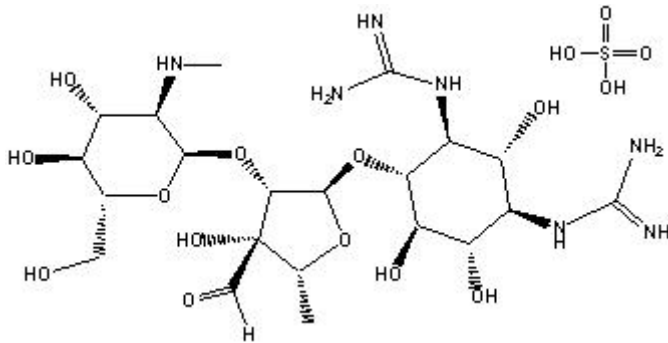


## TECHNICAL INFORMATION

Catalog Number: 100556, 194541, 194797

### Streptomycin Sulfate

#### Structure:



**Molecular Formula:** C<sub>42</sub>H<sub>84</sub>N<sub>14</sub>O<sub>36</sub>S<sub>3</sub>

**Molecular Weight:** 1457.38

**CAS #:** 38100-74-0

**Synonyms:** O-2-Deoxy-2-(methylamino)-a-L- glucopyranosyl-(1->2)-O-5-deoxy-3-C-formyl-a-L- lyxofuranosyl- (1->4)- N,N'-bis(aminoiminomethyl)-D-streptamine; Streptomycin A

**Physical Description:** White powder

**Solubility:** Soluble in aqueous solution (1 g/10 ml water - clear,colorless solution). Stock solutions should be sterile filtered and stored at 2-8°C for up to one month or aliquoted and stored at -20°C for up to 4 to 6 months. Solutions are stable at 37°C for approximately 3 days. Changes in solution color that occur when solutions are exposed to light are not necessarily accompanied by loss of activity; however, solutions should preferably be stored in the dark.

**Description:** An aminoglycoside antibiotic in which streptidine is linked glycosidically to the disaccharide streptobiosamine.<sup>1</sup> It is most active in a slightly alkaline medium. Inhibits initiation and causes misreading of rRNA in protein synthesis. Effective against gram-negative and gram-positive bacteria. Typically used at a concentration of 50-100 mg/liter. The half-life in plasma is about 2-4 hours. About one-third of streptomycin in the circulation is bound to plasma proteins. About 30-90% of a dose is excreted unchanged in the urine in 24 hours.<sup>3,6,7</sup>

Some Representative Minimum Inhibitory Concentrations (MIC) values have been reported:<sup>6</sup>

- 1-2 ug/ml for *Klebsiella sp.*
- 16-64 ug/ml for *Ps. aeruginosa*
- 4-16 ug/ml for *Salmonella sp.*
- 0.5 ug/ml for *M. tuberculosis*
- 2-4 ug/ml for *E. coli* (complete inhibition of *E. coli* has been reported at > 20 ug/ml<sup>5</sup>).

**Mode of Action:** Inhibits prokaryote protein synthesis by preventing the transition from initiation complex to chain-elongating ribosome and causes miscoding: Binds to S12 protein of 30S ribosomal subunit causing the misreading or the inhibition of initiation.

**Mode of Resistance:** Mutation in rpsL (gene for S12 ribosomal protein) prevents binding of streptomycin to ribosome. Aminoglycoside phosphotransferase also inactivates.

**Inactivation:** Streptomycin is inactivated by acids, alkalis, oxidizing and reducing agents, urea and other carbonyl-containing compounds, as well as by cysteine and other sulfhydryl-containing substances.<sup>6</sup>

Loss in potency was reported:<sup>6</sup>

pH	Temperature	Activity Loss
6.5	95°C	50% in 4 hours
9.5	28°C	50% in 12 days

0.8

28°C

50% in 4 days

**Availability:**

Catalog Number	Description	Size
100556	Streptomycin Sulfate	5 g 25 g 50 g 100 g 1 kg
194797	Streptomycin Sulfate, molecular biology reagent, gamma-irradiated	25 mg 50 mg
194541	Streptomycin Sulfate, cell culture reagent	5 g 25 g 50 g 100 g

**References:**

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- *Concise Encyclopedia Biochemistry*, 2nd ed., T. Scott and M. Eagleson (eds.), Walter de Gruyter, Inc.: NY, p. 568 (1988).
- *Data for Biochemical Research*, 3rd ed., Oxford Press, p. 283 (1986).
- *Martindale: The Extra Pharmacopoeia*, 28th Ed., Pharmaceutical Press, p. 1213 (1982).
- *Martindale: The Extra Pharmacopoeia*, 31st Ed., J. Reynolds (ed.), Royal Pharmaceutical Society, p. 275 (1996).
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- Weiss, P.J., et al., *Antibiot. and Chemother.*, **v. 7**, 374 (1957).
- Zierhut, G., et al., *Eur. J. Biochem.*, **v. 98**, 577 (1979).