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INFLUENCE OF THE ORGANICALLY MODIFIED CLAY CONCENTRATION ON THE MECHANICAL PROPERTIES AND MORPHOLOGY OF POLYPROPYLENE/CLAY NANOCOMPOSITES

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Polymer/Clay nanocomposites have attracted great interest of researchers of the whole world. In Brazil, several studies are being carried out using bentonite clay, and significant results were obtained by projects that used these clays, which are extracted from the Northeast region. Therefore, the aim of this research is to continue the studies on polymer/clay nanocomposites by blending polypropylene (polymer matrix) and bentonite clays from Paraíba state based on recent developments of polymer-matrix nanocomposites, and highlighting important issues related to the clay surface modification with surfactant in order to improve the compatibility between the inorganic clay and the organic polymer. This study was conducted in three stages: first, the effect of the concentration of different clays on the properties of polypropylene/Clay nanocomposites was evaluated. In the second, the effect of the compatibilizers on the properties of the nanocomposites was investigated, and finally the rheological properties of the nanocomposites were evaluated using a parallel plates oscillatory rheometer. The results showed a very significant improvement in both mechanical and morphological properties of the nanocomposites with the increase in the clay content. Compatibilized PP/Clay systems showed higher impact strength and thermal properties than the uncompatibilized ones, while the elastic modulus was maintained.