

Extension for Volcanoes and Viscosity Exercise

It is possible to calculate the viscosity of a viscous liquid in Pascal-seconds by using the formula below

$$\mu = \frac{2(\Delta\rho)ga^2}{9v}$$

In the above formula,

$\Delta\rho$ is the difference in density between the sphere and the liquid, in kilograms per meter cubed (kg/m^3)

ρ is density

g is the acceleration due to gravity, 9.8 meters per second squared (m/s^2)

a is the radius of the sphere in meters (m)

v is the average velocity, defined as the distance the sphere falls divided by the time it takes to fall, in meters per second (m/s).

In order to convert a Pascal-second to another commonly used unit of viscosity, the centipoise, multiply by 1,000.