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Core Lab

Pendant Drop Interfacial Tension, IFT-10-P Datasheet

Fluid Characteristics

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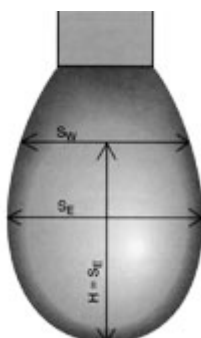
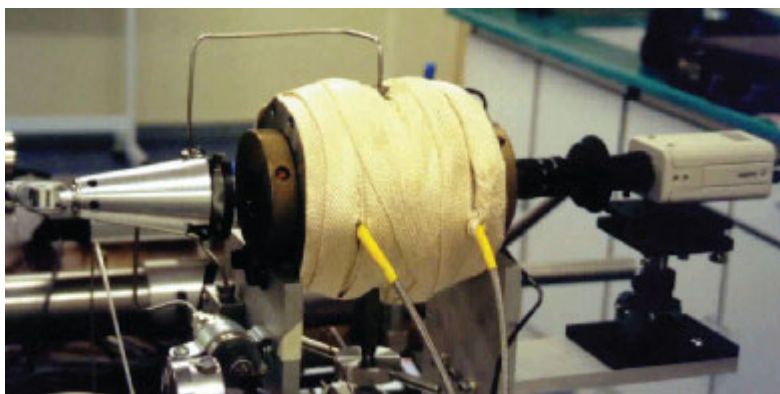
Pendant Drop Interfacial Tension IFT-10-P



The Pendant Drop Interfacial Tension system measures interfacial tension at reservoir pressure and temperature to 10,000 psi and 350 °F. The cell has interchangeable needle tips to achieve a wide measurement range. The lower limit is 10⁻³ dynes/cm. The Temco system can be provided with a vibration free table, heating system, metering pumps, camera, and image and analysis software.

Investigations of surface and interfacial tension require a viewable environmental chamber, temperature and pressure control, a metering pump for drop formation, and observation equipment. During the last several years, Temco has developed a system to meet the special requirements for high pressure and temperature testing of interfacial tension. The pendant drop visual cell is a through windowed cell. The cell has an external band heater for rapid heating. The cell is also insulation wrapped to maintain a constant, uniform temperature throughout the test period. A needle is installed into the cell for the injection of the liquid phase into the cell. A pendant drop or clinging bubble will form on the tip of the needle. The cell is designed so that the injected phase can enter from the bottom or the top of the visual cell.

To observe and record the pendant drop dimensions, a camera system is used with an external light source. The image of the drop is captured within the computer and software for data analysis and collection. The software is discussed later in this literature. The formation of the pendant drop is controlled with a precision-metering pump. For high pressure applications, either hand pumps or computer controlled pumps can be provided. The entire system is provided with transfer vessels for the storage of test fluids, a back pressure system for the maintenance of the pressure, and a vibration free table to maintain the stability of the pendant drop.



Surface tension is derived from drop shape. Given fluid density, the value of S_W / S_E is an entry into a lookup table which yields surface tension.