

A Comparison of Polymeric Cable Insulation Properties Following Lightning Impulse Ageing

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LDPE and HDPE are common materials used within high voltage insulation systems. These materials will be aged after working under high voltage for a long time. The ageing process of these materials may be affected by external factors. The application of repetitive lightning impulse over-voltages is one of these factors and will be considered in this paper. This paper includes the sample preparation process, the ageing of samples under identical conditions and finally the analysis of electrical properties after the ageing process. The obtained results are used to compare the effect of repetitive lightning impulses with these two materials. These results are also used to highlight the possible mechanisms behind the lightning impulse ageing process.

- [1] S. Boev "Electric aging of polyethylene in pulsed electric field" *12th IEEE International Pulsed Power Conference*. (Cat. No.99CH36358) 1999, Monterey, CA, USA, Page(s): 1365-8 vol.2
- [2] G.C. Stone, R.G. Van Heeswijk, R. Bartnikas "Electrical aging and electroluminescence in epoxy under repetitive voltage surges" *IEEE transaction on electrical insulation*, volume 27, issue 2, April 1992 Page(s):233 – 244
- [3] R.A Hartlein, V.S. Harper, Harry Ng "Effects of voltage surges on extruded dielectric cable life project update" *IEEE transactions on power delivery*, volume 9, issue 2, April 1994 Page(s):611 – 619