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PREPARATION OF DYNAMICALLY VULCANIZED THERMOPLASTIC ELASTOMER BASED ON NBR/PVC REINFORCED WITH SWNT

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Dynamically vulcanized thermoplastic elastomers based on NBR/PVC with single walled carbon nanotube were acquired using a Brabender internal mixer at 160 degree of Centigrade and 50 rpm rotor speed. SWNT concentration varied from 0, 0.5, 1 and 1.5 Phr of NBR/PVC composites. Mechanical properties and hardness of NBR/PVC with different concentrations of SWNT were studied. The measured parameters (i.e., the Young's modulus, tensile strength, and elongation at break) varied with the concentration of SWNT. Both Young's modulus and tensile strength increased with increasing SWNT loading. The hardness degree (Shore D) increased with increasing the concentration of SWNT too. The rheological behavior of the SWNT NBR/PVC blends was assessed by dynamic mechanical thermal analysis (DMTA). The results revealed that intensity of tan ? decreased with SWNT loading, indicating better interaction between NBR/PVC and SWNT. Elastic modulus increased with increasing SWNT loading too. The morphology of blends was examined with transmission electron microscopy (TEM) and scanning electron microscopy (SEM) of extracted surfaces of the blends. At the result, mechanical and rheological properties of NBR/PVC improved with concentration of SWNT up to 1.5 Phr of NBR/PVC composites.