OP-A-995

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INVESTIGATION OF THERMAL BEHAVIOR OF LDPE/LLDPE/NANOCLAY NANOCOMPOSITES PREPARED IN A TWIN SCREW EXTRUDER USING THE NOVEL METHOD OF WATER INJECTION.

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LDPE/LLDPE/Nanoclay nanocomposites, with different types of compatibilizers prepared in a twin screw extruder using water injection method, have been studied by thermogravimetry. Unlike conventional method Water/Clay suspension was injected into the extruder to form a better dispersion of nanoclay particles which have been proved to be a feasible way by XRD patterns. Response surface methodology of design of experiments was used to optimize the level of three factors (Clay content, Feeding rate & Alkyl ammonium salt type). The following parameters have been determined from the thermogravimetric (TG) and differential thermogravimetric (DTG) curves of the samples: T10, T50, Tmax, the degree of degradation at 450 C and the residue. The study of degradation kinetics of the neat polymers and their nanocomposites has allowed the determination of the activation energy of degradation, the rate of degradation and the reaction order. Moreover, the effect of clay on the degradation behavior of the polymer matrix is fully investigated.