PREPARATION OF A STANDARD SOLUTION

i SECONDARY STANDARD

Weigh out accurately the desired mass of solute for example 200g (1) and dissolve in the minimum quantity of solvent in a large clean beaker. Heat is often involved to a greater or lesser degree so stir the solution and if necessary, use a water bath to cool the beaker and contents. Pour into graduated volumetric flask of required volume via a filter funnel, ensuring the funnel is not resting in the neck of the flask but held slightly above the neck to enable the air in the flask to escape when being filled. Completely rinse off the beaker into the funnel, followed by the funnel, both inside and on the outside of the stem and top up almost to the mark. Place in a water bath at 20°C shaking occasionally to ensure complete mixing until this temp. is uniformly attained and finally top up to the mark with the BOTTOM of the meniscus on the mark (2). Cork the flask and shake again.

Note 2

Primary Solutions are made in exactly the same way; but using the molecular mass on the bottle calculate and then weigh out the required mass.

PRIMARY STANDARDS OF LOW CONCENTRATIONS

Sometimes solutions of low concentrations say 0.0001 Molar are required. It is impractical to attempt to weigh out such small masses. Instead it is far easier to dilute down a higher concentration of solution to the required volume.

Example

A solution of concentration 0.0001 wrt Chloride ions is required.

Method

Select a suitable Chloride eg. Potassium Chloride and make up a one molar solution: ie. 74.550g of KC1 dissolved in one litre of water as in the above method.

Take 10ml of this solution ie. 0.01 moles of KC1 by using a burette in a new 1L volumetric flask and top up to mark hence diluting the sample 100 times in the flask.

$$\frac{10}{1000}\text{ moles KC1} \times \frac{1Ø}{100Ø} = \frac{10}{100000} = 0.0001\text{ Moles KC1}$$

NOTE: 1 FOR EXAMPLE 2 LITRES OF $BaCl_2.2H_2O$ 100g/L