Volumetric Glassware Use – Volumetric Flask

The Volumetric Flask

A volumetric flask is used when it is necessary to know both precisely and accurately the volume of the solution that is being prepared. Like volumetric pipets, volumetric flasks come in different sizes, depending on the volume of the solution being prepared. Each flask, because it measures only one volume, has only one calibration mark (on the neck of the flask). When used in conjunction with a pipet, a volumetric flask can be used to prepare a dilute solution from a more concentrated one.

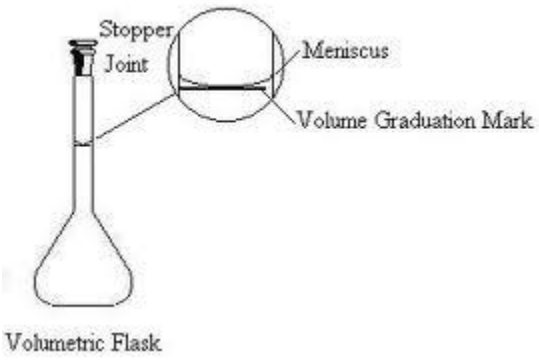

Figure 1: Image of a volumetric flask.

Preparing a Diluted Solution using a Volumetric Flask

Begin with a clean flask. Rinse it well with distilled water. Use a volumetric pipet to deliver the appropriate volume of concentrated solution to the volumetric flask. Add distilled water to the flask, using a funnel or wash bottle, until the level reaches the neck of the flask. Cap and mix the solutions thoroughly. At this point, add water more slowly. Finally, add water drop by drop until the bottom of the meniscus is even with the calibration mark. Stopper the flask tightly, invert it and shake to obtain a homogeneous solution. Repeat the inversion and shaking process several times.

Check out this video link for a demonstration of this:

http://www.youtube.com/watch?v=j2vPLmdxIqs

Preparing a Solution using a Solid Solute

A solution of known concentration can also be prepared by placing a known mass of solute in a volumetric flask and diluting to the mark with distilled water. Use a piece of weighing paper and measure the appropriate mass of solute on the Analytical Balance. Be sure to record the mass to four decimal places. Carefully transfer the solid to the flask. Note that folding the paper will aid in transfer. Add a small amount of water and swirl to dissolve the solid. After the solid is completely dissolved, fill the flask to the mark as previously described. It is very difficult to dissolve the solid once the flask is filled to the mark, so make sure it is all dissolved before you fill to the mark. Stopper the flask tightly, invert it and shake to obtain a homogeneous solution. Repeat the inversion and shaking process several times.