



Cefsulodin Sodium PRODUCT DATA SHEET

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| Product Name: | Cefsulodin Sodium |
| Product Number: | C058 |
| CAS Number: | 52152-93-9 |
| Molecular Formula: | $C_{22}H_{19}N_4NaO_8S_2 \cdot xH_2O$ |
| Molecular Weight: | 554.53 (Anhydrous basis) |
| Form: | Powder |
| Appearance: | White or light yellow crystalline powder |
| Solubility: | Water: Freely soluble |
| Source: | Synthetic |
| Water Content (Karl Fischer): | ≤5.0% |
| Potency (on a dry basis): | ≥864 µg/mg |
| pH: | 3.3-4.8 |
| Melting Point: | 175°C |
| Optical Rotation: | +16.5° to 20.0° |
| Storage Conditions: | -20°C |
| Description: | <p>Cefsulodin sodium is a third-generation cephalosporin antibiotic.</p> <p>Recently, TOKU-E has found that the main cause of cefsulodin instability stems from one key impurity in 7-ACA (7-aminocephalosporanic acid- a raw material used in the synthesis of cefsulodin). In order to produce high-purity, high-stability cefsulodin, TOKU-E uses industrial HPLC to remove significant quantities of this impurity in 7-ACA and thus produce ultra-pure, ultra-stable, and ultra-potent cefsulodin.</p> <p>Tian et al. used cefsulodin sodium from TOKU-E to study the mechanisms of resistance in cefsulodin-resistant <i>Pseudomonas aeruginosa</i>. Read more here: "<u>CpxR Activates MexAB-OprM Efflux Pump Expression and Enhances Antibiotic Resistance in Both Laboratory and Clinical nalB-Type Isolates of Pseudomonas aeruginosa.</u>"</p> |
| Mechanism of Action: | <p>Like β-lactams, cephalosporins interfere with PBP (penicillin binding protein) activity involved in the final phase of peptidoglycan synthesis. PBP's are enzymes which catalyze a pentaglycine crosslink between alanine and lysine residues providing additional strength to the cell wall. Without a pentaglycine crosslink, the integrity of the cell wall is severely compromised and ultimately leads to cell lysis and death. Resistance to cephalosporins is commonly due to cells containing plasmid encoded β-lactamases.</p> |

Spectrum: Cefsulodin sodium has a very limited spectrum specifically targeting *Pseudomonas aeruginosa*. Other members of the gram positive and gram negative species show little susceptibility.

Microbiology Applications Cefsulodin sodium is commonly used in clinical *in vitro* microbiological antimicrobial susceptibility tests (panels, discs, and MIC strips) primarily against *Pseudomonas aeruginosa* isolates. Medical microbiologists use AST results to recommend antibiotic treatment options for infected patients. Representative MIC values include:

- *Pseudomonas aeruginosa* 128 µg/mL – 512 µg/mL
- For a complete list of cefsulodin MIC values, [click here](#).

Media Supplements

Cefsulodin can be used as a selective agent in several types of isolation media:

[Yersinia Selective Agar](#) - *Yersinia* selective supplement

[Columbia Blood Agar](#) - *Helicobacter pylori* Selective Supplement (Dent)

[mTSB](#) - VCC Selective Supplement

[Salmonella Chromogenic Agar](#) - *Salmonella* Selective Supplement

Technical Data:

Cefsulodin Stability Study

Cefsulodin 0.5mg/mL solution was observed to not degrade over a 4 day span at room temperature. With light additional heating (35°C, 1 hour) the cefsulodin powder didn't degrade while the solution showed slight degradation.

Additional heating (35°C, 5 hours) of the solution yielded 6% of degradation of Cefsulodin solution.

Stability at room temperature for >7 days fell below the >90% purity threshold as well as amount of cefsulodin.

References: Georgopapadakou, N. H. "Mechanisms of Action of Cephalosporin 3'-quinolone Esters, Carbamates, and Tertiary Amines in Escherichia Coli." *American Society for Microbiology* 37.3 (1992): 559-65. *Antimicrobial Agents and Chemotherapy*. Web. 21 Aug. 2012.

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