

IONIZING RADIATION INFLUENCE IN LOW DENSITY POLYETHYLENE WITH CHARCOAL BLACK PIGMENT

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In this work we have studied the development of a charcoal black pigment which has characteristics similar to those already used in the market of thermoplastic processing. Nowadays the most widely used black pigment in thermoplastic processing industries is carbon black, that such obtaining process, generates much toxic waste and when released into the atmosphere, it increases air pollution. The aim of this study was to obtain a charcoal black pigment, studying the incorporation of this pigment obtained in low density polyethylene, (LDPE) and also study the influence of ionizing radiation in LDPE with black pigment. Thus, charcoal and LDPE were used as raw-material. Subsequently, the black pigment was incorporated into LDPE obtained by the injection process. The samples were irradiated by electron beam at doses of 100, 200, 300 and 400kGy. Then the non irradiated and irradiated samples were characterized by mechanical analysis. The black pigment was easily obtained from a renewable source, with low cost and presented compatible colorimetric properties and approached to carbon black. The incorporation of the pigment into the polymer matrix during the injection process was easy, distributing it evenly. Regarding the irradiated samples it can be said that there was an increasing in the majority of the properties, previously studied. Depending on the type of piece to be manufactured and which properties are more important, it can be said that one can irradiate the black pigment in LDPE with more suitable doses.