

EFFECT OF MOLECULAR SIEVE INCORPORATED INTO FLUOROELASTOMER ON THE MECHANICAL PROPERTIES

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The nanoparticle incorporation improves mechanical and thermal properties, and also improve gas barrier property in a polymeric matrix. This incorporation can be facilitated by elastomer solubility, which permits a homogeneous distribution of the nanoparticle. In this work molecular sieve with 4A was incorporated into fluoroelastomer matrix at 0.5, 1, and 2% weight. In a Banbury equipment was carried the nanoparticle and fluoroelastomer, in order to obtain nanocomposites. After that was performed the vulcanization process to obtain films with 0.5mm of thickness. The films were characterized by mechanical tests and swelling degree to determine the modification on mechanical properties of the fluoroelastomer matrix. The results showed an increase in the stiffness and in the tension at break values with the increase of dose and amount incorporation. The swelling values showed higher changes at high dose of 20kGy with toluene and the opposite effect with MEK solvent. These results demonstrated the possibility to use these material to absorb CO₂ and maintain the mechanical properties.