

STANDARD SOLUTIONS & PRIMARY STANDARDS

TOPIC TEST 1

QUESTION 1

By referring to the way that standard solutions are prepared, explain why it is considered more accurate to use a Primary Standard than a Secondary Standard.

Solution

QUESTION 2

A primary standard must be readily available in pure form. Explain why the primary standard must be available in pure form **and** identify two other properties of a primary standard.

Solution

QUESTION 3

- (a) Describe the steps involved in making up a primary standard of hydrated oxalic acid ($\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$).
- (b) Why can't hydrated Na_2CO_3 be used as a primary standard, but a primary standard of hydrated oxalic acid can be made?
- (c) Give three important characteristics of substances that can be used as primary standards.

Solution

ANSWERS

QUESTION 1

Preparing a primary standard involves: accurate weighing of the sample, accurate measuring of volume and one calculation. Preparing a secondary standard requires these steps and also accurately performing a titration – more chance for error.

QUESTION 2

Primary standard must be available in pure form so that the molar mass is known accurately, and calculations will be accurate.

QUESTION 3

- (a) - Weigh out known quantity of the primary standard.
 - Add this to the volumetric flask.
 - Half fill the flask with H_2O .
 - Stopper the flask and shake till all of the standard is dissolved.
 - Fill the flask with H_2O so that the bottom of the meniscus touches the mark/line.

- (b) - Hydrated stoichiometry when reacting with the unknown solution.
 - High molar mass which is constant.
 - Doesn't react with the atmosphere.

- iii) - Known stoichiometry when reacting with the unknown solution.
 - High molar mass which is constant.
 - Doesn't react with the atmosphere.