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ELASTOMER NANOCOMPOSITES BASED ON NR/SBR/EPDM/NANOCLAY (MICROSTRUCTURE &MECHANICAL PROPERTIES)

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Natural rubber/Styrene Butadiene rubber/Ethylene Propylene Diene Monomer (NR/SBR/EPDM) blends of five different compositions (0/0/100), (10/10/80), 25/25/50), 40/40/20) and (50/50/0) with 1, 3, 5 and 7 phr organomodified nanoclay (Cloisite15A) were prepared by two-roll mill. The effect of organo-modified layered nanosilicates and composition on the cure characteristics, microstructure, mechanical, and rheological properties of the nanocomposites were studied. Results suggested the intercalation of polymer chains into the silicate layers which was evidenced by d-spacing results of X-ray diffraction patterns. TEM micrographs also directly confirmed XRD results. Mechanical properties of the nanocomposites depicted a nearly 40% percents increase respectively in the tensile modulus of 40NR/40SBR/25EPDM containing 7 wt% nanoclay.