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**THERMAL, TENSILE AND RHEOLOGICAL PROPERTIES OF LOW DENSITY POLYETHYLENE (LDPE) IRRADIATED BY GAMMA-RAY IN DIFFERENT ATMOSPHERES**

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The aim of this paper is to investigate rheological properties of low-density polyethylene (LDPE) modified by ionizing radiation (gamma rays) in different atmospheres. The gamma radiation process for modification of commercial polymers give new physical-chemical and mechanical properties, is a technique widely studied. This technique is to promote the scission of polymer chain with appearance of free radicals via gamma radiation, which can recombine, providing its annihilation, branching or crosslinking.

This polymer was irradiated with gamma source of <sup>60</sup>Co at doses of 5, 10, 20, 50 or 100 kGy at a dose rate of 5 kGy / h. The changes in molecular structure of the branched polyethylene, LDPE, after gamma irradiations were evaluated using thermogravimetric analysis (TGA) and tensile machine and oscillatory rheology. The results showed the variations of the properties depending on the dose at each atmosphere.