

**PROPERTIES OF POLYPROPYLENE/ETHYLENE-PROPYLENE DIENE
TERPOLYMER/NATURAL RUBBER (PP/EPDM/NR) TERNARY BLEND:
THE EFFECT OF DYNAMIC VULCANIZATION**

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ABSTRACT

This paper discusses the effect of dynamic vulcanization on the process development and some properties such as tensile properties, gel content and morphology of the polypropylene (PP)/ethylene-propylene diene terpolymer (EPDM)/natural rubber (NR) blends. Blends were prepared in several blend compositions in Haake Polydrive with temperature and rotor speed of 180 °C and 50 rpm respectively. Dynamically vulcanized blends show higher stabilization torque than unvulcanized blends counterparts. In term of tensile properties, the tensile strength and tensile modulus (stress at 100% elongation, M_{100}) of the vulcanized blends have been found to increase as compared with the unvulcanized blends. However, the elongation at break of the vulcanized blend is higher in the blend EPDM richer content compared with the NR richer content. These results can be attributed to the formation of cross-linking in rubber phase. The improvements in gel content of vulcanized blends have also proved the formation of cross-links in the rubber phase. Scanning electron microscopy (SEM) micrographs from the surface extraction of the blends support that the cross-links have occurred during dynamic vulcanization.

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