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PREPARATION OF NANOCOMPOSITES BASED ON BR/EPDM/ORGANOCLAY (MICROSTRUCTURE, CURE CHARACTERISTICS AND MECHANICAL PROPERTIES)

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Elastomer Nanocomposite based on BR/EPDM (50/50) and Organoclay (Closite 15 A) (0, 3, 5, 7, 10 phr) were prepared by two roll mill. The effect of nanoclay content on the microstructure, mechanical properties (tensile strength, modulus, elongation at break and abrasion resistance) and cure characteristics of nanocomposite samples were studied. According to X-ray diffraction results, the distance of silicate layers was expanded and polymer chains could penetrate between layers. Cure characteristics have shown that the organoclay accelerates the vulcanization reaction and, furthermore, gives rise to a marked increase of the torque, indicating that the elastomer becomes more crosslinked in the presence of the organoclay. The mechanical properties of samples were improved significantly by clay loading which can be considered as a consequence of good interaction established between polymer/clay. A further investigation of nanocomposite structure will soon be conducted using SEM and TEM analysis.