

Product Name:	Oxacillin sodium
Product Number:	O006
CAS Number:	7240-38-2 (monohydrate)
Molecular Formula:	$C_{19}H_{18}N_3NaO_5S$ (anhydrous basis)
Molecular Weight:	423.42 (anhydrous basis)
Form:	Powder
Appearance:	White crystalline powder
Source:	Semi-synthetic
Water Content (Karl Fischer):	3.5-5.0%
pH:	4.5-7.5
Storage Conditions:	2-8 °C.
Description:	Oxacillin sodium is a freely soluble (50 mg/mL) narrow spectrum β -lactam antibiotic of the penicillin class.
Mechanism of Action:	β -lactams 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 β -lactams is commonly due to cells containing plasmid encoded β -lactamases. Oxacillin however, is resistant to the degradative effects of β -lactamases.
Spectrum:	Oxacillin is used primarily against gram positive organisms namely resistant <i>Staphylococcus</i> species.

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

- *Staphylococcus aureus* 0.125 µg/mL - 8 µg/mL
- *Staphylococcus epidermidis* 0.125 µg/mL - 16 µg/mL
- For a complete list of oxacillin MIC values, [click here](#).

Media Supplements

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

ORSAB - ORSAB Selective Supplement

Fox et al. used oxacillin sodium from TOKU-E to study its synergistic effects with blue light irradiation against *Staphylococcus aureus*. "[Investigating Inhibitory Synergy between Blue Light Irradiation and Antibiotic Treatment of *Staphylococcus aureus*](#)."

References:

Guzmán, Flavio, MD. "Beta Lactams Antibiotics (penicillins and Cephalosporins) Mechanism of Action." *Medical Pharmacology*. Pharmacology Corner, 29 Nov. 2008. Web. 21 Aug. 2012.

Pitout JD, Sanders CC, Sanders WE Jr. Antimicrobial resistance with focus on beta-lactam resistance in gram-negative bacilli. *Am J Med* 1997; 103:51.

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