Interaction of Vulcanization and Reinforcement of Nanoclay (MMT) and Cellulose II on Dynamic Property of NR Characterized by RPA2000

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Nanocellulose (cell II) - nanoclay (MMT) hybrid composites, based on natural rubber latex, were prepared. The cellulose loading was fixed at 15 phr and montmorillonite clay content in 3 phr The materials used were: Natural rubber latex (solid content 61.9%) was kindly supplied by Comércio e Beneficiamento de Látex Talismã Ltda (São Paulo, Brazil); montmorillonite (MMT) (Volclay SPV 200) from Wyoming, EUA, was provided by Bentonit União Nordeste S. A.; and cellulose xanthate (cellulose content 9.8%) by Vicunha Têxtil S/A (São Paulo, Brazil).The vulcanizing ingredients and others additives were used as received. The semi efficient curing systems, was used in compositions with natural rubber (NR) of gum type and in NR/cel II/MMT nanocomposites. The nanocomposite was obtained by co-precipitation of elastomeric latex mixture with clay dispersion and aqueous solution of cellulose xanthate[1]. The rubber compounds were prepared in an open two-roll mill at a speed ratio of 1: 1.25, according to ASTM D 3182, at room temperature. The state of dispersion of cell II and MMT was studied by transmission electron microscopy (TEM) and X-ray diffraction (WAXS). Effect of nanoclay (MMT) load level, cellulose on curing process and viscoelastic behavior, interaction between vulcanization and reinforcement were characterized by Rubber Processing Analyzer (RPA2000). The results shown that the nanocomposite: NR/2phr MMT/15 phr Celullose shown the best results

REFERENCES

[1] Mariano , R.M., Picciani, P. H., Nunes, R. C., Visconte, L. L., 2010. Preparation, Structure, and Properties of Montmorillonite/Cellulose II/Natural Rubber Nanocomposites. Journal of Applied Polymer Science, 117, pp. 1168–1172.

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