

ABSTRACT

The viscosity-temperature relationship of local crude oils was investigated using the Capillary Method. A viscometer was designed and built for this study and results obtained for the temperature range 40-200 °C showed a standard deviation of 7.1 from Calibration date.

Viscosity-temperature data was plotted on ASTM D 341-43 graph paper which is based on Walther's equation. Results obtained at atmospheric pressure showed that entrained water caused a trough in data points at 100 °C. This trough was not present in the results of dried oils. The dried oils showed a straight line trend in viscosity-temperature data for the temperature range 40-100 °C; at 100 °C a break in data points occurred. Viscosity-temperature data obtained at elevated pressures also showed a break in data points at 100 °C.

The effect of thermal history was also investigated and it was found to have no significant effect on the viscosity-temperature relationship for temperature range investigated.

It was suggested that the break in data points was not caused by light ends boiling. This was because at elevated pressures the effect of water was suppressed; thus light ends would also have stayed in solution. Also, no hysteresis was obtained for viscosity runs performed for increasing and decreasing temperature. It was recommended that the break in data points be

investigated further. Studies should be conducted on the effect of crude oil composition, particularly wax, resins and asphalts, and high pressure on the rheology of local crude oils.