

Use of Volumetric Equipment

To determine the concentration of a solution, one needs to measure volumes with a fair degree of accuracy. A graduated cylinder is not accurate enough.

Two common methods of delivering an exact amount of solution are the pipet and the buret. In this lab they are kept in separate baths of mild detergent. After removal from the bath the detergent solution has to be rinsed away with tap water, then - the tapwater has to be rinsed away with distilled water. One large rinse is (of course) not nearly as effective as three small rinses. The stopcock on the buret has to be tightened until just snug (do not overtighten the nut). The stopcock on the buret also has to be closed. Then the equipment has to be rinsed with 3 small portions of the solution to be dispensed. (If they were directly filled, the distilled water on the inside walls would dilute the solution, resulting in an error).

At the end of the lab the glassware has to be rinsed clean of the solution. Rinse this away with tap water only. (It would be a waste to use distilled water, as glassware will be stored in a detergent bath). The stopcock on the buret must be loosened and opened, then the glassware returned "tip-side-up" to the baths.

PIPETTING: Use a suction bulb (do not mouth pipet). Fill the pre-rinsed pipet by drawing solution past the mark (do not draw liquid into bulb). Quickly remove the bulb and cover the opening with finger (or thumb) to hold the liquid in the pipet. Wipe off drops adhering to outside of pipet tip. Lower solution to the mark, then drain into required receptacle and allow a few seconds to drain completely then touch tip to the sidewall. This piece of glassware is calibrated "TD", to deliver, not "TC", to contain, therefore it does not need to be "blown out".

TITRATING: After rinsing, fill the buret, with the desired titrant, above the 0.00 mL mark. Open stopcock to fill the buret tip and allow fluid level to drop to or below the 0.00 mark on the scale. Record V_i (reading to half of the smallest division). Place a piece of white paper beneath the flask. Turn the stopcock and swirl the flask containing the sample. When near the endpoint, partially close the stopcock to add titrant dropwise. Rinse down the sides of flask and add the final drop(s) to produce color change for indicator. Record V_f .