**Product Profile**

**Product Name:** Penicillin-Streptomycin Solution, 100,000 units/ml Penicillin G Sodium Salt, 100 mg/ml Streptomycin Sulfate in 0.85% Saline

**Product Catalog Number:** 03-031-5

**Concentration:**
- Penicillin G (Sodium Salt) 10X
- Streptomycin Sulfate 100 mg/ml
- NaCl 0.85% Saline

**Unit Size Availability:**
- (B) 100 ml
- (C) 20 ml

**Formulation:** Frozen Solution

**Defined Storage Conditions:** -20°C

**Stability:** Please Refer To Product Label

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**Product Description:**
Penicillin-Streptomycin is an Aminoglycoside-β-Lactam antibiotic combination solution. It accords broad-spectrum bacteriocidal activity against both gram-positive and gram-negative bacteria. The Mode of Action (MOA) of Penicillin G interferes with the final stage of synthesis of the bacterial cell wall causing disruption of the osmotic pressure gradient with ensuing lysis and cell death, whereas the MOA of Streptomycin Sulfate modifies the permeability of the cell wall, interferes with prokaryote protein synthesis and cellular respiration by irreversibly binding to the 30S ribosome subunit to cause a misreading/miscoding of the mRNA. In essence, this activity freezes the 30S initiation complex (i.e. 30S-mRNA-tRNA) and interrupts any further progress in the initiation phase to chain-elongating ribosome. Both antibiotics, Penicillin, a β-Lactam moiety when combined with Streptomycin, an Aminoglycoside moiety, synergistically enhance their range of activities and increase their effectiveness as opposed to when utilized on an individual basis.

The efficacy of a Penicillin-Streptomycin synergistic combination is accomplished when two individual drugs (i.e. both are bactericidal) interfere with different constituents in the bacterial cellular or metabolic pathways. The result is an effect greater than could be attributed to additive action. In theory, a drug affecting the permeability of the cell membrane (i.e. streptomycin), plus a drug affecting the cell wall (i.e. penicillin), when used in combination, may be more effective than either drug used alone. In this case, there is even evidence of synergism between the two-drugs.

**Important Note:** In some cases, some antibiotics when used in combination often exert atypical cytotoxic effects at lower concentrations than when utilized on an individual basis. Please consult other comprehensive pharmacology references regarding antibiotic properties, characteristics, interactions and possible incompatibilities.

**Some of the Predominant Characteristics of Penicillin-Streptomycin Solution include:**
- Easy-To-Use
- Antibactericidal Broad-Spectrum Combination Antibiotic
- Frozen Solution
- Sterile-Filtered (0.1 µm)
- Cell Culture-Tested
Storage and Stability:
The product should be stored at –20°C and allowed to thaw to room temperature prior to use. The contents should not be left in the light for prolonged periods as it is light-sensitive. When stored in the dark under ideal conditions, the product is stable until the expiry date.

Instructions/Procedure:
1) Take a bottle from proper storage conditions at –20°C and read the label.
2) Thaw to room temperature.
3) Ensure that the cap of the bottle is tight.
4) Gently swirl the solution in the bottle.
5) Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
6) Using aseptic/sterile technique under a laminar-flow culture hood, work according to established protocols.
7) Recommended Use: 1: 1000

Quality Control:

<table>
<thead>
<tr>
<th>Test</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Cell Culture</td>
<td>Test &amp; Record</td>
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<tr>
<td>Osmolality</td>
<td>306-374 mOsm/Kg</td>
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<tr>
<td>pH</td>
<td>6.0-6.7</td>
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<tr>
<td>Sterility</td>
<td>Sterile</td>
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Auxiliary Products

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Catalog Number</th>
<th>Storage Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dulbecco's Phosphate Buffered Saline(DPBS) without Calcium and Magnesium</td>
<td>02-023-1</td>
<td>Room Temperature (15-30°C)</td>
</tr>
<tr>
<td>Amphotericin B 250 micrograms/ml</td>
<td>03-028-1</td>
<td>-20°C</td>
</tr>
<tr>
<td>Amphotericin B 2500 micrograms/ml</td>
<td>03-029-1</td>
<td>-20°C</td>
</tr>
<tr>
<td>Penicillin-Streptomycin Solution</td>
<td>03-031-1</td>
<td>-20°C</td>
</tr>
<tr>
<td>Penicillin-Streptomycin Nystatin Solution</td>
<td>03-032-1</td>
<td>-20°C</td>
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<tr>
<td>Nystatin Cell Culture-Test Biochemicals (gamma-irradiated)</td>
<td>41-506-1/5</td>
<td>-20°C</td>
</tr>
</tbody>
</table>

Note: For a list of Serum, other antibiotics, or Biological Industries' Products, please refer to our Product Catalog/Product Profiles/Guides and Internet Site.

References:
1) 14th Edition Of Merck Index, pps.1224,1514
2) Current Editions USP/E Ph
3) Biological Industries(BI) Specifications
9) Hansel, Donna E. and Dintzis. Pathology, Lipponcott Williams & Wilkins Press: Baltimore, Maryland,2006