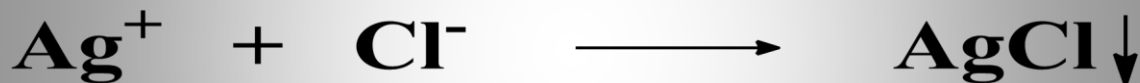


Experiment No.2

Determination of Chloride as Silver Chloride

Introduction

The chloride can be determined in a soluble form in water by adding an increase of silver nitrate solution to the chloride solution diluted with diluted nitric acid and then the precipitated (AgCl) weight after filtration, washing, and drying :



The purpose of nitric acid addition to the solution is to prevent the deposition of some silver salts such as Silver carbonate (Ag_2CO_3) and silver phosphate (Ag_3PO_4), which are deposited from the neutral or base solution. If the CO_3^{2-} and PO_4^{3-} ions are found in the solution, the acid solution Obtainable filtrate (AgCl) easily. By heating and stirring the solution containing AgCl, the colloidal particles formed in principle are formed and the solution becomes clear after it has been unclear (turbidity).

The properties of precipitate are white salt that is low solubility in the water it is about (0.0014 g / L) at room temperature but increases with temperature increase. This salt is sensitive to light and to the reducing factors.




Materials

- 1- Dissolved chloride salt in water.
- 2- Diluted nitric acid (1: 1).
- 3 - Silver nitrate solution (0.1N)
- 4- Diluted Nitric acid (0.015 N).

Procedure

- 1- Accurately weigh (0.1 g) of chloride sample. Transfer weight to the beaker (250 ml) with a glass rod and glass watch as a cover, add about 75 ml of distilled water and dissolved salt by stirring.
- 2- Add about (1.0 mL) of diluted nitric acid (1: 1). The experiment should be conducted in a dark place (dim light).
- 3- Precipitation of chloride in the form of silver chloride is achieved by adding about (20 mL) of silver nitrates (0.1 M), the addition should be slow with continuous stirring of the cold solution.
- 4- Heat the mixture quickly until it reaches near boiling point with continuous stirring.
- 5- Remove the beaker from the heat and leave the precipitate stabilized (2 - 3 minutes), make sure that the precipitation process is complete by adding a few drops of silver nitrate solution to the pure liquid. if not appear additional precipitate the beaker is placed in a dark place and the solution is left to settle for one hour before filter.

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- 6- Prepare the filtration apparatus, filter the solution, wash the precipitate (on the filter paper) with cold diluted nitric acid (0.015N, 5ml) and add small amount until the silver nitrate is removed and then wash the precipitate by a little quantity of distilled water .
 - 7- Dry the precipitate and then weigh it. Calculate the weight of chloride and then the percentage.

Discussion



- 1- Why the experiments are done in a dark place?
- 2- The diluted nitric acid is used as a washing solution for the precipitate and does not use diluted hydrochloric acid?
- 3- What are the specifications of the formed silver chloride precipitate?
- 4- The precipitate filtration is done at room temperature or less?
- 5- What is the weight of the precipitate obtained from a (1) g weight sample, if you know that the percentage of chlorine ion which was precipitated on the form of the silver chloride is (19.2%) and the weight of the chlorine ion is (0.1) g ? the atomic weight for Ag=108 , Cl=35.5