Friday worksheet 8 – Volumetric analysis.

60.00 mL of a brand of brick cleaner, claiming to contain 33.00%m/m HCl, was pipetted into a 250mL volumetric flask. The volumetric flask was previously weighed and its mass recorded as 110.59g. After adding the 60.00 mL sample the volumetric flask and its content was reweighed and the mass recorded as 180.49g. The volumetric flask was then made up to the mark with distilled water.

Four 100mL conical flasks were prepared by placing 20.00 mL of the diluted brick cleaner from the volumetric flask into each of the four conical flasks with two drops of phenolphthalein. Each flask was then titrated against a 1.00M $NaHCO_3$ standard solution. The following titres were obtained.

34.53 mL, 33,00 mL, 32.92 mL, 32.95 mL.

1) a. What are the properties of $NaHCO_3$ that make it a suitable compound to use as a primary standard?

b. What is the colour change of the indicator?

2) Write a balanced ionic equation for the reaction between HCl and $NaHCO_3$.

3) Calculate the average titre delivered.

4) Calculate the amount, in mol, of acid present in each 100mL conical flask.

5) Calculate the amount, in mol, of acid present in the volumetric flask.

6) Calculate the concentration of HCl in %m/m in the original brick cleaner.