

# The Effects of Epoxidised Natural Rubber (ENR-50) on Cure Characteristics and Tensile Properties of Recycled Natural Rubber Catheter Filled Ethylene Propylene Diene Monomer (EPDM) Vulcanizates

## Abstract

The effect of epoxidised natural rubber (ENR-50) on cure characteristics and tensile properties (tensile strength, modulus at 100% elongation and elongation at break) of recycled natural rubber catheter filled ethylene propylene diene monomer (EPDM) vulcanizates were studied. The scorch time,  $t_2$  of EPDM/NRr blends with and without ENR-50 increased as NRr content increased while the cure time,  $t_{90}$  is decreased. However, with the presence of ENR-50 in EPDM/NRr blends, the  $t_2$  was longer and  $t_{90}$  was shorter than the uncompatibilized EPDM/NRr blends. The minimum torque, ML, of EPDM/NRr blend with and without ENR-50 relatively increased while maximum torque, MH, decreased with increasing NRr content. With the presence of ENR-50, the compatibilized EPDM/NRr blends exhibit a lower value of ML and MH compared with uncompatibilized blends. The incorporation of ENR-50 in EPDM/NRr blends enhanced the tensile strength and tensile modulus of compatibilized EPDM/NRr blends compared to uncompatibilized EPDM/NRr blends. The elongation at break (Eb) of compatibilized EPDM/NRr blends is lower than the uncompatibilized EPDM/NRr blends at all blend ratios. This indicated that ENR 50 improved the curing characteristics and tensile properties of the compound.