

## Streptomycin Sulfate

**Cat:** S8290

**Specification:** 5g /25g

**Storage:** Store at 2-8°C.

### Product Information

**CAS:** 3810-74-0

**English name:** Streptomycin Sulfate

**Appearance (Character):** Fine white powder

**Molecular Formula:**  $(C_{21}H_{39}N_7O_{12})_2 \cdot 3H_2SO_4$

**Molecular Weight:** 1457.4

**Synonyms:** Streptomycin sesquisulfate, streptomycin A

### Storage / Stability:

The hygroscopic powder should be stored at 2-8°C with desiccant. When stored as indicated, Streptomycin sulfate has a shelf-life of three years. Streptomycin salts are stable when dry for at least two years at room temperature but some loss in potency occurs at higher temperatures.

### Solubility / Solution Stability:

streptomycin sulfate is soluble in water at 50 mg/mL, obtaining a clear solution ranging from colorless to light yellow. Additional solubilities reported (as mg/mL at 28°C):methanol 0.85; ethanol 0.30; isopropanol 0.01; petroleum ether 0.015; carbon tetrachloride 0.035; ether 0.035.

Streptomycin at 1 mg/mL in water can be kept refrigerated for 30 days. Solutions at pH 3-7 retain potency for several weeks at room temperature, though some discoloration may occur. Changes in color that occur when solutions are exposed to light are not necessarily accompanied by loss of activity, but solutions should preferably be stored in the dark. 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.

Streptomycin is stable in solution at -20°C for at least 18 months.

### Introduction

Streptomycin is an antibiotic which inhibits initiation, elongation and termination of protein synthesis in prokaryotes. It is most active in a slightly alkaline medium. Some representative MIC values (minimum inhibitory concentration) have been reported: 1-2 µg/mL for *Klebsiella* spp., 16-64 µg/mL for *Ps. aeruginosa*, 4-16 mg/mL for *Salmonella* spp., 0.5µg /mL for *M. tuberculosis*, 2-4 µg/mL for *E. coli*. (A second source reported complete inhibition for *E. coli* at concentrations > 20 µg /mL).Streptomycin inhibits protein biosynthesis on 70S ribosomes. It becomes bound to the 23S core protein of the 30S ribosomal subunit. This protein appears to be responsible (in the absence of streptomycin) for the binding of mRNA. However, widespread emergence of resistant strains has significantly reduced its effectiveness against common Gram-negative aerobes. The resistance is thought to be due to mutation of the ribosomal binding site of the antibiotic.

Streptomycin sulfate is poorly and irregularly absorbed from the gastrointestinal tract. It is readily absorbed after intramuscular administration and widely distributed throughout the body. 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.

The lot-specific units given by the supplier are International Units, calculated on an anhydrous basis. International Units are based on the Third International Standard (tested for bioactivity), for which 785 units of streptomycin base are contained in 1 mg of streptomycin sulfate. The U.S. Pharmacopeia states that suitable products must have potency not less than 650 $\mu$ g and not more than 850 $\mu$ g of streptomycin base per mg streptomycin sulfate.

**Note:** The theoretical mass of streptomycin base in anhydrous streptomycin sulfate is 798 $\mu$ g, if 100% pure and active. Therefore, the value for the international standard of 785 units/mg may be neither pure nor precisely anhydrous. For practical purposes, potency in units/mg is approximately equal to  $\mu$ g/mg, within a few percent.

#### Note

1. Unless otherwise specified, the biochemical reagents produced by our company are generally non-sterile packaged. If they are to be used for cell experiments, please conduct pretreatment in advance.
2. Once dissolved, please store the solution in separate containers to avoid product degradation caused by repeated freezing and thawing.
3. The product information is for reference only. If you have any questions, please call 400-968-6088 for consultation.
4. The products are all for scientific research use only. Do not use it for medical, clinical diagnosis or treatment, food and cosmetics, etc. Do not store them in ordinary residential areas.
5. For your safety and health, please wear laboratory clothes, disposable gloves and masks to operate.