IMPROVING OF SOME PHYSICAL-MECHANICAL PROPERTIES OF NITRILE RUBBER BLEND BY IONIZING RADIATION

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ABSTRACT

Mechanical, thermal, physical, as well as morphological properties of thermoplastic elastomers terblends by the combination of NBR/PVC blend as a matrix and a third polymer namely, polypropylene or polyethylene or polychloroprene rubber have been studied. However, many of these polymer blends are incompatible or immiscible. They often exhibit poor mechanical properties. These problems, associated with immiscible polymer blends, could be alleviated by using different techniques like compatibiliztion and radiation vulcanization. The effect of blend ratio, the role of crosslinking agent as compatibilizer and irradiation dose were the main effects to be studied their influence on different properties. The obtained results showed that the tensile strength and solvent resistance of the terblend JSR/CR containing low content of polychloroprene (30-wt %) have been improved after irradiation to doses of 100 kGy Nevertheless, the thermal stability have been improved after irradiation to lower doses, namely 30 and 50 kGy. In contrast, thermal stability as well as the tensile strength, of the terblend $LLDPE_{70}/JSR_{30}$ have been improved, either before or after irradiation (up to 100 kGy), in presence of the TMPTMA. And finally, the incorporation of low content of JSR, namely 30-wt%, to PP in presence of 5 phr of TMPTMA and irradiated to low irradiation dose, namely 30 kGy resulted in improving the thermal stability as well as the physical and the tensile strength of the terblend.

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