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**Ionic mobility**

The **ionic mobility** (μ) is defined as the velocity attained by an **ion** moving through a gas under unit electric field. **Ionic mobility** or **Ionic** conductance is the conductivity of a solution containing 1 g **ion**, at infinite dilution, when two sufficiently large electrodes are placed 1 cm apart.

**Kohlrauch’s Law**

The molar conductivity of an electrolyte at infinite dilution is the sum of the ionic conductivities of the cation and the anion each multiplied with the number of ions present in one formula of the electrolyte. Mathematically,

$λ\infty = λ$+ + $λ$-

Where $λ\infty $ is the molar conductivity of the electrolyte at infinity dilution $λ$+ and $λ$- are the molar conductivities of the cation and the anion respectively at infinite dilution.

$λ\infty for CH$3COOH =$ λ$CH3COO- + $λ$H+

Weak electrolytes are not completely dissociation even at high dilution and as such their $λ$0 values cannot be measured by specific conductivity measurements.Moreover $λ$0 of weak electrolytes can be measured indirectly by applying Kohlrausch law . If we have to calculation $λ$0 for CH3COOH then $λ$0 values of HCl,NaCl and CH3COOH.All strong electrolytes are measured experimentally.

Let,

 $λ$0 HCl = $λ$H+ + $λ$Cl- -----------------[1]

$λ$0 NaCl = $λ$Na+ + $λ$Cl- ------------------[2]

$λ$0 CH3COONa = $λCH3COO$ - + $λ$Na+  -----[3]

then,

$λ$0 CH3COOH = $λ$0 HCl + $λ$0 CH3COONa - $λ$0 NaCl

 =[$ λ$H+ + $λ$Cl- ] + [$λ$Na+ + $λ$Cl- ] – [$λCH3COO$ - + $λ$Na+  ]

 = $λ$H+ +$ λCH3COO$ -

**Applications of Kohlrausch's Law**

Some typical applications of the Kohlrausch's law square measure delineate below,

**(i) Determination of for weak solutions :** The molar physical phenomenon of a weak electrolyte at infinite dilution can't be determined by extrapolation technique. However, values for weak electrolytes is determined by victimization the Kohlrausch's equation.

**(ii) Determination of the degree of ionisation of a weak solution:** The Kohlrausch's law is used for decisive the degree of ionisation of a weak electrolyte at any concentration. If is that the molar physical phenomenon of a weak solution at any concentration C and, is that the molar physical phenomenon of a solution at infinite dilution.

**(iii) Determination of the ionisation constant of a weak solution :** Weak electrolytes in binary compound solutions ionise to a really little extent. The extent of ionisation is delineate in terms of the degree of ionisation In answer, the ions square measure in dynamic equilibrium with the unionised molecules. Such Associate in Nursing equilibrium is delineate by a relentless known as ionisation constant

 **(iv) Determination of the solubility of a meagrely soluble salt :** The solubility of a meagrely soluble salt in a very solvent is kind of low. Even a saturated answer of such a salt is therefore dilute that it is assumed to be at infinite dilution.