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STUDY OF VISCOELASTIC PROPERTIES OF EVA/PVC/CLAY NANOCOMPOSITES USING NLREG SOFTWARE

A. Gehlen^a, H. L. Ornaghi Jr.^b, M. Zeni^a, A. J. Zattera^{a*}

^a Laboratory of Polymers, Center of Exact Sciences and Technology (CCET), Caxias do Sul University (UCS), Caxias do Sul, RS, Brazil, ^b PPGEM, Laboratory of Composite Materials (LACOMP), Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil

* Corresponding author: ajzatter@ucs.br

In this study was processed in a co-rotating twin-screw extruder MH-COR-20-32-1200 (D = 20 mm, L/D = 32) nanocomposites containing 85% of EVA-28, with 10% weight of PVC and 5% weight of montmorillonite clay. It was incorporated three different types of clays: Cloisite® Na⁺, 15A and 30B at two speed processing (200 and 400 rpm). The samples were analyzed by oscillatory rheometry and from the data, obtained the relaxation and retardation spectra, stress relaxation stress and creep compliance via NLREG software. The relaxation and retardation spectra show three distinct peaks for all samples. The first peak is related (probable) to the EVA branching ethylene segments and physical interactions between VAc groups, the second peak is reported to the slipping and entanglement of the long polymeric chains that promote a delay related distribution of the molecular weight, type and size of the chain, and consequently, the third peak is due the mobility of individuals segments of the EVA chain between galleries modified clays. The stress relaxation modulus show higher retention for the samples containing the organophilic clays and the creep compliance (that show the deformation in function of time) show the similar trend for all samples studied, however lower deformation was obtained for the nanocomposites containing the 15A and 30B nanoclays, showing the reinforcement effect.