OSTWALD VISCOMETER 7985
Instructions

The instrument is adjusted for outflow time between 80 and 100 seconds using "pure" water at 20°C unless specially adjusted by request.

In order to obtain accurate results, the instrument must first be calibrated with materials of known viscosity such as pure (deionized freshly distilled water 1.003 centistokes at 20°C), or A.S.T.M. (American Petroleum Institute) Viscosity Standard oils which are available in seven viscosities from Cannon Instrument Co., State College, PA. (3, 6, 20, 60, 200, and 2000 centistokes at 100°F). Select a standard which will give an outflow time between 100 and 1000 seconds; below 100 seconds, the kinetic energy correction becomes increasingly significant, as does variation in delivered volume; over 1000 seconds, timing errors up to 0.1% may occur, mostly because of errors in judgement.

Introduce a sample of sufficient volume to fill the reference bulb and part of the lower receiving bulb so that when the sample drains into the lower bulb, the liquid levels at start and finish will traverse the center portion of that bulb; this will neutralize surface tension error.

Place the viscometer in a constant temperature bath which can maintain at least ±0.02°C. Use a thermometer which has recently been checked for deviation from ice point (°C) and correct results accordingly to attain proper bath temperature.

Check your stopwatch for gross error against an electric clock. This will detect inaccuracies at the 0.2% -0.5% level.

Introduce the sample through the large tube; tilt the tube slightly and allow the sample to run smoothly down the side to avoid entrapping air. Immerse the tube in the constant temperature bath so that all indicia are covered and allow to stand 15 minutes before making a determination. Whether it is better practice to apply positive or negative pressure to charge the reference bulb, depends on the sample.

It is customary to report data in terms of centistokes, i.e., $\dfrac{\textbf{Centistokes}}{\textbf{Density}}$;

The API oils are calibrated in centistokes so that the constant of the instrument will be in like terms and is called the Kinematic Viscosity (Cs) or Kv.

$$Kv = C\,T \quad \text{where } C = \text{Instrument constant}$$
$$T = \text{Reflux time sec.}$$