



INFLUENCE OF THE FUNCTIONALIZING AGENT ON THE LLDPE FILMS PROPERTIES

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The polymers films have been increasingly used as packaging materials because their availability at relatively low cost and their properties such as mechanical, chemical and physical, for example the tensile strength, good barrier to oxygen, heat sealability, meanwhile the most widely films used are the polyolefins films that presents hydrophobicity a surface chemically inert and a low surface energy causing problems to be coated, printed or laminated. Several surface treatments are realized to intend to increase this surface energy, including chemical and physical process. The techniques used for films are: flame treatment, corona discharge, chemical modification, plasma and the irradiation of particle beam (electrons, ions, neutrons, photons). Among these treatments the corona discharge is the most used in the thermoplastic films. So, this work aims to increase the surface energy of LLDPE films using two functionalizing agents (FA) in 1 and 4% wt. The films with and without FA were processed in a single-screw blown film extruder with temperature profile 160-170-200°C and 500 rpm with regulating the films thickness of 30µm. After extrusion, the films were characterized by thermogravimetry analysis (TGA), melt flow index (MFI), FTIR spectroscopy, contact angle with two different liquids (water and diiodo methane) and surface energy. Results showed that functionalized films presented a higher surface energy when compared to the untreated film, the melt flow index was inferior in the films of 4% wt of FA, indicating that the functionalizing agent increased the viscosity probably by their chemical characteristics, the FTIR spectra showed that the LLDPE films treated present a chemical modification and was more pronounced in the films with 4% of FA. In the full paper will be showed the complete work with all properties evaluated.