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POLYPROPYLENE-MONTMORILLONITE NANOCOMPOSITES: STRUCTURAL, MORPHOLOGY AND MECHANICAL PROPERTIES

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The objective of this work is to study the properties of nanocomposites based on polypropylene (PP) and commercial organophilic montmorillonite, prepared by melt intercalation. Because of the non polar character of PP, the polypropylene-graft-maleic anhydride (PP-g-MA) was used as compatibilizer. Materials containing 2.5%, 5%, 7.5% and 10% of clay and PP, and two extra compositions containing only PP and 15% and 30% of PP-g-MA were processed using a twin-screw extruder. The level of clay dispersion was characterized by X-ray diffraction, showing exfoliated or intercalated structure for different concentrations of clay. The crystallization behavior was studied by differential scanning calorimetry (DSC) and polarizing optical microscopy (POM) with hot stage. Kinectic of crystallization was studied by Avrami's equation and n and k parameteres were determinated. Tensile properties were also studied and presented a moderate improvement with increase on clay concentration.