

# Standardization of Etchant

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Insert Intro here.

## Materials

### Chemicals

- NaOH pellets - Caution corrosive!
- Phenolphthalein indicator solution
- Potassium hydrogen phthalate (KHP)
- Distilled Water

### Equipment

- 50 ml Burette
- 1 L Plastic storage bottle
- 250 ml beaker
- Ring stand
- Burette clamp

## Procedure

### Titration

1. Make sodium hydroxide solution by measuring out calculated amount of sodium hydroxide pellets and dissolve the pellets in approximately 900 ml of distilled water. Mix thoroughly.
2. Measure out correct amount of KHP on analytical balance, using the reference table below and record the mass. Dissolve in about 100 ml of distilled water in a 250 ml beaker.
3. Add 2 to 3 drops of phenolphthalein to KHP solution.
4. Prepare burette by washing with water, then with a small amount of the etching solution that you will be standardizing.

5. Add sodium hydroxide solution to burette, making sure to record the height of the sodium hydroxide in the burette.
6. Add sodium hydroxide until a pink/purple color starts to appear, then add sodium hydroxide more slowly.
7. When the KHP solution stays a light pink or purplish color, the end point is reached. Record the final level of the sodium hydroxide solution.
8. Calculate the molar concentration(M) of the sodium hydroxide solution.
9. Run three trials and average the final.

## Material Calculations

The above titration procedure will be preformed using the following amounts calculated. These amounts can be changed and methods to do so to fit the present situation will be mentioned.

### Sodium Hydroxide

The following amounts of distilled water and sodium hydroxide will be needed to make 1 M , 3 M and 6 M solutions of sodium hydroxide.

1. For 0.25 M solution, 900 ml of distilled water and about 9 grams of sodium hydroxide.
2. For 1 M solution, 900 ml of distilled water and about 36 grams of sodium hydroxide.
3. For 2 M solution, 900 ml of distilled water and about 72 grams of sodium hydroxide.

### KHP

The following amount of KHP should be weight out for the corresponding molar solution of sodium hydroxide

1. For 0.25 M solution, weight out about 0.75 - 0.76 grams of KHP. The end point should be around 15 ml of solution
2. For 1 M solution, weight out about 3 - 3.1 grams of KHP. The end point should be around 15 ml of solution
3. For 2 M solution, weight out about 6 - 6.1 grams of KHP. The end point should be around 15 ml of solution.