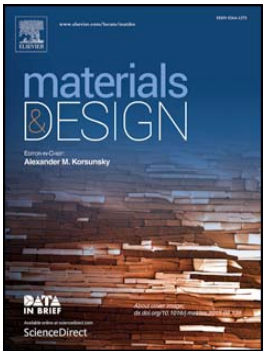

Blown nanocomposite films from polypropylene and talc. Influence of talc nanoparticles on biaxial properties

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Blown nanocomposite films from polypropylene and talc.

Influence of talc nanoparticles on biaxial properties

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Abstract

Blown films based on polypropylene (PP) and talc nanoparticles (0, 1, 3 and 5 wt%) were obtained at pilot scale. Good nanoparticles dispersion and distribution was achieved without thermooxidative degradation. Nanocomposite films presented a higher crystalline degree than PP ones due to the contribution of both talc particles, acting as PP nucleating agents, and process crystallization induction. Mechanical properties were determined along machine and transverse direction (MD and TD, respectively) revealing that all films were elastic, tough, ductile and capable to form neck, but films presented higher elongation at break in MD than in TD. Results were interpreted in terms of changes in biaxial crystallization induced either by particles or by process, following a systematic experimental analysis. The issues were closely related to the development of blown