

EXPERIMENT: 14

AIM:

EXPLAIN QUANTITATIVE ESTIMATION OF MAGNESIUM SULPHATE

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REQUIREMENTS

A. Glassware & Instruments

1. Conical flask
2. Volume flask
4. Burette
5. Pipette
6. Funnel
7. Beaker

B. Chemicals & Reagents

1. Magnesium sulphate heptahydrate: 0.3 g
2. Strong ammonia-ammonium chloride solution (6.75 g NH_4Cl in 74.0 ml strong ammonia solution add water. to produce to 100 ml)
3. 0.05 M disodium edetate
4. Mordant Black II mixture (mixture of 0.2 part mordant black II with 100 parts of NaCl): 0.1 g

THEORY

Magnesium sulphate occurs naturally in seawater, mineral springs and in mineral such as kieserite and epsomite. It is recovered from them or by reacting sulfuric acid and magnesium oxide.

PROCEDURE

- Weigh precisely 0.3 grammes of magnesium sulphate heptahydrate and dissolve it in 50 ml of DW.

- Add 10 ml of a strong ammonia-ammonium chloride solution to it, and titrate with 0.05 M disodium ethylene diamine tetracetate, using 0.1 g of mordant black II mixture as an indicator, until the blue turns pink.
- Each ml of 0.05 M disodium ethylene diamine tetracetate corresponds to 0.00602 g of magnesium sulphate.

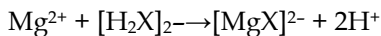
Standardization Of 0.05 M Disodium EDETATE Solution

Method

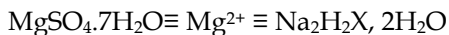
- Accurately weigh approximately 0.8 g of zinc granules, then dissolve them in 12 ml of diluted HCl and 5 drops of Br₂ water.
- In a volumetric flask, boil to remove excess Br₂, cool, and add sufficient DW to generate 200 ml.
- In a flask, carefully neutralise 20 ml of the resultant solution with 2 N NaOH.
- In a flask, carefully neutralise 20 ml of the resultant solution with 2 N sodium hydroxide. Dilute to approximately 150 ml with DW, add sufficient ammonia buffer (pH 10.0) to dissolve the precipitate, and add an excess of 5 ml.
- Add 50 mg of the mixture of Mordant Black II and titrate with the disodium edetate solution until the solution turns green.
- Each 0.003269 g of granulated zinc corresponds to 1 ml of 0.05 M disodium ethylenediaminetetracetate.

REACTION

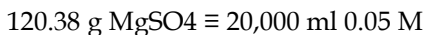
The assay of MgSO₄·7H₂O is based upon the reactions designated by the following equations:



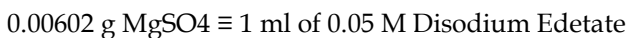
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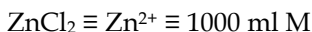
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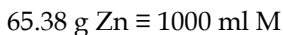
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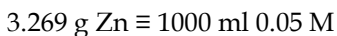
CALCULATION



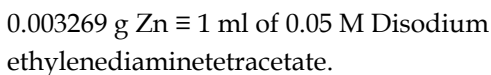
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or



APPLICATION

1. Medication is used to prevent low blood magnesium seizures in woman with eclampsia severe asthma exacerbations.
2. Used in constipation.

RESULT

% of magnesium sulphate present is.....