

Study of Rheological, Physic-Mechanical and Morphological Properties of Nitrile Butadiene Rubber Loaded with Organo-Bentonite

Authors : Doaa S. Mahmoud, Nivin M. Ahmed, Salwa H. El-Sabbagh

Abstract : The rheometric characteristics and physicomechanical properties of bentonite / acrylonitrile-butadiene rubber (NBR) were investigated. The influences of adding bentonite (Bt) and / or modified bentonite (organo-Bt) to the rubber were observed. Scanning electron microscopy (SEM) showed that the rubber chains may be confined within the interparticle space and the Bt particles presented a physical dispersion in NBR matrix. Bentonite (Bt) was modified with tetra butyl phosphonium bromide (TBP) in order to produce organo-Bt. The modification was carried out at 0.5, 1 and 2 cation exchange capacity (CEC) of bentonite. Results showed that the maximum torque of organo-Bt / NBR composite increases at high bentonite loading. The scorch time (tS2) and cure time (tC90) of the organo-Bt / NBR composites decreased simultaneously relative to those of the neat NBR. The prepared composite exhibited significant improvement in mechanical compared with that of neat NBR.

Keywords : acrylonitrile-butadiene rubber, bentonite, composites, physico-mechanical properties

Conference Title : ICFPCMA 2017 : International Conference on Functional Polymers, Composites, Materials and Applications

Conference Location : Amsterdam, Netherlands

Conference Dates : August 07-08, 2017