

## Answer on Question #63795, Chemistry / General Chemistry

- 1) A 0.500 M standard solution of NaOH cannot be made up by weighing out solid NaOH and dissolving it in the correct amount of water. Thus NaOH cannot serve as a primary standard. Suggest two reasons for this
- 2) Suggest a reason why the normality of NaOH solutions may change if the solution is exposed to air for an extended period of time
- 3) Why was phenolphthalein suitable as an indicator for this experiment? Can you suggest another indicator that might be suitable as well?

### Answer:

- 1) NaOH reacts with atmospheric carbon dioxide to form sodium carbonate. This is due to its high reactivity. NaOH can also easily absorb moisture from the air to form hydrated crystals. This is due to its hygroscopicity. Therefore, it is not recommended to do a standard NaOH solution by weighing it.
- 2) Caustic soda is very hygroscopic, is a good absorber of carbon dioxide. Therefore, when stored in air as part of the product moisture content is increased (in crystalline form), and sodium carbonate. Also, it may be formed the sodium bicarbonate (baking soda), sodium carbonate hydrate (washing soda).
- 3) Depending on the pH phenolphthalein molecule can exist in solution in various forms with different colors. So now indicator has multiple color transition intervals, but in practice the acid-base titration is only one of them - in the range 8.2-10. Aqueous NaOH solutions are strongly alkaline (pH 1% solution = 13). The main methods of determining the alkali solutions are in response to the hydroxide ion (OH<sup>-</sup>) phenolphthalein - crimson staining and methyl orange (methyl orange) - yellow staining.