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Measurement of Vacuum Residue and Asphaltene Fluid Properties at Process Conditions

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The fluid properties of interfacial tension and viscosity, and the fluid-solid interactions embodied in the contact angle, are important in a wide range of phenomena that affect the processing of the vacuum residue fractions of petroleum and oilsand bitumens. Direct measurements of these fluid properties at representative processing conditions can give important insight into a variety of design and operating challenges, from gas holdup in hydroconversion to fouling of furnace tubes. This review summarizes the efforts to measure fluid properties of vacuum residue materials at high temperature and pressure. Significant progress has been made in measuring surface tension and viscosity of vacuum residues at temperatures to 530°C at low pressures. Further work is needed to develop methods for measurement of contact angle, and for measurements at high pressure.

Keywords: [Fluid property](#), [Surface tension](#), [Viscosity](#), [Contact angle](#), [Vacuum residue](#), [Asphaltene](#)

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