Status: Currently Official on 17-Feb-2025
Official Date: Official Prior to 2013
Document Type: USP Monographs
DocId: GUID-C196C74B-F716-40A0-AE2C-087F2234FC8A_1_en-US
DOI: https://doi.org/10.31003/USPNF_M7135_01_01
DOI Ref: xa0o4

Barium Sulfate Suspension

DEFINITION

Barium Sulfate Suspension contains NLT 90.0% and NMT 110.0% of the labeled amount of barium sulfate ($BaSO_4$). It contains suitable dispersing and/or suspending agents so that when mixed as directed in the labeling, it yields a uniformly dispersed suspension. It may contain one or more suitable colors, flavors, fluidizing agents, and preservatives.

IDENTIFICATION

• **A.** Identification Tests—General, *Sulfate* ⟨191⟩

Sample: Shake the Suspension, and transfer a volume equivalent to 0.5 g of barium sulfate to a suitable container. Ignite to constant weight.

Analysis: Mix 0.5 g of the ignited *Sample* with 2 g each of anhydrous sodium carbonate and anhydrous potassium carbonate, heat the mixture in a crucible until fusion is complete, treat the resulting fused mass with hot water, and filter. Proceed as directed in the chapter.

Acceptance criteria: The filtrate, acidified with hydrochloric acid, meets the requirements.

• **B.** Identification Tests—General, *Barium* ⟨191⟩

Sample solution: Dissolve a portion of the well-washed residue from *Identification* test *A* in 6 N acetic acid.

Acceptance criteria: The solution meets the requirements.

ASSAY

• **Procedure**

Sample: A volume of Suspension, previously well shaken in its original container, equivalent to 0.60 g of barium sulfate, in a tared platinum crucible

Analysis: Ignite over a low flame until any organic matter is thoroughly carbonized. Cool, cautiously add 0.5 mL of nitric acid and 0.5 mL of sulfuric acid, and continue the ignition over a low flame until the residue becomes gray in color, then ignite over the full heat of a blast burner. Allow the contents of the crucible to cool to room temperature.

[Note—If the specimen contains a silicate, such as bentonite, proceed as follows. Add 10 mL of water and 1 mL of sulfuric acid to the residue in the crucible, mix, and add 10 mL of hydrofluoric acid. Heat gently over a low flame until fumes of sulfur trioxide appear. Add 5 mL more of hydrofluoric acid, heat again over a low flame to the appearance of dense fumes, and continue heating until the sulfuric acid has been completely volatilized. Allow the contents of the crucible to cool.]

[Note—If the specimen does not contain a silicate, omit the treatment of the specimen with hydrofluoric and sulfuric acids.]

Add to the treated or untreated specimen in the platinum crucible 10 g of anhydrous sodium carbonate, fuse over a blast burner until a clear melt is obtained, and heat for an additional 30 min. Cool, place the crucible in a 400-mL beaker, add 250 mL of water, stir with a glass rod, and heat to dislodge the melt. Remove the crucible from the beaker, and wash with water, collecting the washings in the beaker. Rinse the inside of the crucible with 2 mL of 6 N acetic acid and then with water, again collecting the washings in the beaker, and continue heating and stirring until the melt is disintegrated. Cool the beaker in an ice bath until the precipitate settles, and decant the clear liquid through filter paper (Whatman No. 40, or equivalent), taking care to transfer as little precipitate as possible to the paper.

Wash twice by decantation as follows. Wash down the inside of the beaker with 10 mL of cold sodium carbonate solution (1 in 50), swirl the contents of the beaker, allow the precipitate to settle, and decant the supernatant through the same filter paper as before, transferring as little precipitate as possible to the paper. Place the beaker containing the bulk of the barium carbonate precipitate under the funnel, wash the filter paper with five 1-mL portions of 3 N hydrochloric acid, and wash the paper with water. [Note—The solution may be slightly hazy.]

Add 100 mL of water, 5.0 mL of hydrochloric acid, 10.0 mL of ammonium acetate solution (2 in 5), 25 mL of potassium dichromate solution (1 in 10), and 10.0 g of urea. Cover the beaker with a watch glass, and digest at 80°–85° for NLT 16 h. Filter while hot through a tared, fine-porosity, sintered-glass crucible, transferring all of the precipitate with the aid of a rubber-tipped stirring rod. Wash the precipitate with potassium dichromate solution (1 in 200), and finally with 20 mL of water. Dry at 105° for 2 h, cool, and weigh. The weight of the barium chromate so obtained, multiplied by 0.9213, represents the weight of barium sulfate ($BaSO_4$).

Acceptance criteria: 90.0%–110.0%

SPECIFIC TESTS

• **Microbial Enumeration Tests ⟨61⟩** and **Tests for Specified Microorganisms ⟨62⟩:** The total bacterial count does not exceed 10^2 cfu/mL, the total combined molds and yeasts count does not exceed 10^1 cfu/mL, and it meets the requirements of the tests for absence of *Salmonella* species, *Staphylococcus aureus*, and *Pseudomonas aeruginosa*.

• **pH ⟨791⟩:** 3.5–10.0

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight containers, and avoid freezing.

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
BARIUM SULFATE SUSPENSION	Documentary Standards Support	SM42020 Small Molecules 4
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM42020 Small Molecules 4

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 28(1)

Current DocID: GUID-C196C74B-F716-40A0-AE2C-087F2234FC8A_1_en-US

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