

What is a primary standard

- A primary standard must be available in a highly pure state
- It must be stable in air
- It must dissolve easily in water
- Example= Sodium Carbonate(Na_2CO_3)
- A standard solution is one in which the exact concentration is known.

List of equipment

- 250 ml volumetric flask
- Wash bottle
- Clock glass
- Mass balance
- 2 beakers
- Conical flask
- White tile
- pipette
- Burette
- Sodium carbonate
- “deionised water”
- Methyl orange
- HCl
- Pipette filler
- Retort stand

Making a standard solution of Sodium carbonate

1. We weigh out 2.6g of standard sodium carbonate, Na_2CO_3 .
2. Dissolve it in 100 cm^3 of deionised water in a beaker.
3. Wash all traces of the carbonate into the beaker using a wash bottle.
4. Stir the mixture until fully dissolved.
5. • Using a funnel, transfer the solution to a 250cm^3 volumetric flask.
6. Make up to within 1 cm of the mark with deionised water.
7. Add the rest of the water using a dropper Read from the bottom of the meniscus.
8. Invert 20 times to ensure an even/uniform solution.

Procedure for using the burette

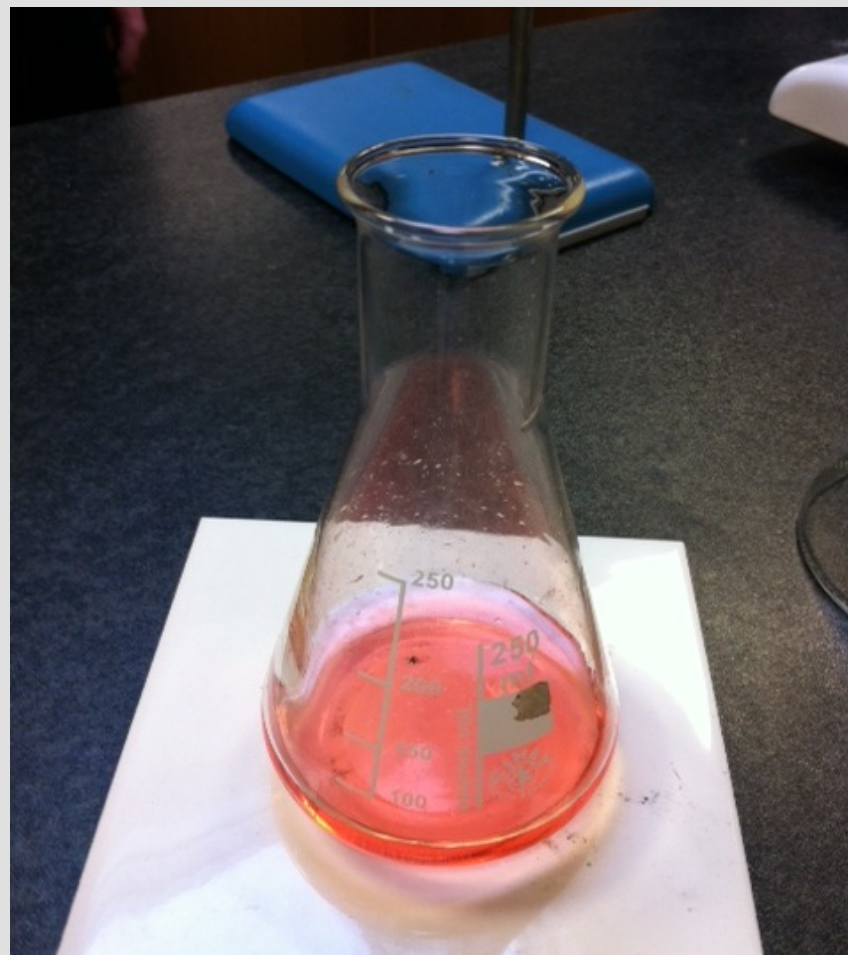
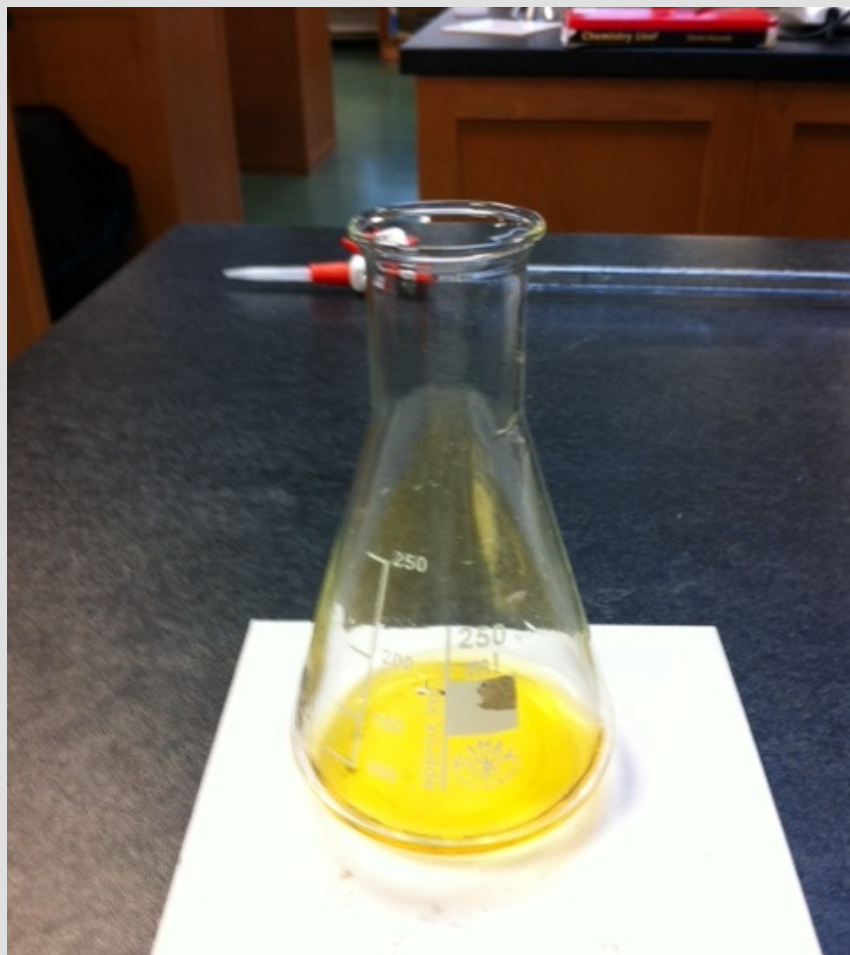
- Rinse the burette with deionised water
- Clamp it vertically in the retort stand.
- Using the funnel, add a little of the hydrochloric acid solution to the burette and rinse the burette with this solution and discard it.
- Fill the burette with hydrochloric acid solution above the zero mark.
- Remove the funnel.
- Using the tap at the base of the burette, allow the acid to flow into a beaker until the level of liquid is at the zero mark. Ensure that there are no air bubbles in the nozzle of the burette.

Procedure for using the pipette

To find the exact concentration of an HCl solution using Na_2CO_3 as a standard

1. Place 100ml of your standard Na_2CO_3 into a beaker
2. Place 100ml of HCl(conc. Not known exactly) into another beaker.
3. Rinse a 25ml pipette with water and then with some Na_2CO_3 .
4. Rinse out the burette with Water.
5. Pipette 25ml of Na_2CO_3 into a clean conical flask
6. Add 3 drops of methyl orange indicator
7. Fill the burette to 0 with HCl.
7. Add the HCl from the burette to the conical flask
8. The end point will be from yellow to red.
9. Carry out 1 rough titration and 3 accurate titrations.
10. We disregard the rough titration value in our calculations
11. Use first principles to calculate exact conc. Of HCl

Methyl orange



To find the exact concentration of an NaOH solution and make a sample of salt

1. Place 100ml of HCL (1M) into a beaker
2. Place 100ml of NaOH(conc. Not known exactly) into another beaker.
3. Rinse a 25ml pipette with water and then with some NaOH.
4. Rinse out the burette with Water.
5. Pipette 25ml of NaOH into a clean conical flask
6. Add 3 drops of methyl orange indicator
7. Fill the burette to 0 with HCl.
7. Add the HCl from the burette to the conical flask
8. The end point will be from yellow to red.
9. Carry out 1 rough titration and 2 accurate titrations.
10. Take note of the point of neutralisation on the burette
11. Use the average titre and add that vol. of acid to 25 ml of base in a beaker. .
12. Place the mixture in an evaporating dish in the window
13. Calculate the exact conc. Of NaOH using the worksheet given by Ms Brennan

Making a salt

