

CW
5/10/2021

ch-1

1. Define the term density of a substance?

Ans) Density is defined as the ratio of mass of the object to the volume of the object.

2. State the SI unit and the CGS unit of it. How they are related?

Ans) The SI unit of density is kg/m^3 . The CGS unit of density is g/cm^3 or gm^3 .

Relationship between kg/m^3 and g/cm^3

$$1 \text{ kg} = 1000 \text{ g}$$

$$\text{or } 1 \text{ g} = \frac{1}{1000} \text{ kg}$$

$$\text{and } 1 \text{ m}^3 = ~~1000~~ 100 \text{ cm}^3 = 100 \times 100 \times 100 \text{ cm}^3$$

$$\text{or } 1 \text{ cm}^3 = \frac{1}{10,00,000} \text{ m}^3 = 10,00,000 \text{ cm}^3$$

$$\text{now } 1 \text{ g/cm}^3 = \frac{1 \text{ g}}{1 \text{ cm}^3}$$

$$= \frac{\frac{1}{1000} \text{ kg}}{\frac{1}{10,00,000} \text{ m}^3}$$

$$= \frac{1000000}{1000} \text{ kg/m}^3$$

$$= 1000 \text{ kg/m}^3$$

$$\text{Thus, } 1 \text{ g/cm}^3 = 1000 \text{ kg/m}^3$$

the object
of it How
unit of

3. How does density of water change when heated from 0 to 4 degree celcius.

Ansly When water is heated from 0°C, its volume decreases because its density increases and you can see this effect upto 4°C. Because the density of ice is maximum at 4°C. Afterwards as the density decreases the volume increases.

4. How density will change with temperature?

Ansly Density is directly proportion to pressure and indirectly to temperature. As pressure increases, with temperature constant, density increases. Conversely when temperature increases, with pressure constant, density decreases.

5. The mass of 5l water is 5kg Find the water in gram per ~~centimetre~~ centimetre cube.

Ansly Given mass = 5kg = 5000g
Volume = 5l = 5000cm³
Density = $\frac{M}{V} = \frac{5000g}{5000cm^3} = 1g/cm^3$