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**Raoults law of Vapour pressure**

The relative lowering of vapoure pressure is equal to the mole fraction of the solute .If w g of a solute of mol.wt.m be dissolved in W g of a solvent of mol.wt M then the number of moles of solute and solvent will be w/m and W/M respectively and therefore the mole fraction of solute (Xn) =

Since w is generally very small and m is very large therefore w/m is neglected from denominator and then Xn ==

So according to Raoults law

=

m =

So if the relative lowering of vapour pressure is known for a solution containing a known weight of the solute in a given weight of the solvent the molecular weight m of the solute can easily be calculated with the help of above expression .

**Ideal and non ideal solution and their charecteristics**

**Ideal Solution:** Solution which obey Raoults law strictly at all temperature and concentration are called ideal solution .Further the heat change () and the volume change () on mixing of such solution are zero.Actually ideal solution are very rare but many solution e.g. benzene and toluene,ethyl bromide and ethyl iodide ,hexane and heptane practically behave as ideal.

**Non ideal solution:** Solution which donot obey Raoults law and there is a noticeable change in volume and heat energy when two components are mixed are called non-ideal solution.e.g.ethanol and cyclohexane,benzene and acetone,acetone and chloroform.

The charecteristics f ideal and non ideal solution may be given as below.

Ideal solution :

1. They follow Raoult’s Law. This implies that the partial pressure of components A and B in a solution will be PA = PA0 xA and PB = PB0 xB . PA0 and PB0 are respective vapour [pressure](https://www.toppr.com/guides/physics/force-and-pressure/introduction-to-pressure) in pure form. On the other hand, xA and xB are respective mole [fractions](https://www.toppr.com/guides/maths/fractions/introduction-to-fraction/) of components A and B

2. The enthalpy of mixing of two components should be zero, that is, Δmix H = 0. This signifies that no heat is released or absorbed during mixing of two pure components to form an ideal solution

Non ideal solution:

1. The solute-solute and solvent-solvent interaction is different from that of solute-solvent interaction

2. The enthalpy of mixing that is, Δmix H ≠ 0, which means that heat might have released if enthalpy of mixing is negative  (Δmix H < 0) or the heat might have observed if enthalpy of mixing is positive (Δmix H > 0)