

**OSMOTIC PRESSURE OF MIXTURE OF TWO SOLUTIONS****Case-1:**

Let two solutions of same substance having different osmotic pressure  $\pi_1$  and  $\pi_2$  are mixed.

The resultant solution has osmotic pressure is given by

$$\pi_1 V_1 + \pi_2 V_2 = \pi R(V_1 + V_2)$$

Equal volumes of two isotonic solutions are mixed.

$$\pi_{\text{resultant}} = \frac{\pi_1 V_1 + \pi_2 V_2}{V_1 + V_2} = \pi$$

**Note:**  $\pi_1 = \pi_2 = \pi$  and  $V_1 = V_2 = V$  are given.

**Case-2:**

Let  $n_1$  and  $n_2$  are the number of moles of two different solutes present in  $V_1$  and  $V_2$  volumes respectively. Then, the osmotic pressure of the mixture is given by

$$\pi = \pi_1 + \pi_2 = \frac{n_1 i_1 RT}{(V_1 + V_2)} + \frac{n_2 i_2 RT}{(V_1 + V_2)}$$

$\therefore$

$$\pi = CRT$$

$\therefore$

$$\pi = \frac{n}{V} RT$$

$$\pi = \frac{n_1 i_1 + n_2 i_2}{(V_1 + V_2)} \times RT$$

$i_1$  &  $i_2$  are Van't Hoff factors for two solutes