

Abstract

In this work, the rheological behavior for three types of crude oil coming from different quagmires namely Amassak, Tamendjelt and Tin Fouye of the TFT sector (Tin Fouye Tabankort/South Algeria) has been experimentally investigated. A controlled stress rheometer (AR 2000, TA Instrument) was used throughout this investigation. The experimental measurements in terms of flow and dynamic tests were carried out at different temperatures during the shear rate over the range of 0–700 s⁻¹ and frequency range of 0.1–10 rad/s. The obtained results show that the viscosity and shear stress of the crude oils decreases about 53.30%, 58.80%, and 59% respectively, when the temperature increased from 10 to 20 °C. The yield stress required to flow of crude oils also decreased to 37.06%, 89.78%, and 77.53% respectively. The dynamic analysis of the crude oils by identifying of the storage modulus (G') and the loss modulus (G'') has indicated that the rheological properties of crude oils were significantly temperature-dependent.