

The Effect of Mgo and Rubber Nanofillers on Electrical Treeing Characteristic of XLPE Based Nanocomposites

Authors : Nur Amira nor Arifin, Tashia Marie Anthony, Mohd Ruzlin Mokhtar, Huzainie Shafi Abd Halim

Abstract : Cross-linked polyethylene (XLPE) material is being used as the cable insulation for the past decades due to its higher working temperature of 90 °C and some other advantages. However, the use of XLPE as an insulating material for underground distribution cables may have subjected to the unforeseeable weather and uncontrollable environmental condition. These unfavorable condition when combine with high electric field may lead to the initiation and growth of water tree in XLPE insulation. There are several studies on numerous nanofillers incorporate into polymer matrix to hinder the growth of tree propagation. Hence, in this study aims to investigate the effect of MgO and rubber nanofillers at different concentration on the electrical tree of XLPE. The nanofillers and XLPE were mixed and later extruded. After extrusion, the material were then fabricated into the desired shape for experimental purposes. The result shows that the electrical tree propagation of XLPE filled with optimize concentration of nanofillers were much slower compared to pure XLPE. In this paper, the effect of nanofillers towards electrical treeing characteristic will be discussed.

Keywords : electrical trees, nanofillers, polymer nanocomposites, XLPE

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