

Continue Learning with FirstHope

Complete Notes on the FirstHope App

Complete subject and semesters are available on FirstHope app only.

- Get complete subject and semester notes in the FirstHope app.
- Available for B.Pharm, D.Pharm, M.Pharm and Pharm.D students.

[Click here to get the FirstHope app](#)

Join the FirstHope Telegram Channel

Join FirstHope Notes and keep up with channel updates.

[Click here to join Telegram](#)

Instagram

@firsthope.official

[Click here to follow Instagram](#)

YouTube Channel

FirstHope-Pharmacy / Live streams

[Click here to watch the YouTube channel](#)

WhatsApp Channel

Follow FirstHope on WhatsApp.

[Click here to join the WhatsApp channel](#)

FirstHope Website

firsthopenotes.com

[Click here to visit the website](#)

Preparation of Potash Alum

Experiment 7 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To prepare potash alum crystals and calculate yield using the stated hydrated formula.

Principle

Potash alum is $KAl(SO_4)_2 \cdot 12H_2O$. It can crystallise from a suitable mixture of potassium sulphate and aluminium sulphate solutions. Solubility differences with temperature allow purification by crystallisation. Hydrated crystal mass includes water of crystallisation.

Requirements

- Prescribed potassium sulphate and aluminium sulphate with stated hydrate form.
- Water, beakers, controlled heating, filtration apparatus and balance.

Procedure

1. Calculate reactants

Use the correct hydrate molecular mass. Identify the limiting reactant and the theoretical alum amount.

2. Dissolve

Prepare the required warm solutions using the prescribed water amounts. Combine in the assigned proportions.

3. Clarify

Filter the warm solution if required to remove insoluble matter, maintaining the specified conditions.

4. Crystallise

Concentrate or cool as directed until crystals form. Avoid uncontrolled rapid evaporation or heating that changes the hydrate.

5. Collect

Separate crystals, use the prescribed small wash and dry under conditions that preserve the intended hydrate.

6. Evaluate

Record crystal appearance and dry surface condition, weigh and calculate yield on the dodecahydrate basis.

Pharmaceutical Inorganic and Analytical Chemistry**Observations and Record**

Item	Basis	Record
Reactants	Mass and hydrate form	_____
Crystals	Appearance / recovered mass	___ g
Yield	Actual ÷ theoretical × 100	___%

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Reaction basis: $\text{K}_2\text{SO}_4 + \text{Al}_2(\text{SO}_4)_3 + 24 \text{H}_2\text{O} \rightarrow 2 \text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$.
- Illustrative equimolar amounts: 1.743 g $\text{K}_2\text{SO}_4 \approx 0.010$ mol and 6.664 g $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O} \approx 0.010$ mol.
Theoretical alum = $0.020 \times 474.39 \approx 9.49$ g.
- If 9.10 g crystals are recovered on the intended hydrate basis, yield = $9.10 \div 9.49 \times 100 \approx 95.9\%$.

Result

Potash alum crystals were obtained with appearance _____. Recovered mass ____ g; hydrate-basis yield ____%.

Precautions

- Use hydrate-corrected reactant masses.
- Do not strongly heat the final crystals when the calculation assumes the dodecahydrate.
- Excessive wash water can dissolve product and reduce yield.

Viva Questions and Answers**1. Why can cooling give crystals?**

The solution can become supersaturated as solubility decreases.

2. What is the formula of potash alum?

$\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$.

3. Does a high yield prove purity?

No; retained mother liquor or impurities can inflate the mass.

Continue Learning with FirstHope

Complete Notes on the FirstHope App

Complete subject and semesters are available on FirstHope app only.

- Get complete subject and semester notes in the FirstHope app.
- Available for B.Pharm, D.Pharm, M.Pharm and Pharm.D students.

[Click here to get the FirstHope app](#)

Join the FirstHope Telegram Channel

Join FirstHope Notes and keep up with channel updates.

[Click here to join Telegram](#)

Instagram

@firsthope.official

[Click here to follow Instagram](#)

YouTube Channel

FirstHope-Pharmacy / Live streams

[Click here to watch the YouTube channel](#)

WhatsApp Channel

Follow FirstHope on WhatsApp.

[Click here to join the WhatsApp channel](#)

FirstHope Website

firsthopenotes.com

[Click here to visit the website](#)