

U.S. PHARMACOPEIA

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Sodium Lauryl Sulfate

Sulfuric acid monododecyl ester sodium salt.

Sodium monododecyl sulfate [151-21-3].

» Sodium Lauryl Sulfate is a mixture of sodium alkyl sulfates consisting chiefly of sodium lauryl sulfate $[\text{CH}_3(\text{CH}_2)_{10}\text{CH}_2\text{OSO}_3\text{Na}]$. The combined content of sodium chloride and sodium sulfate is not more than 8.0 percent.

Packaging and storage— Preserve in well-closed containers.

Identification—

A: Ignite about 500 mg at 800° until the carbon is consumed: the residue dissolved in 10 mL of water responds to the tests for [Sodium](#) $\langle 191 \rangle$.

B: A solution (1 in 10) after acidification with hydrochloric acid and gentle boiling for 20 minutes, responds to the tests for [Sulfate](#) $\langle 191 \rangle$.

Alkalinity— Dissolve 1.0 g in 100 mL of water, add phenol red TS, and titrate with 0.10 N hydrochloric acid: not more than 0.60 mL is required for neutralization.

[Heavy metals, Method II](#) $\langle 231 \rangle$: 0.002%.

[Organic volatile impurities, Method IV](#) $\langle 467 \rangle$: meets the requirements.

Sodium chloride— Dissolve about 5 g, accurately weighed, in about 50 mL of water. Neutralize the solution with 0.8 N nitric acid, using litmus paper as the indicator, add 2 mL of [potassium chromate TS](#), and titrate with 0.1 N silver nitrate VS. Each mL of 0.1 N silver nitrate is equivalent to 5.844 mg of NaCl.

Sodium sulfate—

Lead nitrate solution— Dissolve 33.1 g of lead nitrate in water to make 1000 mL.

Procedure— Transfer about 1 g of Sodium Lauryl Sulfate, accurately weighed, to a 250-mL beaker, add 35 mL of water, and warm to dissolve. To the warm solution add 2.0 mL of 1 N nitric acid, mix, and add 50 mL of alcohol. Heat the solution to boiling, and slowly add 10 mL of *Lead nitrate solution*, with stirring. Cover the beaker, simmer for 5 minutes, and allow to settle. If the supernatant is hazy, allow to stand for 10 minutes, heat to boiling, and allow to settle. When the solution is almost to a boiling point, decant as much liquid as possible through a 9-cm filter paper (Whatman No. 41 or equivalent). Wash four times by decantation, each time using 50 mL of 50 percent alcohol, and bring the mixture to a boil. Finally, transfer the filter paper to the original beaker, and immediately add 30 mL of water, 20.0 mL of 0.05 M edetate disodium VS, and 1 mL of ammonia-ammonium chloride buffer TS. Warm to dissolve the precipitate, add 0.2 mL of [eriochrome black TS](#) and titrate with 0.05 M zinc sulfate VS. Each mL of 0.05 M edetate disodium is equivalent to 7.102 mg of Na_2SO_4 .

Unulfated alcohols— Dissolve about 10 g, accurately weighed, in 100 mL of water, and add 100 mL of alcohol. Transfer the solution to a separator, and extract with three 50-mL portions of solvent hexane. If an emulsion forms, sodium chloride may be added to promote separation of the two layers. Wash the combined solvent hexane extracts with three 50-mL portions of water, and dry with anhydrous sodium sulfate. Filter the solvent hexane extract into a tared beaker, evaporate on a steam bath until the odor of solvent hexane no longer is perceptible, dry the residue at 105° for 30 minutes, cool, and weigh. The weight of the residue is not more than 4.0% of the weight of the Sodium Lauryl Sulfate taken.

Total alcohols— Transfer about 5 g, accurately weighed, to an 800-mL Kjeldahl flask, and add 150 mL of water, 50 mL of hydrochloric acid, and a few boiling chips. Attach a reflux condenser to the Kjeldahl flask, heat carefully to avoid excessive frothing, and then boil for about 4 hours. Cool the flask, rinse the condenser with ether, collecting the ether in the flask, and transfer the contents to a 500-mL separator, rinsing the flask twice with ether and adding the washings to the separator. Extract the solution with two 75-mL portions of ether, evaporate the combined ether extracts in a tared beaker on a steam bath, dry the residue at 105° for 30 minutes, cool, and weigh. The residue represents the total alcohols, and is not less than 59.0% of the weight of Sodium Lauryl Sulfate taken.

Residual solvents { 467 } : meets the requirements.

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Expert Committee : (EM105) Excipient Monographs 1

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