactions, where labile chlorine atoms are replaced by groups which required for their detachment an activation energy higher than the activation energy of dehydrochlorination (dhc)⁽⁵⁻⁹⁾. On this basis the rate of HCl liberated throughout degradation affords a suitable parameter to study PVC degradation at elevated temperatures and its stabilization⁽¹⁰⁻¹²⁾.

The aim of this work is to study the stabilizing effects of some lanthanides carboxylates on PVC by measuring the rate of HCl liberated throughout degradation of PVC as function of time.