



MTS™ Technical Sheet **Staphylococci**

Specimen

Blood, wounds, sterile sites (tissues, bone, joints, fluids, CNS) and indwelling devices.

Procedure

Medium: Mueller Hinton II Agar (ref. 10031).

Inoculum: Suspension in physiological solution to 0.5 McFarland (Ref. 80400).

Incubation: 35 ± 2°C / ambient / 16-20 hours. Interpret vancomycin and oxacillin after 24 hours.

Interpretation of results: Bactericidal drugs: interpret the M.I.C. at complete inhibition of growth including microcolonies, hazes and isolated colonies. Bacteriostatic drugs: interpret the M.I.C. at 80% inhibition when trailing is seen.

Methicillin/Oxacillin Resistant Staphylococci

ORSA (Oxacillin resistant *S. aureus*), **OR-CNS** (Oxacillin resistant Coagulase Negative Staphylococci), **BORSA** (Borderline Oxacillin Resistant *S. aureus*).

Medium: Mueller Hinton Agar + 2% NaCl (Ref. 11206).

Inoculum: Suspension in physiological solution to 0.5-1 McF (heavier inoculum improves detection of low level R).

Incubation: 35 ± 2°C / ambient / 24 hours for ORSA/ BORSA, 48 hours for ORCNS.

Interpretation of results: Interpret at complete inhibition of all growth; watch for microcolonies, hazes and isolated colonies.

Glycopeptide non-susceptible *Staphylococcus aureus*

GRSA (Glycopeptide resistant *S. aureus*), **GISA** (Glycopeptide Intermediate *S. aureus*), **hGISA** (heteroresistant glycopeptide intermediate *S. aureus*).

Macro gradient test

Medium: Brain Heart Infusion Agar (Ref. 10060).

Inoculum: Suspension in broth to 2 McF (heavier inoculum improves detection of hetero-resistance).

Incubation: 35 ± 2°C / ambient / interpret at 24 hours and confirm at 48 hours.

Interpretation of results: Interpret at complete inhibition; watch for hazes, microcolonies and isolated colonies. Use a magnifying glass, oblique light and tilt the plate.

	Quality Control (MIC µg/mL)	CLSI INTERPRETATION MIC Criteria (µg/mL)			EUCAST INTERPRETATION MIC Criteria (µg/mL)			
		<i>S. aureus</i> ATCC® 29213	<i>S. aureus</i> ATCC® 43300	S	I	R	S	R
P PENICILLIN G	0.25-2			≤0.12	-	≥0.25	≤0.12	>0.12
C CHLORAMPHENICOL	2-16			≤8	16	≥32	≤8	>8
CIP CIPROFLOXACIN	0.12-0.5			≤1	2	≥4	≤0.001	>1
CD CLINDAMYCIN	0.06-0.25			≤0.5	1-2	≥4	≤0.25	>0.5
DAP DAPTOMYCIN	0.12-1			≤1	-	-	≤1	>1
E ERYTHROMYCIN	0.25-1			≤0.5	1-4	≥8	≤1	>2
CN GENTAMICIN	0.12-1			≤4	8	≥16	≤1	>1
LNZ LINEZOLID	1-4			≤4	-	≥8	≤4	>4
RD RIFAMPICIN	0.004-0.016			≤1	2	≥4	≤0.06	>0.5
TEC TEICoplanin <i>S. aureus</i> Coagulase-negative staphylococci	0.25-1			≤8	16	≥32	≤2 ≤4	>2 >4
TE TETRACYCLINE	0.12-1			≤4	8	≥16	≤1	>2
TGC TIGECYCLINE	0.03-0.25			-	-	-	≤0.5	>0.5
SXT TRIMETHOPRIM-SULFAMETHOXAZOLE (1/19)	≤0.5			≤2	-	≥4	≤2	>4
VA VANCOMYCIN <i>S. aureus</i> <i>Staphylococcus</i> spp. other than <i>S. aureus</i> Coagulase-negative staphylococci	0.5-2			≤2 ≤4	4-8 8-16	≥16 ≥32	≤2 ≤4	>2 >4
Methicillin/Oxacillin Resistant Staphylococci (MecA-mediated resistance)								
OX OXACILLIN <i>S. aureus</i> and <i>S. lugdunensis</i> <i>S. epidermidis</i> <i>S. pseudointermedius</i> and <i>S. schleiferi</i> Other staphylococci	0.12-0.5 >8			≤2 ≤0.5 ≤0.5 ≤0.5	- - - -	≥4 ≥1 ≥1 ≥1	≤2 ≤0.25	>2 >0.25
FOX CEFOXITIN <i>S. aureus</i> and <i>S. lugdunensis</i>	1-4 >8			≤4	-	≥8	-	-

Susceptible (S), Intermediate (I), Resistant (R)

S. aureus ATCC® 29213 - *MecA* negative

S. aureus ATCC® 43300 - *MecA* positive

Note: For combination agents, MIC values are expressed as the concentration of the first component of the combination.

Disclaimer: The table is intended for general guidance only and may not contain all the necessary information. Also reported interpretive criteria and QC MIC ranges might be out of date. Always current guidelines from CLSI and/or EUCAST should be consulted.

Macro gradient test for determining Glycopeptide non-susceptible *Staphylococcus aureus*

MIC (µg/mL)		GRSA, GISA or hGISA
TEICOPLANIN	VANCOMYCIN	
≥12	Do not test	Positive
8	≥8	Positive
<8	Do not test	Negative

This test gives an indication of reduced vancomycin susceptibility but note that the readings are not MICs.

References

1. CLSI M100. Performance Standards for Antimicrobial Susceptibility Testing. 31st Edition, 2021.
2. EUCAST. Breakpoint tables for interpretation of MICs and zone diameters. Version 11.0, 2021.
3. Routine and extended internal quality control for MIC determination and disk diffusion as recommended by EUCAST. Version 11.0, 2021.
4. CLSI M07. Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria That Grow Aerobically. 11th Edition, 2018.
5. EUCAST guidelines for detection of resistance mechanisms and specific resistances of clinical and/or epidemiological importance. Version 2.0, 2017.

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