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AN EXPERIMENTAL STUDY ON MECHANICAL AND THERMAL BEHAVIOR OF ACRYLONITRILE BUTADIENE STYRENE ENHANCED WITH FIRE RETARDANTS

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Abstract

Nine samples of recycled acrylonitrile butadiene styrene (ABS) with organic montmorillonite and fire retardants adding were combined to prepare ABS copolymer nanocomposites. A very good dispersion of clay and fire retardant was noticed in the recycled ABS (reABS) matrix. The effect of montmorillonite and fire retardants on the mechanical and thermal properties of the reABS nanocomposites was further investigated. Experimental results showed that the addition of organic montmorillonite increased the Young modulus and decreased the tensile strength. As a conclusion of mechanical tests it can affirm that the best overall mechanical results are obtained for reABS 1% OMT 18% FR. The thermal analysis clearly shows that the reABS-OMT-FR nanocomposites have higher thermal stability than the pure reABS. Also, the reABS-OMT-FR char mass and the glass transition temperature are larger than those for pure reABS.

Key words: acrylonitrile butadiene styrene (ABS); DSC; fire retardant; mechanical; montmorillonite; TGA

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