

Determination of the Coefficient of Viscosity by Using Stokes's Method



General Aim

To determine the coefficient of viscosity of a liquid..

Method

Stokes's Method

Learning Objectives (ILOs)

- Employ stoke's method to find the terminal velocity of an object in a viscous medium.
- Enumerates the different factors that could alter the viscosity of a liquid.

Theoretical Background/Context

When a metallic ball is allowed to fall through a liquid, it will reach its terminal speed after moving a certain distance through the liquid, where its weight is balanced by the viscous (drag) Stoke's force due to the viscosity of the fluid, and the buoyant force acting on it. Writing the equilibrium condition for these forces enables us to derive a formula that can be used to determine the viscosity coefficient of the liquid.

Principle of Work

It depends on measuring the fall - terminal speed of a metal sphere that falls in a glass jar filled with a viscous fluid, as a function of the sphere's radius. Hence the viscosity coefficient of the liquid can be readily determined.