Experimental Study of the Characteristics of Transformer oil and some selected Vegetable oils

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ABSTRACT:

The world's energy requirement has been dominated by petroleum oil resources for years in many applications, especially in the area of electricity generation and utilization. Mineral oil application in power system equipment can be potentially hazardous to the environment, especially when there are incidents of transformer explosion, which caused spillage of oil to the soils or water streams and thereby pollute the surrounding environments. This paper is aimed at finding a substitute for the use of mineral oil as transformer oil. Experiments on breakdown voltage, flash points, pour points, viscosities, densities and insulation resistances on conventional mineral oil and some selected vegetable oils were conducted, analyzed and compared to the internationally accepted standards. ASTM (America Standard Test of Material). Rubber seed oil, Palm oil, Melon oil, Groundnut oil and Palm kernel oil were found to have good electrical, chemical and thermal properties which the transformer oil has.

Keywords: Electrical, chemical, thermal, transformer, mineral oil, vegetable oils