Safety: Safety Glasses, Chemical Resistant Gloves, and Lab Coat

Purpose: Determination of Chloride by Silver Nitrate Titration.

Equipment:

125ml or 250ml Erlenmeyer flask
2 Class A -10ml Volumetric Pipettes
Class A – 1ml Volumetric Pipette
Class A- 10 ml or 25 ml Volumetric Burette with stand
Pipette Bulb
DI Water
100ml beaker
5% Potassium Chromate Solution
.1N Silver Nitrate Standardized Solution

Procedure:

1. Pipette 10ml of Liquid Magnesium Sulfate with unknown concentration into a clean, dry 125ml or 250ml Erlenmeyer Flask
2. Pipette 20 ml of DI H20 into a same Flask
3. Pipette 1 ml of 5% Potassium Chromate Solution into flask.
4. Swirl flask for about five seconds to mix the solution
5. Fill 10ml or 25ml volumetric burette with 0.1 N Silver Nitrate
6. Write down the initial volume mark. For example, the initial volume mark is 2.5ml
7. Titrate with 0.1 N Silver Nitrate until you see a formation of red precipitate At that point, where no chloride ions (Cl-) are left, an excess of silver nitrate starts to react with indicator according to the equation $2AgNO3 + K2CrO4 = Ag2CrO4+2KNO3$. Swirl flask consistently while titrating.
8. Record the volume mark of the solution in the burette. For example, the final volume mark is 26.4ml.
9. Subtract the initial volume mark (Step 6) from the final one (Step 9) to calculate the volume of silver nitrate solution used for the titration. In this example, the volume is 26.4ml – 2.5ml = 23.9ml

The ppm of Chloride in sample solution is calculated using the following formula:

$$\frac{\textbf{ml AgNO3 x 3550}}{\textbf{ml of sample solution}} = \textbf{ppm (parts per million)}$$

Calculation Derivation

.1N AgNO3 = .1M AgNO3 = .1 moles/liter

(.1moles/ L AgNO3) (_____L AgNO3) = _____ moles AgNO3 = moles Cl-

(_____moles Cl-) ÷ (_____L samples solution) = _____ M Cl-

(_____ moles/ L Cl-)* (35.5 g / mole) *(1000mg/g) = _____ mg/L = ppm

TRAINING DOCUMENTATION

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Revision Number	Revision Date	Revision Author	Revision Description
00	10/21/11	LC	New Procedure
01	11/11/11	SL	Revised Test Method