

PC 02

EFFECT OF DIFFERENT QUATERNARY AMMONIUM SALTS USED IN THE TREATMENT OF A BRAZILIAN MONTMORILLONITE ON THE PROPERTIES OF POLYMER-LAYERED SILICATE NANOCOMPOSITES PREPARED BY MINIEMULSION POLYMERIZATION

A.M.C. Pereira^a, A.M. Santos^{*a}, R.P. Moraes^a, T.S. Valera^b, N.R. Demarquette^b

^a*Chemical Engineering Department, Engineering School of Lorena, University of São Paulo, Estrada Municipal do Campinho, S/N, 12.602-810, Lorena/SP, Brazil*

^b*Department of Metallurgical and Materials Engineering – Polytechnic School, University of São Paulo – USP, Av. Prof. Melo Moraes 246305508-900, São Paulo, SP - Brazil (*amsantos@dequi.eel.usp.br, <http://www.eel.usp.br/dequi>)*

In this work hybrid latexes of poly(styrene-*co*-butyl acrylate) were synthesized via *in situ* miniemulsion polymerization in presence of organically modified Brazilian smectite clay (Montmorillonite-MMT) with 3 and 6 wt% loading. In order to enhance the interaction between the clay and the monomer phase and also to improve its distribution and dispersion properties in the polymeric matrix, the MMT was submitted to organic modification. Three different ammonium salts: cetyltrimethyl ammonium chloride (CTAC), alquyl-dimethyl-benzyl ammonium chloride (Dodigen) and dioctadecyl-dimethyl ammonium chloride (Praepagen), were evaluated as organic modifiers. The evaluation was done in terms of the latex colloidal stability, reaction's kinetics and final properties of the hybrid material. The hybrid material's final properties were evaluated in terms of mechanical properties, thermal properties and MMT's basal spacing. In addition, microscopy analyses were carried in order to visualize the composite microstructure. The characterizations used in this work include dynamic light scattering (DLS), transmission electron microscopy (TEM), dynamical-mechanical analysis (DMA), thermal gravimetric analysis (TGA) and X-ray diffraction (XRD). Differences in material's properties were observed among the clays modified with the different ammonium salts. The results were discussed as function of the organic modifier molecular structure.