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Sodium Sulfate

$Na_2SO_4 \cdot 10H_2O$ 322.19
Sulfuric acid disodium salt, decahydrate.
Disodium sulfate decahydrate CAS RN®: 7727-73-3; UNII: 0YPR65R21J.
Anhydrous 142.04 CAS RN®: 7757-82-6; UNII: 36KCS0R750.

» Sodium Sulfate contains ten molecules of water of hydration, or is anhydrous. It contains not less than 99.0 percent of Na_2SO_4, calculated on the dried basis.

Packaging and storage—Preserve in tight containers, preferably at a temperature not exceeding 30°.

Labeling—Label it to indicate whether it is the decahydrate or is anhydrous.

Identification—A solution (1 in 20) responds to the tests for *Sodium* ⟨191⟩ and for *Sulfate* ⟨191⟩.

Acidity or alkalinity—To 10 mL of a solution, containing the equivalent of 1.0 g of $Na_2SO_4 \cdot 10H_2O$ in 20 mL of water, add 1 drop of bromothymol blue TS: not more than 0.50 mL of either 0.010 N hydrochloric acid or 0.010 N sodium hydroxide is required to change the color of the solution.

Loss on drying ⟨731⟩—Dry at 105° for 4 hours: the decahydrate loses between 51.0% and 57.0% of its weight, and the anhydrous form loses not more than 0.5% of its weight.

Chloride ⟨221⟩—A portion equivalent to 1.0 g of $Na_2SO_4 \cdot 10H_2O$ shows no more chloride than corresponds to 0.30 mL of 0.020 N hydrochloric acid (0.02%).

Assay—Weigh accurately a portion of Sodium Sulfate, equivalent to about 400 mg of anhydrous sodium sulfate, dissolve in 200 mL of water, and add 1 mL of hydrochloric acid. Heat to boiling, and gradually add, in small portions and while constantly stirring, an excess of hot barium chloride TS (about 8 mL). Heat the mixture on a steam bath for 1 hour, collect the precipitate of barium sulfate on a retentive, ashless filter paper, wash until free from chloride when tested with silver nitrate TS, and place the filter into a suitable tared crucible. Carefully burn away the paper, and ignite at 800 ± 25° to constant weight. The weight of the barium sulfate so obtained, multiplied by 0.6086, represents its equivalent of Na_2SO_4.

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

Topic/Question	Contact	Expert Committee
SODIUM SULFATE	Documentary Standards Support	SM32020 Small Molecules 3
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

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