

* NON-AQUEOUS TITRATIONS *

- The organic acids and bases are insoluble in water. These are extremely weak and can not be analysed using normal titrimetric method. Hence the non-aqueous titrimetric method is used.
- The main principle involved in the non-aqueous titrimetric method is the sample & titre are dissolved in the non-aqueous solvent.

→ In a Non-Aqueous solvent such as glacial acetic acid, TGA organic bases and their salt can be titrated with Acetous Perchloric acid solution.

* Reasons for titration in Non-Aqueous solvents: →

- The reactants, or, products might be insoluble in water.
- The reactants, or products might be react with water.
- The Analyte is too TGA an acid or base to be titrated in water.

* SOLVENTS IN NON-AQUEOUS TITRATIONS:

→ Analytical work can be classified into four classes.

[A] PROLOGENIC SOLVENT: →

They are acidic solvents and enhance the basicity the TGA base.

Ex = H_2SO_4 , formic acid.

[B] PROTOPHILIC SOLVENT:

These solvant are basic in

Nature.

Ex → Pyridine.

→ D-Butylamine.

→ Ethylenediamine.

(c) AMPHIBROTIC SOLVENT: → This category of solvent behave as acid or base depending upon the substance dissolved in it -

E.g. GLACIAL ACETIC ACID.

DIOXAN.

(d) APROTIC SOLVENT: → Solvent like BENZENE, CARBON TETRACHLORIDE etc. are neutral in nature.



IN-NON-AQUEOUS FILTRATION the SOLVENT SELECTION is mainly based upon the following parameters:

- Solubility of the Sample.
- Nature of the Sample.
- Should produce SHARP END POINT.
- Should have the High dielectric constant.
- Should be of low toxicity.
- Should be easily purified.

* Detection of end-point = By two methods -

(A) Potentiometric Methods.

(B) INDICATORS

(1) CRYSTAL VIOLET (0.5% in glacial acetic acid)

[Violet - yellowish green]

(2) α -Naphthol BENZENE (0.2% in glacial acetic acid)

[Blue - dark green]

(3) QUINALDINE RED → [Magenta - colourless]

(4) METHYL RED → [Yellow to Red]

ADVANTAGES: →

- ① The organic acids and base that are INSOLUBLE in Water or in Aqueous media are readily analysed By the non-aqueous titration.
- ② It is helpful to detect the end point of the sample that is present in mixture.
- ③ These are Highly Accurately Methods.
- ④ These produce sharp end point with an INTERNAL Indicator.
- ⑤ These are simple and selectively.

Disadvantages: ↳

- ① ⇒ Samples with equal strength to titrant are can not be Handled By the Non-Aqueous titration.
- ② ⇒ Aqueous-Solutions are Not Handled By- Non-Aqueous titration.
- ③ ⇒ Require restandardisation of the Solvent for every titration.

Application

- Percentage of Purity OF Assays.
- Used in the determination of the concentration extract.
- Used in the determination of the Steroids.
- used - determination of drugs contain