

# Effects of Environmental Aging in Polypropylene Obtained by Injection Molding

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UV light, heat, and pollutants can interact with Polypropylene (PP) molecules, mainly with the tertiary carbon producing free radicals which can react with oxygen producing changes in its properties [1]. PP has outstanding physical and chemical properties, and a good processability at very low market price. In addition, PP is extensively used for manufacturing various kinds of products, however due to its large scale consumption a lot of waste is generated at the end of their life cycle to the environment with low rate degradation [2]. This study has the objective of comparing the environmental exposure of PP (spheres) neat and PP (spheres) irradiated with 20 kGy. Dumbbell samples were manufactured by injection molding and exposed to the environment during 90 days. Another one set was exposed to gamma irradiation at 20 kGy total dose and exposed at the same conditions. The samples were characterized by Scanning Electron Microscopy (SEM), Differential Scanning Calorimetry (DSC) and Fourier Transform Infrared Spectroscopy (FTIR). The dumbbell samples PP 20 kGy, after environmental aging, showed oxidation with presence of cracks more intensely than PP spheres neat.

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