Viscosity of Heavy Fractions of Petroleum

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Dynamic viscosities of heavy fractions of oil, samples of vacuum residues and atmospheric residues, have been measured at atmospheric pressure. These residues are the heaviest by-products obtained during the distillation process in a refinery. The rheological behavior of the samples was studied, with a couette viscometer, in the 160 to 260 °C temperature range for the vacuum residues, and the 60 to 160 °C temperature range for the atmospheric ones. procedure for the experimental analysis was established in order to avoid heat transfer influence in the measurements. The specific gravity has been measured and the boiling temperature has been obtained from the simulated distillation data. Different models from literature have been used with the samples. These models were empirical, based on the equation of state, based on corresponding states, and based on the ASTM method.

Most models have been modified, because they have not fit the data well. New coefficients for the equations have been generated using the experimental points.

New samples, with the same mixtures as before, were obtained and used to test the modified equations.