

Name of experiment: preparation of divalent compounds 0.1M

**Theory:**

Mass is a measure of the quantity of matter in an object. • The terms “mass” and “weight” are often used interchangeably, although, strictly speaking, they refer to different quantities. In scientific terms, weight is the force that gravity exerts on an object. • The mass of an object can be determined readily with a balance, and this process, oddly, is called weighting. The SI base unit of mass is the kilogram (kg), but in chemistry the smaller gram (g) is more convenient:

$$1\text{kg} = 1000\text{ g} = 1 \times 10^3\text{ g}$$

Volume is simply defined as the amount of space occupied by any three-dimensional solid. These solids can be a cube, cylinder or sphere different shapes have different volumes.

The unit of volume is:

The Cubic meter (m^3) is the SI unit of volume

Many other units like liter (L) cubic centimeter (cm^3) can be used as a measure of volume

Molecular weight : the mass of a molecule that may be calculated as the sum of the atomic weights of its constituent atoms.

Molarity : it is the number of moles in one liter of solvent.

Molarity = $M = \text{moles of solute} / \text{Volume of solution} = \text{moles/L}$.

$$M = \text{Molarity} \quad M = W / M.W.T \times 1000 / V$$

W = weight in (gm)

M.W.T = molecular weight in (g/mol)

V = volume in milliliter

Procedure

$$M = \frac{\text{wt} * 1000}{\text{M. wt} * 100}$$

$$\text{M.wt (Na}_2\text{CO}_3) = 2 \times 23 + 12 + 3 \times 16 = 106 \text{ g/mol}$$

$$0.1 = \frac{\text{wt} * 1000}{106 * 100}$$

$$\text{wt} = \frac{0.1 * 106}{10}$$

$$= \frac{10.6}{10}$$

$$= 1.06 \text{ gm}$$

We take 1.06 gm of Na_2CO_3 and dissolve in 100 ml of volumetric flask to get 0.1 M Na_2CO_3

Discussion

Q1/ is Na_2CO_3 solid or aqueous?

Q2/ Does Na_2CO_3 solubility ?

Q3/ what are the property of Na_2CO_3 ?