P-18-1172

LINEAR VISCOELASTIC BEHAVIOR OF BLOCK POLYMERS OF STYRENE AND BUTADIENE SB AND SBS TYPES, AND THEIR PARTIALLY HYDROGENATED DERIVATIVES SEB AND SEBES, RESPECTIVELY.

Xicohtencatl-Serrano Hugo[1], Medina-Torres Luis[1], Herrera-Nájera Rafael[1*]

[1] *Universidad Nacional Autónoma de México. Facultad de Química. Departamento de Ingeniería Química.*

In general, the selection of polymers for the production of composite materials, such as polymer-modified asphalt and engineering plastics, depend on the molecular characteristics of the polymer, since they determine the interactions between the polymer and the other components of the composite, thus its properties. Molecular characteristics, such as polymer composition (wt % of styrene), elastomeric bock composition, blocks molecular weights (Mw, Mn, and Mz) and polymer chain architecture are important in determining the properties of styrene butadiene block copolymers, such as SB, SEB, SBS and SEBES. This document reports the linear viscoelastic behavior of two commercial polymers Solprene 1205 and 416 (SB and SBS, respectively) and two polymers produced as a result of the partial hydrogenation of SB and SBS (SEB and SEBES, respectively). The homogeneous hydrogenation of SB and SBS was carrying out with an organometallic catalyst based on titanocene and n-butyllithium that allows changing the composition of the elastomeric block while keeping the other molecular characteristics of the polymer. Polymers were analyzed through FTIR, GPC and rheometry to determine their composition, molecular weights and rheological behavior. Rheological measurements were accomplished using a rheometer (TA-Instruments, AR-G2) equipped with parallel plates (25 mm diameter and 0.5mm gap). All polymer samples were yielded to oscillatory shear flow at frequencies ranging from 0.1 to 300 rad/s at various temperatures (40-90 °C), under linear viscoelastic conditions ($\delta \approx 10$ %). Results indicate that molecular weight, chain architecture and composition of the elastomeric block are important in determining the rheological behavior of neat polymers.