

## **P6. HIGH MELT STRENGTH POLYPROPYLENE (HMSPP) NANOCOMPOSITE UNDER PHOTO AND THERMAL AGEING**

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HMSPP was synthesized by gamma irradiation under acetylene atmosphere. The nanocomposite of HMSPP with montmorillonite clay was obtained by twin-screw extrusion. The compatibilizer agent was the polypropylene graft with maleic anhydride. The samples were submitted to photo and thermal ageing. After ageing assay, the thermal properties of the samples were analyzed by Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA). The chemical alterations were investigated by Fourier Transformed Spectroscopy (FT-IR), Carbonyl Index (CI) and Melt Flow Index (MFI) and Energy Dispersive Spectroscopy (EDS) through the technique of Scanning Electron Microscopy (SEM). When the nanocomposites were submitted to photo ageing, they showed higher decomposition level at 1 year of assay. At lower concentrations (<5 wt%) the higher values of MFI corroborate with the chain scission mechanism of the polymer. This evidence was confirmed by CI values and oxidation level of surfaces observed by EDS spectroscopy. Under photo ageing the sample with higher content of clay (10 wt%) showed more intense cracks in the surface compared to the others, while, under thermal ageing the same sample showed more intense cracks in the surface only after the period of 56 days of assay. The results suggested that the ageing occurs with scission and oxidation in the terminal of chains.