

Effects of Surface Insulation of Silicone Rubber Composites in HVDC

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Abstract : Polymeric insulators are high hardness, corrosion resistant, lightweight and also good dielectric strength in electric equipment. For such reasons, the amount of polymeric insulators is increased consistently abroad. The current outdoor insulators are replaced by polymeric insulators. Silicone rubber of polymeric insulators is widely used in insulation materials for outdoor application since it has excellent electrical characteristics and high surface hydrophobic. However, it can be evade exposure to pollutant on surface using at outdoor. It also improve the pollution for dust and smoke due to the large are increasing, because most of the industrial area in which the electric power loads are concentrated are located at the coastal area with salt attack. Thus it is important to detect the main cause of the deterioration for outdoor insulation materials. But there has no standards for valuation to apply reliably and determine accurately deterioration under DC, still lacks DC characteristic researches in proportion to AC. In addition, a lot of ATH was added to improve tracking resistivity of silicone rubber, although the problem has been brought up about falling sharply mechanical properties. Therefore, we might compare surface resistivities of silicone rubber compounding of three kinds of filler. In this paper, specimens of silicone rubber composite usable as outdoor insulators were prepared. Micro-silica (SiO₂), nano- alumina (Al₂O₃) and nano-ATH (Al(OH)₃) were used in additives. The study aims to investigate properties of DC surface insulation on silicone rubber composite which were filled with various fillers from surface resistivity measurement and salt-fog test.

Keywords : composite, silicone rubber, surface insulation, HVDC

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