



STUDY OF STRUCTURE AND RHEOLOGICAL, MECHANICAL AND THERMAL PROPERTIES OF POLYLACTIDE/CLOISITE 30B NANOCOMPOSITES ELABORATED BY MELT BLENDING.

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This paper reports the study of melt-state and solid state mechanical properties and thermal stability of polylactide layered silicate nanocomposites elaborated by melt intercalation as a function of clay content. Wide angle X-ray scattering results and transmission electron microscopy observations indicated that the clay was finely distributed in the polylactide matrix. Contrary to non linear mechanical properties, thermal and linear mechanical properties were shown to increase with increasing clay fraction. The nanoindentation measurements confirm the significant increase of linear mechanical properties previously observed by tensile tests. The good correlation of linear mechanical properties at the macro- and nanometric scales is explained by the high dispersion degree of the nanofiller in the biodegradable polymer matrix.