

SUBJECT: IDENTIFICATION METHODS FOR COPPER SULFATE	Effective Date MM/DD/YY	SOP Number: 65-0006
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1. SCOPE

To describe the methods and requirements for assessment of raw material copper sulfate.

2. DEFINITIONS - N/A

3. REFERENCES

- 3.1. SOP: XX-ABCD Lab Analyst Training Program
- 3.2. USP, current - cupric sulfate
- 3.3. USP, current - General Identification Tests <191>
- 3.4. Incoming Raw Material/Component Specification *ZZ-ZZZZ*

4. REAGENTS

- 4.1.1. 3 N Hydrochloric Acid
- 4.1.2. 6 N Ammonium Hydroxide
- 4.1.3. Barium Chloride TS

5. RESPONSIBILITY

- 5.1.1. This assay is to be performed by any appropriately trained analyst. Analyst training and documentation of training will be conducted per SOP XX-ABCD.
- 5.1.2. A second qualified analyst will verify the results.
- 5.1.3. The final approval of laboratory results is the responsibility of the QC Manager (or designee).

6. HAZARD COMMUNICATION

- 6.1.1. *HYDROCHLORIC ACID*

<p>DANGER: CORROSIVE. AVOID CONTACT WITH SKIN AND EYES. AVOID INHALATION OF VAPOR AND MIST. <u>DO NOT MIX</u> WITH CAUSTICS OR OTHER REACTIVES.</p>
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6.1.2. *AMMONIUM HYDROXIDE*

DANGER: CORROSIVE. AVOID CONTACT WITH SKIN AND EYES. AVOID INHALATION OF MIST OR VAPORS. DO NOT MIX WITH ACIDS OR OTHER REACTIVES.

6.1.3. *BARIUM CHLORIDE*

DANGER: MAY CAUSE SKIN AND EYE IRRITATION. MAY BE TOXIC IF INGESTED. AVOID CONTACT WITH OTHER CHEMICALS.

7. ATTACHMENTS

- 7.1. Attachment I – Form: ZZ-1234 QC Report of Analysis
- 7.2. Attachment II - Form: ZZ-1235 SOP Reading Verification Sheet

8. PROCEDURES

8.1. Sample Preparation

8.1.1. A 1 in 10 solution should be made as follows:

8.1.1.1. Weigh 2.5 ± 0.1 g copper sulfate under test in a 25-mL volumetric flask.

8.1.1.2. Add 15-20 mL purified water and mix until completely dissolved. QS to volume.

8.1.2. This solution should be used for the copper and sulfate identification tests.

8.2. Copper Identification

8.2.1. Place 10 mL of the solution from 5.1 into a clean test tube.

8.2.2. Place several drops 6 N ammonium hydroxide into this solution and gently mix.

8.2.3. A blue precipitate should result and then a deep blue colored solution.

8.2.4. Record results on Appropriate Report of Analysis (ROA) and analyst notebook.

8.3. Sulfate Identification

8.3.1. Place 5 mL of the solution from 5.1 into each of two clean test tubes. Label the tubes 1 & 2.

8.3.2. Into tube 1, place 3 drops of barium chloride TS. A white precipitate should form.

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8.3.3. Into tube 1, place 3 drops of hydrochloric acid. The precipitate should NOT disappear.

8.3.4. Into tube 2, add 3 drops of hydrochloric acid. NO precipitate should form.

NOTE: Step 5.3.4 must be carried out as this distinguishes sulfates from thiosulfates.

8.3.5. Record results on appropriate ROA and analyst notebook.

8.4. Properly dispose of samples and reagents.