THE FORMATION OF POLYESTER-MELAMINE / URETHANE COATINGS

Abstract: One of the cost-effective ways to significantly influence the coating formation process and the performance of polyester coatings is to use a cross-linking agent containing an isocyanate. Methylated melamine-formaldehyde with a high degree of alkylation (HMMM) and blocked hexamethylene diisocyanate (HDI) were used for polyester resin cross-linking. The influence of cross-linking agents on coating performance and characteristics was studied using Small Amplitude Oscillatory Rheometry (SAOS), Thermogravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC) techniques. The cross-linking degree of the polyester system containing the mixture of HMMM and HDI was shown to be significantly lower than that of the systems where only one of the cross-linking agents was used. High loss modulus values \( G'' \) in the system with HMMM as compared to the system with HDI can be explained by a less dense three-dimensional network structure. With the decrease of HMMM and HDI the formation of three-dimensional network starts at a higher temperature. At the same time, when only the hardener content is reduced it leads to the decrease of the cross-linking degree.

Keywords: coating, polyester, cross-linking

PROCES SIECIOWANIA HYBRYDOWYCH POLIESTROWO – MELAMINOWO / URE- TANOWYCH WYROBÓW LAKIEROWYCH

Słowie kluczowe: powłoka, poliester, sieciowanie