

PRODUCTION OF BIODIESEL FROM CRUDE PALM OIL (*Elaeis guineensis*), TO BE USED AS A CONTINUOUS PHASE IN DRILLING FLUIDS

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ABSTRACT

The use of oils as a continuous phase in drilling fluids led to the development of a fluid from crude palm oil (*Elaeis guineensis*). For this, it was necessary to apply a transesterification process to obtain an ester or biodiesel. When characterized, it complied with the ASTM B100 standard, except for the kinematic viscosity (6.38 cSt), which exceeded the maximum regulated value. Likewise, it presented a typical IR spectrum of a palm biodiesel, which confirmed the quality of the biodiesel obtained by applying acid and basic methanolysis. A drilling fluid with a density of 1437.92 kg / m³, was then formulated and subjected to a dynamic aging process at 121.1 °C (250 ° F) and 1.38 MPa (200 psi). The resulting fluid was shown to have better physical properties than fluids Vassa and diesel of equal density. Finally, its behavior was studied by reducing and increasing the temperature by 27.7 ° C with respect to the initial aging temperature, presenting an ideal operation at the lowest temperatures (93.3 and 121.1 °C), but a thermal degradation at 148.8 °C, which makes it non-functional at that temperature.

Keywords: Continuous Phase, Transesterification, Biodiesel, Physical Properties, Thermal Degradation.

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