

## AP LAB 01F: Preparing a standard solution

**Aim** To accurately prepare 100. mL of an approximately 0.200 M sodium hydrogen carbonate solution

**Apparatus** Weighing boat, funnel, wash bottle, electronic balance, 100. mL volumetric flask, pipet, spatula.

**Chemicals** Distilled water, solid sodium hydrogen carbonate

### **Method**

1. Calculate the exact mass of solid sodium hydrogen carbonate required to make 100. mL of a 0.200 M solution.
2. Place a weighing boat on the balance and record the mass.
3. Using a spatula, add approximately the mass of solid sodium hydrogen carbonate calculated in #1. Record the mass accurately. (It does not need to be exactly the same mass as calculated in #1. but it must be close, and it must be measured accurately).
4. Using great care, transfer the entire solid to the volumetric flask using wash bottle and the funnel.
5. Add approximately 50.0 mL of distilled water to the solid in the volumetric flask, replace the stopper and shake the flask gently to dissolve the solid.
6. When the entire solid has dissolved make up to the mark taking great care when approaching the mark. Near the mark add distilled water drop by drop using a pipet.
7. Calculate the exact concentration of the solution that you have prepared.

**Results**

|                                    |  |
|------------------------------------|--|
| Mass of weighing boat + solid in g |  |
| Mass of weighing boat in g         |  |
| Mass of solid in g                 |  |



### Conclusion/Calculation

Calculate the exact concentration of the sodium hydrogen carbonate solution you have prepared.

### Notes

- (i) A standard solution is a solution that has an accurately known concentration.
- (ii) To ensure accuracy in preparation, great care must be taken at all stages, with careful, accurate weighing, careful transfer of solid, and the use of clean glassware.
- (iii) Solids that are to be used to make standard solutions must fulfill some criteria, i.e., they must be pure, dissolve in water easily, should not decompose, and have a relatively high molar mass.