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ASSESSMENT OF THE SPECIFIC POLIPROPHYLENE DEGRADATION FOR TISSUE NONWOVEN

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Disposable polymeric products have a short life cycle and take years to degrade on the environment. The degradation of these materials is a critical point for the planet, which discusses a sustainable world, because more and more the volume of plastic waste grows. First of all, realizing specific tests turned to degradation and processing of polymers is an important step to know what can be done to avoid the waste increasing. Polymer processing involves high temperatures, shearing, which can be modified to compare thermomechanicals and thermo-oxidative differences, differing too crosslinking, crystallization and chain scission processes occurring simultaneously in the processing. The goal of this project was to evaluate the thermal and mechanical oxidative degradation level of specifics nonwoven and film polypropylene (PP), when submitted to extrusion process with different conditions. On a first step, was chosen two specific PPs for nonwoven tissue, classified in two different names: A (lower melt flow rate, MFR) and B (higher MFR). Samples were processed on a simple screw extruder (L/D= 22) with four combinations of processing parameters (temperature profile and screw speed). From this, for determination of the most degradative condition, were made MFR, thermal analysis DSC (cristalinity grade tand OIT). Preliminarily results on PP-A the most intense degradation was on the PP with lowest screw speed and temperature profile, with the lowest OIT and highest degree of cristallinity. On PP-B it happens on PP with highest screw speed and temperature profile. In the full paper will be showed the complete work with the thermal properties.