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ESTIMATION OF MAGNESIUM SULPHATE, AND CALCIUM GLUCONATE

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ESTIMATION OF MAGNESIUM SULPHATE

- **MATERIALS REQUIRED** : Magnesium sulphate heptahydrate : 0.3 g ; strong ammonia-ammonium chloride solution (6.75 g NH₄Cl in 74.0 ml strong ammonia solution add water q.s. to produce to 100 ml) ; 0.05 M disodium edetate ; Mordant Black II mixture (mixture of 0.2 part mordant black II with 100 parts of NaCl) : 0.1 g.
- **EQUATIONS** : The assay of MgSO₄·7H₂O is based upon the reactions designated by the following equations :
- $$\text{Mg}^{2+} + [\text{H}_2\text{X}]^{2-} \rightarrow [\text{MgX}]^{2-} + 2\text{H}^+$$
- or
$$\text{MgSO}_4 \cdot 7\text{H}_2\text{O} \equiv \text{Mg}^{2+} \equiv \text{Na}_2\text{H}_2\text{X}, 2\text{H}_2\text{O}$$



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or **120.38 g MgSO₄ ≡ 20,000 ml 0.05 M**

- or **0.00602 g MgSO₄ ≡ 1 ml of 0.05 M Disodium Edetate**

- **PROCEDURE :**

- Weigh accurately about **0.3 g** of magnesium sulphate heptahydrate and dissolve in **50 ml** of DW. Add to it **10 ml** of strong ammonia-ammonium chloride solution, and titrate with **0.05 M** disodium ethylene diamine tetracetate employing **0.1 g** of mordant black II mixture as indicator, until the pink colour is discharged from the blue. Each ml of **0.05 M** disodium ethylene diamine tetracetate is equivalent to **0.00602 g** of MgSO₄.



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STANDARDIZATION OF 0.05 M DISODIUM EDTATE SOLUTION

Procedure : Weigh accurately about 0.8 g of granulated zinc, dissolve by gentle warming in 12 ml of dilute hydrochloric acid and 5 drops of bromine water. Boil to remove excess bromine, cool and add sufficient DW to produce 200 ml in a volumetric flask. Pipette 20 ml of the resulting solution into a flask and neutralize carefully with 2 N sodium hydroxide. Dilute to about 150 ml with DW, add to it sufficient ammonia buffer (pH 10.0) to dissolve the precipitate and add a further 5 ml quantity in excess. Finally add 50 mg of Mordant Black II mixture and titrate with the disodium edetate solution until the solution turns green. Each 0.003269 g of granulated zinc is equivalent to 1 ml of 0.05 M disodium ethylenediaminetetracetate.



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CALCULATIONS :

- **$\text{ZnCl}_2 \equiv \text{Zn}^{2+} \equiv 1000 \text{ ml M}$**
- **or $65.38 \text{ g Zn} \equiv 1000 \text{ ml M}$**
- **or $3.269 \text{ g Zn} \equiv 1000 \text{ ml } 0.05 \text{ M}$**
- **or $0.003269 \text{ g Zn} \equiv 1 \text{ ml of } 0.05 \text{ M Disodium ethylenediaminetetraacetate.}$**

ESTIMATION OF CALCIUM GLUCONATE is same as magnesium sulphate.



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THANK YOU