



MIC Test Strip Technical Sheet *Streptococcus pneumoniae*

Specimen

Blood, CSF and respiratory sites (sputum, tracheal aspirate, middle ear fluid, nasopharynx).

Medium	Mueller Hinton II Agar (Sheep blood 5%), Ref. 10131 or Mueller Hinton Fastidious Agar (Horse blood 5% + 20 mg/L β -NAD), Ref. 10132 ¹
Inoculum	Suspension in Mueller Hinton Broth (Ref. 24107) to 0.5 McFarland (Ref. 80400). 1 McFarland (Ref. 80401) for mucoid.
Incubation	35 \pm 2°C/ 5% CO ₂ / 20-24 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.

	Quality Control (M.I.C. μ g/mL) <i>S. pneumoniae</i> ATCC® 49619	CLSI INTERPRETATION M.I.C. Criteria (μ g/mL)			EUCAST INTERPRETATION M.I.C. Criteria (μ g/mL)		Examples of ANTIBIOGRAM	
		S	I	R	S	R	140 mm petri dish	90 mm petri dish
AZM AZITHROMYCIN (-CO ₂) ²	0.06-0.25	\leq 0.5	1	\geq 2	\leq 0.25	$>$ 0.5		
AZM AZITHROMYCIN (+CO ₂) ³	0.5-2							
P PENICILLIN G Parenteral (non-meningitis) Parenteral (meningitis) Oral	0.25-1	\leq 2 \leq 0.06 \leq 0.06	4 - 0.12-1	\geq 8 \geq 0.12 \geq 2	\leq 0.06 \leq 0.06	$>$ 2 $>$ 0.06	\checkmark 0.002-32	\checkmark 0.002-32
CTX CEFOTAXIME meningitis non-meningitis	0.03-0.12	\leq 0.5 \leq 1	1 2	\geq 2 \geq 4	\leq 0.5	$>$ 2	\checkmark 0.002-32 (or CRO 0.002-32)	\checkmark 0.002-32 (or CRO 0.002-32)
CRO CEFTRIAZONE meningitis non-meningitis	0.03-0.12	\leq 0.5 \leq 1	1 2	\geq 2 \geq 4	\leq 0.5	$>$ 2		
C CHLORAMPHENICOL	2-8	\leq 4	-	\geq 8	\leq 8	$>$ 8		
CLR CLARITHROMYCIN (-CO ₂) ²	0.03-0.12	\leq 0.25	0.5	\geq 1	\leq 0.25	$>$ 0.5		
CLR CLARITHROMYCIN (+CO ₂) ³	0.06-0.25							
CD CLINDAMYCIN (-CO ₂) ^{1,2}	0.03-0.12	\leq 0.25	0.5	\geq 1	\leq 0.5	$>$ 0.5		
CD CLINDAMYCIN (+CO ₂) ^{1,3}	0.06-0.25							
ETP ERTAPENEM	0.03-0.25	\leq 1	2	\geq 4	\leq 0.5	$>$ 0.5		
E ERYTHROMYCIN (-CO ₂) ²	0.03-0.12	\leq 0.25	0.5	\geq 1	\leq 0.25	$>$ 0.5	\checkmark	
E ERYTHROMYCIN (+CO ₂) ³	0.06-0.25							
IMI IMIPENEM	0.03-0.12	\leq 0.12	0.25-0.5	\geq 1	\leq 2	$>$ 2		
LEV LEVOFLOXACIN	0.5-2	\leq 2	4	\geq 8	\leq 2	$>$ 2		
LNZ LINEZOLID	0.25-2	\leq 2	-	-	\leq 2	$>$ 4		
MRP MEROPENEM meningitis non-meningitis	0.06-0.25	\leq 0.25	0.5	\geq 1	\leq 0.25 \leq 2	$>$ 1 $>$ 2	\checkmark 0.002-32	
OFX OFLOXACIN	1-4	\leq 2	4	\geq 8	\leq 0.12	$>$ 4		
TE TETRACYCLINE	0.06-0.5	\leq 1	2	\geq 4	\leq 1	$>$ 2		
SXT TRIMETHOPRIM- SULFAMETHOXAZOLE 1/19 ⁴	0.12-1	\leq 0.5	1-2	\geq 4	\leq 1	$>$ 2	\checkmark	
VA VANCOMYCIN	0.12-0.5	\leq 1	-	-	\leq 2	$>$ 2	\checkmark	

Notes

- When Clindamycin MTS is used in conjunction with MH-F there is a potential for the overestimation of the MIC for QC strains ATCC 49619 which can give some values out of range. Patient results may also be evaluated resulting in a false resistant result.
- CLSI broth microdilution (BMD) method uses ambient incubation (-CO₂).
- For capnophilic organisms MTS method (as well as BMD) may require incubation in atmosphere enriched with carbon dioxide (+CO₂). This is expected to decrease the pH of the medium resulting in a decreased activity (higher MICs) of macrolides (azithromycin, clarithromycin, erythromycin) and lincosamides (clindamycin). Thus, both QC ranges and interpretive criteria adjusted for CO₂ incubation should be used when capnophilic strains are tested against such drugs.
- Values on the MIC scale refer to the first component of the combination

References

- CLSI M100-S27, 2017. Performance Standards for Antimicrobial Susceptibility Testing.
- CLSI M07-A10, 2015. Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that Grow Aerobically.
- EUCAST. Breakpoint tables for interpretation of MICs and zone diameters. Version 7.1, 2017.

MIC Test Strip, International Patent



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