

Suitability of palm based oil as dielectric insulating fluid in transformers

ABSTRACT

Mineral oil has been widely used as dielectric insulating fluid in transformers due to its excellent performance in-service. However, there are few issues with mineral oil such as it has poor biodegradability and could contaminate the environment if a spillage occurs. With the increasing tight regulation on safety and environment, alternative fluids for mineral oil are currently being investigated and among the suitable candidate is the vegetable oil. There are different types of vegetable oils and one of them is the palm based oil. At the moment, extensive research works are carried out to examine its feasibility to be applied in transformers. This paper will review the previous research works that were carried out to examine the suitability of palm based oil as dielectric insulating fluid in transformers. The physical and chemical properties of palm based oil are studied based on viscosity, acidity, oxidation stability and flash point. Next, the electrical characteristics of palm based oil are examined based on AC breakdown voltage, relative permittivity, dissipation factor and partial discharge.

Keyword: Dielectric insulating fluid; Palm based oil; Transformers