



THE DENSITY OF LIQUIDS

Object: To determine the density of liquids from the measurement of the volume and mass

(investigation of the density of various liquids such as water, alcohol, chloroform, hexane, benzene and mineral oil)

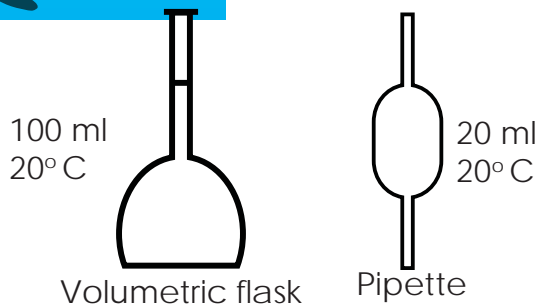


MATERIALS

- Measuring cylinders
- Volumetric flasks
- Pipettes
- Ohaus Scout® Pro balance (readability 0.01g)
- Pycnometers
- Various liquids

PROCEDURE

The glass apparatus such as pycnometer, volumetric flask is tared and then filled with the liquid under investigation. The mass is noted down.



EVALUATION

The density is determined as the quotient of mass and volume.

$$\rho_t = \frac{m}{V}$$

ρ_t = density at temperature

m = mass

V = volume

t, ϑ = temperature of liquid

NOTES

Since the density of liquids is temperature-dependent, the temperature must be specified. For very accurate measurements, a buoyancy correction is necessary. The liquid used for school experiments must not be irritant or poisonous. Carbon tetrachloride, benzene and concentrated alkalis and acids must not be used. Percent errors are normally from temperature and accuracy of the volumetric device, and purity of solution. For example, denatured alcohol has methyl alcohol added. This is an excellent place for students to use standard reference books to check their results. Good technique can give results within 3 significant figures.