

Antimicrobial Susceptibility Test Discs

Intended Use

Antimicrobial susceptibility testing of bacterial and fungal isolates is a common and important techniques in most of clinical laboratories. The results of this tests are used for selection of most appropriate antimicrobial agent(s) for treatment against the infectious organisms. Antimicrobial susceptibility testing is carried out in large scale as a guide to antibiotic therapy. The results of antimicrobial susceptibility testing should be combined with clinical information and experience when selecting the most appropriate antibiotic for patient.

Background & Summary

Over five to six decades have passed, since the discovery of the "miracle drug" referred to as antibiotics or antimicrobials. These drugs are still used for control and treatment of diseases in people, when microbes are the likely cause. Though an exhaustive number of antibiotics are discovered, this line of treatment faces severe setbacks due to emergence of single or multiple drug resistant microorganisms. Hence antimicrobial susceptibility testing is carried out in large scale as a guide to antibiotic therapy^(2,7). Currently these methods are based on dilution or diffusion procedures. Of these the disc method is best suited to routine use for most purposes as compared to the traditional broth-based techniques⁽⁹⁾.

Principle

The Kirby-Bauer test is an assay whereby discs of filter paper are impregnated with a single concentration of different antibiotics or any chemicals that will diffuse from the disc into the agar. The selected antibiotic discs are placed on the surface of an agar plate which has already been inoculated with test bacteria. During the incubation period, the antibiotics/chemicals diffuse outward from the discs into the agar. This will create a concentration gradient in the agar which depends on the solubility of the chemical and its molecular size. The absence of growth of the organism around the antibiotic discs indicates that, the respected organism is susceptible to that antibiotic and the presence of growth around the antibiotic disc indicates the organism is resistant to that particular antibiotic. This area of no growth around the disc is known as a zone of inhibition, which is uniformly circular with a confluent lawn of growth in the media.

Applications

The test is useful for determining the antimicrobial susceptibility of aerobes, anaerobes, non-fastidious and fastidious organisms. It can be used to study local, national and international antibiotic resistance surveillance. Along with single disc, for convenience & economy of conducting Antimicrobial Susceptibility Tests HiMedia provides Hexa, Octo, Dodeca and Icosa Discs. These series of discs gives the privilege to study large number of antibiotics at one time.

Susceptibility Test Procedure:

Media Preparation: Prepare plates of Mueller Hinton Agar (M173) for use in the Kirby-Bauer Method for rapidly growing aerobic organisms. For fastidious organisms such as *Streptococci*, Mueller Hinton Agar (M173) is supplemented with 5% sterile, defibrinated blood. For *Haemophilus* spp, Haemophilus Test Medium and for *N. gonorrhoeae*, GC Agar Base (M434) with 1% defined growth supplement are recommended respectively. For Fungal cultures use Mueller Hinton Agar (M173) + 2% Glucose + 0.5 mcg/ml Methylene Blue Dye (GMB Medium). The medium in the plates should be sterile and have a depth of about 4 - 5 mm.

Inoculum Preparation: Use only pure cultures. Confirm by Gram-staining before starting susceptibility test. Transfer 4-5 similar colonies with a wire, needle or loop to 5 ml Tryptone Soya Broth (M011) and incubate at 35-37°C for 2-8 hours until light to moderate turbidity develops. Compare the inoculum turbidity with that of standard 0.5 McFarland (R092) (prepared by mixing 0.5 ml of 1.175% barium chloride and 99.5 ml of 0.36N sulfuric acid). Dilute the inoculum or incubate further as necessary to attain comparative turbidity. Alternatively, the inoculum can be standardized by other appropriate optical method (0.08 - 0.13 OD turbid suspension at 620 nm).

Also direct colony suspension method can be used. Prepare a direct colony suspension, from 18-24 hour old non-selective media agar plate in broth or saline. Adjust the turbidity to that of standard 0.5 McFarland. This method is recommended for testing fastidious organisms like *Haemophilus* spp., *Neisseria* spp, streptococci and for testing staphylococci for potential Methicillin or Oxacillin resistance.

For fungal cultures inoculum is prepared by picking five distinct colonies of approximately 1mm from 24 hours old culture grown on Sabouraud Dextrose Agar (M063) and incubated at 35 ± 2°C. Colonies are suspended in 5ml of sterile 0.85% Saline. Vortex the resulting suspension and adjust the turbidity to yield 1 x 10⁶ - 5 x 10⁶ cells /ml (i.e. 0.5 McFarland standard).

Type of Specimen: Pure cultures should be derived from specimens obtained from patients prior to the initiation of antimicrobial therapy. Specimens can be of bacterial or fungal isolates derived from blood, urine, faeces, pus, CSF etc. Direct

specimens should not be employed in this test. Refer procedure, which includes preparation of inoculum^(4, 6).

Clinical Specimen Collection, Handling and Processing: Follow appropriate techniques for handling specimens as per established guidelines. After use, contaminated materials must be sterilized by autoclaving before discarding^(4, 6).

Test Procedure: Dip a sterile non-toxic cotton swab on a wooden applicator into the standardized inoculum (turbidity so adjusted, as to obtain confluent growth on the Petri plate) and rotate the soaked swab firmly against the upper inside wall of the tube to express excess fluid. Streak the entire agar surface of the plate with the swab three times, turning the plate at 60° angle between each streaking. Allow the inoculum to dry for 5 - 15 minutes with lid in place.

Apply the discs using aseptic technique. Deposit the discs with centres at least 24 mm apart. For fastidious organisms and for Penicillins and Cephalosporins, the discs should preferably be deposited with centres 30 mm apart.

Incubate immediately at 35 ± 2°C and examine after 16-18 hours or longer, if necessary. For fastidious organisms, incubate at appropriate temperature and time. For fungal cultures, Incubate immediately at 35 ± 2°C and examine each plate after 20 - 24 hours of incubation. If plate was satisfactorily streaked the resulting zones of inhibition will be uniformly circular and there will be a semi-confluent lawn of growth. Read at 48 hours only when insufficient growth is observed after 24 hours incubation.

Result & Interpretation: Measure the zones showing complete inhibition and record the diameters of the zones to the nearest millimeter using a calibrated instrument. Zone scales PW096, of dimensions 370 x 65 mm or PW297, a compact (pocket size), of dimensions 200 x 95 mm can be used to measure sizes of zones in the range of 10 - 40 mm.

Please refer to zone size interpretative chart for list of antibiotics, quality control limits & interpretative criteria.

Warning & Precautions:

1. For *in vitro* diagnostic use and are intended for professional use only. These discs are intended only for agar diffusion method and not for broth dilution method.
2. Follow directions for use. Performance of disc depends on use of proper inoculum and control cultures, recommended test medium & proper storage temperature.
3. Accuracy of the test depends on the disc potency, storage & handling, proper inoculum, functional pretested medium plates (nature of medium and its depth), inoculation technique, incubation temperature and time, etc.
4. To maintain the potency of discs, store the stock containers of discs in the freezer at -20°C. The discs when required for use within a week, may be kept in refrigerator (below 8°C) and the remainder should be kept with desiccant and tightly closed container caps in the freezer.
5. Remove the antimicrobial discs from refrigerator to room temperature 1 - 2 hours before use to avoid moisture condensation. Return unused discs to refrigerator immediately after applications.
6. Once a cartridge is opened it is recommended that it should be used within one week.
7. While reading results :
 - a) Ignore swarming of *Proteus* species if zones of inhibition are clearly defined.
 - b) Measure the Sulphonamide zones at the margin of heavy growth since Sulphonamide may not inhibit organisms for several generations and slight growth may appear within zones of inhibition.
 - c) Subculture, reidentify and retest any large colony growing within a clear zone of inhibition.
8. Control tests using known cultures should be included each time a sensitivity test is performed.
9. Antibacterial agents other than those listed in Interpretative Chart are in current use. Susceptibility tests employing these agents should be interpreted on the basis of presence or absence of a definite zone of inhibition and should be considered as only qualitative until the time interpretative zones have been established.

Storage & Shelf life

On receipt, discs should be stored between -20°C to 8°C or strictly at -20°C as recommended & for prolonged usage discs should be stored at or below -20°C (refer individual product label for details). Use before expiry date on the label.

Disposal

After use, antibiotic discs and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques^(5, 6).

Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Symbol	Disc content	Interpretative Criteria			Quality Control Limits (mm)											
				Sensitive mm or more	Intermediate mm	Resistant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560
SD035	Amikacin	AK	30 mcg															
	<i>Enterobacteriales, P. aeruginosa, Acinetobacter & Staphylococcus spp.</i>			17	15-16	14	19-26	20-26	18-26	-	-	-	-	-	-	-	-	-
	<i>Enterobacteriales</i>			18	-	18	19-26	-	-	-	-	-	-	-	-	-	-	-
	<i>Pseudomonas spp.</i>			15	-	15	-	-	20-26	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus spp.</i>			15	-	15	-	-	-	18-24	-	-	-	-	-	-	-	-
	<i>Coagulase negative staphylococci</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Acinetobacter spp.,</i>			19	-	19	-	-	-	-	-	-	-	-	-	-	-	-
SD063	Amoxycylav (Amoxicillin/Clavulanic acid)	AMC	30 mcg (20/10)															
	<i>Enterobacteriales</i>			18	14-17	13	18-24	28-36	-	17-22	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			20	-	19	-	-	-	-	-	15-23	-	-	-	-	-	-
	<i>Enterobacteriales (IV)</i>			19	-	19	18-24	-	-	17-22	-	-	-	-	-	-	-	-
	<i>Enterobacteriales (uncomplicated UTI only)</i>			16	-	16	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Enterobacteriales (Infection originating from the urinary tract)</i>			50	19-49	19	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i>			50	15-49	15	-	-	-	-	-	-	17-23	-	-	-	-	-
	<i>Moraxella catarrhalis</i>			19	-	19	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Pasteurella multocida</i>			15	-	15	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Burkholderia pseudomallei</i>			50	22-49	22	-	-	-	-	-	-	-	-	-	-	-	-
SD002	Ampicillin	AMP	10 mcg															
	<i>Enterobacteriales</i>			17	14-16	13	15-22	-	-	6	-	-	-	-	-	-	-	-
	<i>Staphylococcus spp.</i>			29	-	28	-	27-35	-	-	-	-	-	-	-	-	-	-
	<i>Enterococcus spp.</i>			17	-	16	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			22	19-21	18	-	-	-	-	-	13-21	-	-	-	-	-	-
	<i>Streptococcus spp. beta haemolytic group</i>			24	-	-	-	-	-	-	-	-	-	-	-	-	30-36	-
	<i>Enterobacteriales (IV & Oral)</i>			14	-	14	15-22	-	-	-	-	-	-	-	-	-	-	-
SD002A	Ampicillin	AMP	2 mcg															
	<i>Staphylococcus saprophyticus</i>			18	-	18	-	-	-	-	15-21	-	-	-	-	-	-	-
	<i>Enterococcus spp.</i>			10	8-9	8	-	-	-	-	-	15-21	-	-	-	-	-	-
	<i>Streptococcus pneumoniae</i>			22	16-21	16	-	-	-	-	-	-	-	-	-	-	25-31	-
	<i>Streptococcus spp. viridans group</i>			21	15-20	15	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i>			18	-	18	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Listeria monocytogens (IV)</i>			16	-	16	-	-	-	-	-	6-12	19-25	-	-	-	-	-
	<i>Pasteurella multocida</i>			17	-	17	-	-	-	-	-	-	-	-	-	-	-	-
<i>Aerococcus sanguinicola & urinae</i>			26	-	26	-	-	-	-	-	-	-	-	-	-	-	-	
SD112	Ampicillin/Subactam	A/S	10/10mcg															
	<i>Enterobacteriales, Acinetobacter</i>			15	12-14	11	19-24	29-37	-	13-19	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			20	-	19	-	-	-	-	-	14-22	-	-	-	-	-	-
	<i>Enterobacteriales</i>			14	-	14	19-24	-	-	13-19	-	-	-	-	-	-	-	-
SD204	Azithromycin	AZM	15 mcg															
	<i>Enterobacteriales</i>			13	-	12	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus, S.pneumoniae, Streptococcus spp. Viridians group & Streptococcus spp. beta haemolytic group</i>			18	14-17	13	-	21-26	-	-	-	-	-	-	-	-	19-25	-
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			12	-	-	-	-	-	-	-	13-21	-	-	-	-	-	-
	<i>Neisseria meningitidis</i>			30	-	-	-	-	-	-	-	-	-	-	-	30-38	-	-
	<i>Salmonella Typhi</i>			13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Enterobacteriales</i>			-	-	-	14-20	-	-	-	-	-	-	-	-	-	-	-
<i>Vibrio spp.</i>			16	-	16	-	-	-	-	-	-	-	-	-	-	-	-	
SD064	Azlocillin	AZ	75 mcg															
SD212	Aztreonam	AT	30 mcg															
	<i>Enterobacteriales</i>			21	18-20	17	28-36	-	-	31-38	-	-	-	-	10-16	-	-	-
	<i>P. aeruginosa</i>			22	16-21	15	-	-	23-29	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			26	-	-	-	-	-	-	-	30-38	-	-	-	-	-	-
	<i>Enterobacteriales</i>			26	21-25	21	28-36	-	-	-	-	-	-	-	9-17	-	-	-
	<i>Pseudomonas spp.</i>			50	18-49	18	-	-	23-29	-	-	-	-	-	-	-	-	-
*SD003	Bacitracin	B	10 units															
SD004	Carbenicillin	CB	100 mcg															
SD157	Cefaclor	CF	30 mcg															
	<i>Enterobacteriales, Staphylococcus spp.</i>			18	15-17	14	23-27	27-31	-	-	-	-	-	-	-	-	24-32	-
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			20	17-19	16	-	-	-	-	-	-	25-31	-	-	-	-	-
	<i>S. pneumoniae</i>			50	28-49	28	-	-	-	-	-	-	-	-	-	-	25-31	-

- ▼ : In accordance to Performance Standards for Antimicrobial Disk Susceptibility Tests, CLSI & EUCAST.
- : Zone size interpretative criteria given in Red colour is as per EUCAST standard (The European Committee on Antimicrobial Susceptibility Testing).
- * : Not included in CLSI chart; FDA approved performance standards for Antimicrobial Discs obtained from drug manufacturers.
- : On receipt, store at -20°C.

On receipt all other products to be stored between -20°C to 8°C. For prolonged use, store at or below -20°C.

For *E. coli*, *S. aureus*, *P. aeruginosa* : Mueller Hinton Agar (MHA). For *Haemophilus spp.* : Haemophilus Test Medium; For *S. pneumoniae* : Mueller Hinton Agar with 5% sheep blood; For *N. gonorrhoeae* : GC Agar Base with 1% defined growth supplement.

Zone Size Interpretative Chart▼

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Interpretative Criteria			Quality Control Limits (mm)											
				Sen- sitive mm or more	Inter- mediate mm	Resi- stant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560
SD116	• Cefadroxil	CFR	30 mcg															
	<i>Enterobacteriales</i> (Uncomplicated UTI only)			12		12	14-20											
SD048	• Cefalexin	CN	30 mcg															
	<i>Enterobacteriales</i> (Uncomplicated UTI only)			14		14	15-21											
SD200	• Cefamandole	FAM	30 mcg															
	<i>Enterobacteriales</i> , <i>Staphylococcus</i> spp.			18	15-17	14	26-32	26-34										
SD047	• Cefazolin	CZ	30 mcg															
	<i>Enterobacteriales</i>			23	20-22	19	21-27											
	<i>Enterobacteriales</i> (uncomplicated UTIs)			15		14												
	<i>Staphylococcus</i> spp.			18	15-17	14		29-35										
	<i>Enterobacteriales</i> (<i>E. coli</i> , <i>Klebsiella</i> except <i>K. aerogenes</i>)			50	20-49	20	21-27											
SD218	• Ceftinir	CDR	5 mcg															
	<i>Enterobacteriales</i> , <i>Staphylococcus</i> spp.			20	17-19	16	24-28	25-32							40-49	26-31		
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			20								24-31						
SD219	• Cefepime	CPM	30 mcg															
	<i>Enterobacteriales</i>			25	19-24	18	31-37		25-31									
	<i>P. aeruginosa</i> , <i>Acinetobacter</i>			18	15-17	14		23-29										
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			26							25-31							
	<i>Neisseria gonorrhoeae</i>			31											37-46			
	<i>Streptococcus</i> spp. Viridians group			24	22-23	21											28-35	
	<i>Streptococcus</i> spp. beta haemolytic group			24														
	<i>Enterobacteriales</i>			27	24-26	24												
	<i>Pseudomonas</i> spp.			50	21-49	21	31-37		25-31									
	<i>Streptococcus</i> spp. viridans group			25		25												31-37
	<i>Haemophilus influenzae</i>			28		28							30-36					
	<i>Moraxella catarrhalis</i>			20		20												
<i>Aeromonas</i> spp.			27	24-26	24													
SD211	• Cefixime	CFM	5 mcg															
	<i>Enterobacteriales</i>			19	16-18	15	20-26										16-23	
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			21								25-33						
	<i>Neisseria gonorrhoeae</i>			31												37-45		
	<i>Enterobacteriales</i> (Uncomplicated UTI only)			17		17	20-26											
	<i>Haemophilus influenzae</i>			26		26							29-35					
<i>Moraxella catarrhalis</i>			21		21													
SD244	• Cefmetazole	CMZ	30 mcg															
	<i>Enterobacteriales</i>			16	13-15	12	26-32	25-34				16-21						
	<i>Neisseria gonorrhoeae</i>			33	28-32	27									31-36			
SD248	• Cefonicid	CID	30 mcg															
	<i>Enterobacteriales</i>			18	15-17	14	25-29	22-28										
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			20	17-19	16						30-38						
SD072	• Cefoperazone	CPZ	75 mcg															
	<i>Enterobacteriales</i>			21	16-20	15	28-34	24-33	23-29									
SD040	• Cefotaxime (Cephotaxime)	CTX	30 mcg															
	<i>Enterobacteriales</i>			26	23-25	22	29-35							17-25				
	<i>Acinetobacter</i> & <i>Staphylococcus</i> spp.			23	15-22	14		25-31	18-22									
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			26								31-39						
	<i>Neisseria meningitidis</i>			34														
	<i>Neisseria gonorrhoeae</i>			31											38-48			
	<i>Streptococcus</i> spp. Viridians group			28	26-27	25											31-39	
	<i>Streptococcus</i> spp. beta haemolytic group			24														
SD295E	• Cefotaxime (Cephotaxime)	CTX	5 mcg															
	<i>Enterobacteriales</i> (indications other than meningitis)			20	17-19	17	25-31							12-18				
	<i>Enterobacteriales</i> (meningitis)			20		20												
	<i>Haemophilus influenzae</i>			27		27							29-37					
	<i>Moraxella catarrhalis</i>			20	17-19	17												
	<i>Pasteurella multocida</i>			26		26												
	<i>Streptococcus</i> spp. viridans group			23		23											28-34	
	<i>Kingella kingae</i>			27		27												
<i>Vibrio</i> spp.			21		21													

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For *S. pneumoniae* : Mueller Hinton Agar with 5% sheep blood; For *N. gonorrhoeae* : GC Agar Base with 1% defined growth supplement.

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SD249	• Cefotetan	CTN	30 mcg																
	<i>Enterobacterales</i>			16	13-15	12	28-34	17-23	-	-	-	-	-	-	-	-	-	-	
	<i>Neisseria gonorrhoeae</i>			26	20-25	19	-	-	-	-	-	-	-	-	-	30-36	-	-	
SD041	• Cefoxitin (Cephoxitin)	CX	30 mcg																
	<i>Enterobacterales</i>			18	15-17	14	23-29	-	-	-	-	-	-	-	-	-	-	-	
	<i>For S. aureus & S. lugdunensis</i>			22	-	21	-	23-29	-	-	-	-	-	-	-	-	-	-	
	<i>For Coagulase-negative Staphylococci except S. lugdunensis & S. pseudintermedius</i>			25	-	24	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Neisseria gonorrhoeae</i>			28	24-27	23	-	-	-	-	-	-	-	-	-	33-41	-	-	
	<i>Enterobacterales</i>			19	-	19	23-29	-	-	-	-	-	-	-	-	-	-	-	
	<i>Staphylococcus spp. (S. epidermidis)</i>			25	-	25	-	-	-	24-30	-	-	-	-	-	-	-	-	
<i>Staphylococcus spp. (Coagulase- negative Staphylococci other than S. epidermidis)</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-		
SD725	• Cefpodoxime	CPD	10 mcg																
	<i>Enterobacterales, Staphylococcus spp.</i>			21	18-20	17	23-28	19-25	-	-	-	-	-	9-16	-	-	28-34	-	
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			21	-	-	-	-	-	-	-	25-31	-	-	-	-	-	-	
	<i>Neisseria gonorrhoeae</i>			29	-	-	-	-	-	-	-	-	-	-	35-43	-	-	-	
	<i>Enterobacterales (Uncomplicated UTI only)</i>			-	-	-	23-28	-	-	-	-	-	-	9-16	-	29-35	-	-	
<i>Haemophilus influenzae</i>			26	-	26	-	-	-	-	-	-	30-36	-	-	-	-	-		
SD209	• Cefprozil	CPR	30 mcg																
	<i>Enterobacterales, Haemophilus influenzae & Haemophilus parainfluenzae</i>			18	15-17	14	21-27	27-33	-	-	-	-	20-27	-	-	25-32	-	-	
SD062	• Ceftazidime	CAZ	30 mcg																
	<i>Enterobacterales, B. cepacia</i>			21	18-20	17	25-32	-	-	-	-	-	-	10-18	-	-	-	-	
	<i>Paeruginosa, Acientobacter & Staphylococcus spp.</i>			18	15-17	14	-	16-20	22-29	-	-	-	-	-	-	-	-	-	
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			26	-	-	-	-	-	-	-	27-35	-	-	-	-	-	-	
<i>Neisseria gonorrhoeae</i>			31	-	-	-	-	-	-	-	-	-	-	35-43	-	-	-		
SD062A	• Ceftazidime	CAZ	10 mcg																
	<i>Enterobacterales</i>			22	19-21	19	23-29	-	-	-	-	-	-	6-12	-	-	-	-	
	<i>Pseudomonas spp.</i>			50	17-49	17	-	21-27	-	-	-	-	-	-	-	-	-	-	
	<i>Burkholderia pseudomallei</i>			50	17-49	17	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Vibrio spp.</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-		
SD309	Ceftazidime / Avibactam	CZA	30/20 mcg																
	<i>Enterobacterales, P. aeruginosa</i>			21	-	20	27-35	16-22	25-31	28-35	-	-	-	21-27	-	-	-	-	
SD110	• Cefizoxime	CZX	30 mcg																
	<i>Enterobacterales</i>			25	22-24	21	30-36	27-35	12-17	-	-	-	-	-	-	-	28-34	-	
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			26	-	-	-	-	-	-	-	29-39	-	-	-	-	-	-	
<i>Neisseria gonorrhoeae</i>			38	-	-	-	-	-	-	-	-	-	-	42-51	-	-	-		
SD065	• Ceftriaxone	CTR	30 mcg																
	<i>Enterobacterales</i>			23	20-22	19	29-35	-	-	-	-	-	-	16-24	-	-	-	-	
	<i>P. aeruginosa, Acientobacter & Staphylococcus spp.</i>			21	14-20	13	-	22-28	17-23	-	-	-	-	-	-	-	-	-	
	<i>Haemophilus influenzae & Haemophilus parainfluenzae</i>			26	-	-	-	-	-	-	-	31-39	-	-	-	-	-	-	
	<i>Neisseria meningitidis</i>			34	-	-	-	-	-	-	-	-	-	-	39-51	-	-	-	
	<i>Neisseria gonorrhoeae</i>			35	-	-	-	-	-	-	-	-	-	-	-	30-35	-	-	
	<i>Streptococcus spp. Viridians group</i>			27	25-26	24	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Streptococcus spp.</i>			24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>beta haemolytic group</i>			24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Enterobacterales (indications other than meningitis)</i>			25	22-24	22	29-35	-	-	-	-	-	-	16-22	-	-	-	-	
	<i>Enterobacterales (meningitis)</i>			25	-	25	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Streptococcus spp viridans group</i>			27	-	27	-	-	-	-	-	-	-	-	-	32-38	-	-	
	<i>Haemophilus influenzae</i>			32	-	32	-	-	-	-	-	-	34-42	-	-	-	-	-	
<i>Moraxella catarrhalis</i>			24	21-23	21	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Kingella kingae</i>			30	-	30	-	-	-	-	-	-	-	-	-	-	-	-		

▼ : In accordance to Performance Standards for Antimicrobial Disk Susceptibility Tests, CLSI & EUCAST.

■ : Zone size interpretative criteria given in Red colour is as per EUCAST standard (The European Committee on Antimicrobial Susceptibility Testing).

• : On receipt, store at -20°C.

On receipt all other products to be stored between -20°C to 8°C. For prolonged use, store at or below -20°C.

Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Interpretative Criteria			Quality Control Limits (mm)															
				Sen- sitive mm or more	Inter- mediate mm	Resi- stant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560				
SD061	● Cefuroxime	CXM	30 mcg																			
				<i>Enterobacteriales</i> (parenteral) & <i>Staphylococcus</i> spp.	18	15-17	14	20-26	27-35	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Enterobacteriales</i> (oral)	23	15-22	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	20	17-19	16	-	-	-	-	-	-	-	28-36	-	-	-	-	-	-	
				<i>Neisseria gonorrhoeae</i>	31	26-30	25	-	-	-	-	-	-	-	-	-	33-41	-	-	-	-	
				<i>Enterobacteriales</i> (IV)	50	20-49	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Enterobacteriales</i> (Oral) <i>E. coli</i> , <i>Klebsiella</i> spp.,	19	-	19	20-26	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Streptococcus</i> spp. viridans group (IV)	26	-	26	-	-	-	-	-	-	-	-	-	-	-	28-34	-	-	
				<i>Haemophilus influenzae</i> (IV)	27	25-26	25	-	-	-	-	-	-	-	26-34	-	-	-	-	-	-	
				<i>Haemophilus influenzae</i> (Oral)	50	27-49	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Moraxella catarrhalis</i> (IV)	21	18-20	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Moraxella catarrhalis</i> (Oral)	50	21-49	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Kingella kingae</i> (IV)	29	-	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
SD050	● Cephalothin	CEP	30 mcg	-	-	-	15-21	29-37	-	-	-	-	-	-	-	-	26-32	-				
SD066	● Chloramphenicol	C	30 mcg																			
				<i>Enterobacteriales</i> , <i>Staphylococcus</i> & <i>Enterococcus</i> spp.	18	13-17	12	21-27	19-26	-	-	-	-	-	-	-	-	-	-	-		
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	29	26-28	25	-	-	-	-	-	-	31-40	-	-	-	-	-	-	-	
				<i>Neisseria meningitidis</i>	26	20-25	19	-	-	-	-	-	-	-	-	-	-	-	23-27	-	-	
				<i>S. pneumoniae</i>	21	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Streptococcus</i> spp. Viridians group & <i>Streptococcus</i> spp. beta haemolytic group	21	18-20	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Enterobacteriales</i>	17	-	17	21-27	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Staphylococcus</i> spp.	18	-	18	-	-	-	-	20-28	-	-	-	-	-	-	-	-	-	
				<i>Streptococcus</i> group A, B, C & G	19	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>S. pneumoniae</i>	21	-	21	-	-	-	-	-	-	-	-	-	-	-	24-30	-	-	
				<i>Haemophilus influenzae</i>	28	-	28	-	-	-	-	-	-	-	31-37	-	-	-	-	-	-	
				<i>Moraxella catarrhalis</i>	30	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Burkholderia pseudomallei</i>	50	22-49	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
SD245	● Cinoxacin	CIN	100 mcg																			
	<i>Enterobacteriales</i>			19	15-18	14	26-32	-	-	-	-	-	-	-	-	-	-	-				
SD060	● Ciprofloxacin	CIP	5 mcg																			
				<i>Enterobacteriales</i> other than <i>S. Typhi</i> & extraintestinal <i>Salmonella</i> spp.	26	22-25	21	29-38	-	-	-	-	-	-	-	-	-	-	-	-		
				<i>Acinetobacter</i> , <i>Staphylococcus</i> & <i>Enterococcus</i> spp.	21	16-20	15	-	22-30	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>P. aeruginosa</i>	25	19-24	18	-	-	25-33	-	-	-	-	-	-	-	-	-	-	-	
				For <i>S. Typhi</i> and extraintestinal <i>Salmonella</i> spp.	31	21-30	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>	21	-	-	-	-	-	-	-	-	34-42	-	-	-	-	-	-	-	
				<i>Neisseria meningitidis</i>	35	33-34	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Neisseria gonorrhoeae</i>	41	28-40	27	-	-	-	-	-	-	-	-	-	-	48-58	-	-	-	
				<i>Enterobacteriales</i>	25	22-24	22	29-37	-	-	-	-	-	-	-	-	-	-	22-28	-	-	
				<i>Staphylococcus</i> spp.	50	21-49	21	-	-	-	-	21-27	-	-	-	-	-	-	-	-	-	
				<i>Coagulase-negative Staphylococci</i>	50	24-49	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				<i>Pseudomonas</i> spp.	50	26-49	26	-	-	25-33	-	-	-	-	-	-	-	-	-	-	-	
<i>Enterococcus</i> spp. (Uncomplicated UTI only)	15	-	15	-	-	-	-	-	-	19-25	-	-	-	-	-	-	-					
<i>Acinetobacter</i> spp.	50	21-49	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
<i>Haemophilus influenzae</i> , <i>Campylobacter</i> spp.	30	-	30	-	-	-	-	-	-	-	32-40	-	-	-	-	-	-					
<i>Moraxella catarrhalis</i>	26	-	26	-	-	-	-	-	-	-	-	-	-	-	-	-	34-42					
<i>Pasteurella multocida</i>	31	-	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
<i>Corynebacterium</i> spp.	27	-	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
<i>Aerococcus sanguinicola</i> & <i>urinae</i> (Uncomplicated UTI only)	50	25-49	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
<i>Kingella kingae</i>	21	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
<i>Aeromonas</i> spp.	28	-	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
<i>Bacillus</i> spp.	27	24-26	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
<i>Vibrio</i> spp.	50	23-49	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
SD192	● Clarithromycin	CLR	15 mcg																			
	<i>Staphylococcus</i> spp.			18	14-17	13	-	26-32	-	-	-	-	-	-	-	-	-	-				
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			13	11-12	10	-	-	-	-	-	11-17	-	-	-	-	-	-				
	<i>S. pneumoniae</i> , <i>Streptococcus</i> spp. Viridians group, <i>Streptococcus</i> spp. beta haemolytic group			21	17-20	18	-	-	-	-	-	-	-	-	25-31	-	-	-				

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■ : Zone size interpretative criteria given in Red colour is as per EUCAST standard (The European Committee on Antimicrobial Susceptibility Testing).

● : On receipt, store at -20°C.

On receipt all other products to be stored between -20°C to 8°C.

For prolonged use, store at or below -20°C.

For *E. coli*, *S. aureus*, *P. aeruginosa* : Mueller Hinton Agar (MHA). For *Haemophilus* spp. : Haemophilus Test Medium;

For *S. pneumoniae* : Mueller Hinton Agar with 5% sheep blood; For *N. gonorrhoeae* : GC Agar Base with 1% defined growth supplement.

Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Symbol	Disc content	Interpretative Criteria			Quality Control Limits (mm)												
				Sensitive mm or more	Intermediate mm	Resistant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560	
SD051	Clindamycin	CD	2 mcg																
	<i>Staphylococcus</i> spp.			21	15-20	14	-	24-30	-	-	-	-	-	-	-	-	-	-	
	<i>S. pneumoniae</i> , <i>Streptococcus</i> spp. <i>Viridians</i> group, <i>Streptococcus</i> spp. beta haemolytic group			19	16-18	15	-	-	-	-	-	-	-	-	-	-	19-25	-	
	<i>Staphylococcus</i> spp.			22	19-21	19	-	-	-	23-29	-	-	-	-	-	-	-	-	
	<i>Streptococcus</i> spp. <i>viridians</i> group & <i>S. pneumoniae</i>			19	-	19	-	-	-	-	-	-	-	-	-	-	-	22-28	-
	<i>Streptococcus</i> group A, B, C & G			17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Corynebacterium</i> spp.			20	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Bacillus</i> spp.			17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	
SD297	Colistin Sulphate	CS	10 mcg	-	-	-	11-17	-	11-17	-	-	-	-	-	-	-	-	-	
SD010	Co-Trimoxazole (Trimethoprim/Sulphamethoxazole)	COT	25 mcg (1.25/23.75) mcg																
	<i>Enterobacteriales</i> , <i>Acinetobacter</i> , <i>B. cepacia</i> , <i>S. maltophilia</i> , <i>Staphylococcus</i> , <i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			16	11-15	10	23-29	24-32	-	-	-	>=20	24-32	-	-	-	-	-	
	<i>Neisseria meningitidis</i>			30	26-29	25	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>S. pneumoniae</i>			19	16-18	15	-	-	-	-	-	-	-	-	-	-	20-28	-	
	<i>Enterobacteriales</i>			14	11-13	11	23-29	-	-	-	-	-	-	-	-	-	-	-	
	<i>Acinetobacter</i> spp.			14	11-13	11	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Staphylococcus</i> spp.			17	14-16	14	-	-	-	26-32	-	-	-	-	-	-	-	-	
	<i>Stenotrophomonas maltophilia</i>			50	17-49	16	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Enterococcus</i> spp.			50	21-49	21	-	-	-	-	-	26-34	-	-	-	-	-	-	
	<i>Streptococcus</i> group A, B, C & G, <i>Moraxella catarrhalis</i>			18	15-17	15	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>S. pneumoniae</i>			13	10-12	10	-	-	-	-	-	-	-	-	-	-	18-26	-	
	<i>Haemophilus influenzae</i>			23	20-22	20	-	-	-	-	-	-	27-35	-	-	-	-	-	
	<i>Listeria monocytogens</i>			29	-	29	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Pasteurella multocida</i>			23	-	23	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Kingella kingae</i>			28	-	28	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Aeromonas</i> spp.			19	16-18	16	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Burkholderia pseudomallei</i>			50	17-49	17	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Achromobacter xylosoxidans</i>			26	-	26	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Vibrio</i> spp.			21	-	21	-	-	-	-	-	-	-	-	-	-	-	-		
# SD283	Doripenem	DOR	10 mcg																
	<i>Enterobacteriales</i>			23	20-22	19	27-35	33-42	-	-	-	-	-	-	-	-	30-38	-	
	<i>P. aeruginosa</i>			19	16-18	15	-	-	28-35	-	-	-	-	-	-	-	-	-	
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			16	-	-	-	-	-	-	-	21-31	-	-	-	-	-		
	<i>Acinetobacter</i> spp.			18	15-17	14	-	-	-	-	-	-	-	-	-	-	-		
	<i>Enterobacteriales</i>			24	21-23	21	-	-	-	-	-	-	-	-	-	-	31-37	-	
<i>P. aeruginosa</i>			50	22-49	22	-	-	28-35	-	-	-	-	-	-	-	-	-		
<i>Acinetobacter</i>			50	22-49	22	-	-	-	-	-	-	-	-	-	-	-	-		
SD012	Doxycycline Hydrochloride	DO	30 mcg																
	<i>Enterobacteriales</i>			14	11-13	10	18-24	23-29	-	-	-	-	-	-	-	-	-	-	
	<i>Acinetobacter</i>			13	10-12	9	-	-	-	-	-	-	-	-	-	-	-		
	<i>Staphylococcus</i> & <i>Enterococcus</i> spp. <i>S. pneumoniae</i>			16	13-15	12	-	-	-	-	-	-	-	-	-	-	-		
SD237	Enoxacin	EN	10 mcg																
	<i>Enterobacteriales</i>			18	15-17	14	28-36	22-28	22-28	-	-	-	-	-	-	43-51	-	-	
	<i>Staphylococcus</i> spp.			18	15-17	14	-	-	-	-	-	-	-	-	-	-	-		
<i>Neisseria gonorrhoeae</i>			36	32-35	31	-	-	-	-	-	-	-	-	-	-	-			
SD280	Ertapenem	ETP	10 mcg																
	<i>Enterobacteriales</i>			22	19-21	18	29-36	-	13-21	-	-	-	-	27-33	-	-	28-35	-	
	<i>Staphylococcus</i> spp.			19	16-18	15	-	24-31	-	-	-	-	-	-	-	-	-		
	<i>Haemophilus influenzae</i> & <i>parainfluenzae</i>			19	-	-	-	-	-	-	-	20-28	-	-	-	-	-		
	<i>Enterobacteriales</i>			25	-	25	29-36	-	-	-	-	-	-	-	-	-	28-34	-	
<i>Haemophilus influenzae</i>			23	-	23	-	-	-	-	-	-	27-33	-	-	-	-			
<i>Moraxella catarrhalis</i>			29	-	29	-	-	-	-	-	-	-	-	-	-	-			

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: Doripenem QC limits are as per EUCAST, version - 8 (2018) & have been deleted in version 9 (2019).

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For *E. coli*, *S. aureus*, *P. aeruginosa* : Mueller Hinton Agar (MHA). For *Haemophilus* spp. : Haemophilus Test Medium;

For *S. pneumoniae* : Mueller Hinton Agar with 5% sheep blood; For *N. gonorrhoeae* : GC Agar Base with 1% defined growth supplement.

Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Interpretative Criteria			Quality Control Limits (mm)											
				Sen- sitive mm or more	Inter- mediate mm	Resi- stant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560
SD013	Erythromycin	E	15 mcg															
	<i>Staphylococcus & Enterococcus</i> spp.			23	14-22	13	-	22-30	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae, Streptococcus</i> spp. <i>Viridians group, Streptococcus</i> spp. beta haemolytic group			21	16-20	15	-	-	-	-	-	-	-	-	-	-	25-30	-
	<i>Staphylococcus</i> spp. & <i>Streptococcus</i> group A, B, C & G			21	-	21	-	-	-	23-29	-	-	10-16	-	-	-	-	-
	<i>S. pneumoniae</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	26-32	-
	<i>Moraxella catarrhalis</i>			23	-	23	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Listeria monocytogens</i>			25	-	25	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Campylobacter coli</i>			24	-	24	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Campylobacter jejuni</i>			20	-	20	-	-	-	-	-	-	-	-	-	-	-	27-35
	<i>Kingella kingae</i>			20	-	20	-	-	-	-	-	-	-	-	-	-	-	-
<i>Bacillus</i> spp.			24	-	24	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Vibrio</i> spp.			12	-	12	-	-	-	-	-	-	-	-	-	-	-	-	
SD279	Faropenem	FAR	5 mcg															
	Enterobacterales			-	-	-	20-26	27-34	-	-	-	-	15-22	-	-	-	27-35	-
SD205	Fosfomicin	FO	200 mcg															
	Enterobacterales, <i>Enterococcus</i> spp.			16	13-15	12	22-30	25-33	-	-	-	-	-	-	-	-	-	-
	Enterobacterales (IV)			24	-	24	26-34	-	-	-	-	-	-	-	-	-	-	-
	Enterobacterales (uncomplicated UTI only <i>E. coli</i>)			21	-	21	-	-	-	-	-	-	-	-	-	-	-	-
SD171	Fusidic acid	FC	10 mcg															
	<i>Staphylococcus</i> spp.			24	-	24	-	-	-	26-32	-	-	-	-	-	-	-	-
SD737	Gatifloxacin	GAT	5 mcg															
	Enterobacterales, <i>P. aeruginosa</i> , <i>Acinetobacter & Enterococcus</i> spp.			18	15-17	14	30-37	-	20-28	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			23	20-22	19	-	27-33	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae &</i> <i>Haemophilus parainfluenzae</i>			18	-	-	-	-	-	-	-	33-41	-	-	-	-	-	-
	<i>Neisseria gonorrhoeae</i>			23	20-22	19	-	-	-	-	-	-	-	-	-	45-56	-	-
SD250	Gemifloxacin	GEM	5 mcg															
	Enterobacterales			20	16-19	15	29-36	27-33	19-25	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae &</i> <i>Haemophilus parainfluenzae</i>			18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			23	20-22	19	-	-	-	-	-	-	-	-	-	-	28-34	-
SD195	Gentamicin	HLG	120 mcg															
	<i>Enterococcus</i> spp.			23	20-22	19	-	27-33	-	-	-	-	-	-	-	-	-	-
SD016	Gentamicin	GEN	10 mcg															
	Enterobacterales, <i>P. aeruginosa</i> , <i>Acinetobacter & Staphylococcus</i> spp.			15	13-14	12	19-26	19-27	17-23	-	-	-	-	-	-	-	-	-
	Enterobacterales			17	-	17	19-26	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			18	-	18	-	-	-	19-25	-	-	-	-	-	-	-	-
	Coagulase negative <i>Staphylococci</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Pseudomonas</i> spp.			15	-	15	-	-	17-23	-	-	-	-	-	-	-	-	-
	<i>Acinetobacter</i> spp.			17	-	17	-	-	-	-	-	-	-	-	-	-	-	-
<i>Corynebacterium</i> spp.			23	-	23	-	-	-	-	-	-	-	-	-	-	-	-	
SD170	Gentamicin	GEN	30 mcg															
	<i>Enterococcus</i> spp.			-	-	-	-	-	-	-	-	12-18	-	-	-	-	-	-
SD073	Imipenem	IPM	10 mcg															
	Enterobacterales			23	20-22	19	26-32	-	-	-	-	-	-	-	25-33	-	-	-
	<i>P. aeruginosa</i>			19	16-18	15	-	-	20-28	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae &</i> <i>Haemophilus parainfluenzae</i>			16	-	-	-	-	-	-	-	21-29	-	-	-	-	-	-
	<i>Acinetobacter</i> spp.			22	19-21	18	-	-	-	-	-	-	-	-	-	-	-	-
	Enterobacterales			22	17-21	17	26-32	-	-	-	-	-	-	-	-	-	34-42	-
	<i>Pseudomonas</i> spp.			50	21-49	20	-	-	20-28	-	-	-	-	-	-	-	-	-
	<i>Acinetobacter</i> spp.			24	21-23	21	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Enterococcus</i> spp.			50	22-49	21	-	-	-	-	-	24-30	-	-	-	-	-	-
	<i>Haemophilus influenzae</i>			20	-	20	-	-	-	-	-	-	24-30	-	-	-	-	-
	<i>Moraxella catarrhalis</i>			29	-	29	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Morganella morganii, Proteus</i> spp. & <i>Providencia</i> spp.			50	19-49	19	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Burkholderia pseudomallei</i>			29	-	29	-	-	-	-	-	-	-	-	-	-	-	-
<i>Bacillus</i> spp.			30	-	30	-	-	-	-	-	-	-	-	-	-	-	-	
SD017	Kanamycin	K	30 mcg															
	Enterobacterales, <i>Staphylococcus</i> spp.			18	14-17	13	17-25	19-26	-	-	-	-	-	-	-	-	-	-

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Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Symbol	Disc content	Interpretative Criteria			Quality Control Limits (mm)											
				Sensitive mm or more	Intermediate mm	Resistant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560
SD216	Levofloxacin	LE	5 mcg															
	<i>Enterobacteriales</i> , <i>S. Typhi</i>			21	17-20	16	29-37	-	-	-	-	-	-	-	-	-	-	-
	<i>P. aeruginosa</i>			22	15-21	14	-	-	19-26	-	-	-	-	-	-	-	-	-
	<i>Acinetobacter</i> spp., <i>S. maltophilia</i> , <i>Enterococcus</i> spp., <i>S. pneumoniae</i> , <i>Streptococcus</i> spp. <i>Viridians</i> group, <i>Streptococcus</i> spp. <i>beta haemolytic</i> group			17	14-16	13	-	-	-	-	-	-	-	-	-	-	20-25	-
	<i>Staphylococcus</i> spp.			19	16-18	15	-	25-30	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			17	-	-	-	-	-	-	-	32-40	-	-	-	-	-	-
	<i>Enterobacteriales</i> ,			23	19-22	19	29-37	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp., <i>Pseudomonas</i> spp.			50	23-49	22	-	-	19-26	-	23-29	-	-	-	-	-	-	-
	<i>Coagulas</i> -negative <i>Staphylococci</i>			50	25-49	24	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Enterococcus</i> spp. (Uncomplicated UTI only)			15	-	15	-	-	-	-	-	19-25	-	-	-	-	-	-
	<i>Acinetobacter</i> spp.			23	20-22	20	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G			50	18-49	17	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			50	17-49	16	-	-	-	-	-	-	-	-	-	-	21-27	-
	<i>Haemophilus influenzae</i>			30	-	30	-	-	-	-	-	-	31-39	-	-	-	-	-
	<i>Moraxella catarrhalis</i>			29	-	29	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Pasteurella multocida</i>			27	-	27	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Kingella kingae</i>			28	-	28	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Bacillus</i> spp.			50	23-49	23	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Vibrio</i> spp.			23	-	23	-	-	-	-	-	-	-	-	-	-	-	-
SD854	Levonadifloxacin	LND	10 mcg															
	<i>Staphylococcus aureus</i>			17	14-16	13	27-33	32-39	17-23	-	-	-	33-41	-	-	-	24-31	-
	<i>S. pyogenes</i>			20	-	19	-	-	-	-	-	-	-	-	-	-	-	-
	<i>E. faecalis</i>			10	-	9	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. dysgalactiae</i> & <i>S. agalactiae</i>			20	-	19	-	-	-	-	-	-	-	-	-	-	-	-
SD215	Linezolid	LZ	30 mcg															
	<i>Staphylococcus</i> spp.			21	-	20	-	25-32	-	-	-	-	-	-	-	-	-	-
	<i>Enterococcus</i> spp.			23	21-22	20	-	-	-	-	-	-	-	-	-	-	-	-
SD296E	Linezolid	LZ	10 mcg															
	<i>Enterococcus</i> spp.			20	-	20	-	-	-	-	19-25	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			21	-	21	-	-	-	21-27	-	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G			19	-	19	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Corynebacterium</i> spp.			25	-	25	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	23-29	-
SD206	Lomefloxacin	LOM	10 mcg															
	<i>Enterobacteriales</i> , <i>P. aeruginosa</i> & <i>Staphylococcus</i> spp.			22	19-21	18	27-33	23-29	22-28	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			22	-	-	-	-	-	-	33-41	-	-	-	-	-	-	-
	<i>Neisseria gonorrhoeae</i>			38	27-37	26	-	-	-	-	-	-	-	-	45-54	-	-	-
SD176	Mecillinam	MEC	10 mcg															
	<i>Enterobacteriales</i>			15	12-14	11	24-30	-	-	-	-	-	-	-	-	-	-	-
SD727	Meropenem	MRP	10 mcg															
	<i>Enterobacteriales</i>			23	20-22	19	28-35	-	-	-	-	-	-	-	-	-	-	-
	<i>P. aeruginosa</i>			19	16-18	15	-	-	27-33	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			16	14-15	13	-	29-37	-	-	-	-	-	-	-	-	-	-
	<i>B. cepacia</i>			20	16-19	15	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			20	-	-	-	-	-	-	-	20-28	-	-	-	-	-	-
	<i>Neisseria meningitidis</i>			30	-	-	-	-	-	-	-	-	-	-	-	-	28-35	-
<i>Acinetobacter</i> spp.			18	15-17	14	-	-	-	-	-	-	-	-	-	-	-	-	

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Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Interpretative Criteria			Quality Control Limits (mm)											
				Sen- sitive mm or more	Inter- mediate mm	Resi- stant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560
	<i>Enterobacteriales</i> (indications other than meningitis)			22	16-21	16	28-35	-	-	-	-	-	-	-	-	-	30-38	-
	<i>Enterobacteriales</i> (meningitis)			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Pseudomonas</i> spp. (indications other than meningitis)			24	18-23	18	-	-	27-33	-	-	-	-	-	-	-	-	-
	<i>Pseudomonas</i> spp. (meningitis)			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Acinetobacter</i> spp. (indications other than meningitis)			21	15-20	15	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Acinetobacter</i> spp. (meningitis)			21	-	21	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i>			20	-	20	-	-	-	-	-	-	27-35	-	-	-	-	-
	<i>Moraxella catarrhalis</i>			33	-	33	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Listeria monocytogens</i>			26	-	26	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Aerococcus sanguinicola</i> & <i>urinae</i>			31	-	31	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Kingella kingae</i>			30	-	30	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Burkholderia pseudomallei</i>			24	-	24	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Bacillus</i> spp.			25	-	25	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Achromobacter xylosoxidans</i>			26	20-25	20	-	-	-	-	-	-	-	-	-	-	-	-
#SD019	• Methicillin	MET	5 mcg	-	-	-	-	17-22	-	-	-	-	-	-	-	-	-	-
#SD225	• Mezlocillin	MZ	75 mcg	-	-	-	23-29	-	19-25	-	-	-	-	-	-	-	-	-
SD158	Minocycline	MI	30 mcg															
	<i>Enterobacteriales</i> , <i>Acinetobacter</i>			16	13-15	12	19-25	25-30	-	-	-	-	-	-	-	-	-	-
	<i>B. cepacia</i> , <i>S. maltophilia</i> , <i>Staphylococcus</i> & <i>Enterococcus</i> spp.			19	15-18	14	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Neisseria meningitidis</i>			26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.,			23	-	23	-	-	23-29	-	-	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G			23	-	23	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			24	-	24	-	-	-	-	-	-	-	-	-	-	25-31	-
	<i>Haemophilus influenzae</i>			24	-	24	-	-	-	-	-	-	26-32	-	-	-	-	-
	<i>Moraxella catarrhalis</i>			25	-	25	-	-	-	-	-	-	-	-	-	-	-	-
SD220	Moxalactam	MX	30 mcg															
	<i>Enterobacteriales</i>			23	15-22	14	28-35	18-24	17-25	-	-	-	-	-	-	-	-	-
SD217	Moxifloxacin	MO	5 mcg															
	<i>Staphylococcus</i> spp.			24	21-23	20	28-35	28-35	17-25	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			18	-	-	-	-	-	-	-	31-39	-	-	-	-	-	-
	<i>S. pneumoniae</i>			18	15-17	14	-	-	-	-	-	-	-	-	-	-	25-31	-
	<i>Enterobacteriales</i>			22	-	22	28-35	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			25	-	25	-	-	25-31	-	-	-	-	-	-	-	-	-
	Coagulase-negative <i>Staphylococci</i>			28	-	28	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G			19	-	19	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	24-30	-
	<i>Haemophilus influenzae</i> ,			28	-	28	-	-	-	-	-	-	30-36	-	-	-	-	-
	<i>Corynebacterium</i> spp.			25	-	25	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Moraxella catarrhalis</i>			26	-	26	-	-	-	-	-	-	-	-	-	-	-	-
SD293E	Mupirocin	MUP	200 mcg															
	<i>Staphylococcus</i> spp.			-	-	-	-	-	31-37	-	-	-	-	-	-	-	-	-
SD246	Nafcillin	NAF	1 mcg	-	-	-	-	16-22	-	-	-	-	-	-	-	-	-	-
SD021	Nalidixic Acid	NA	30 mcg															
	<i>Enterobacteriales</i>			19	14-18	13	22-28	-	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i> ,			23	-	-	22-28	-	-	-	-	-	26-32	-	-	-	-	-
	<i>Moraxella catarrhalis</i> ,			23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Pasteurella multocida</i>			23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SD731	Neomycin	N	10 mcg															
	<i>S. pseudintermedius</i> & <i>S. schelleri</i>			20	-	20	14-20	-	-	-	16-22	-	-	-	-	-	-	-
SD046	Netilil (Netilmicin Sulphate)	NET	30 mcg															
	<i>Enterobacteriales</i> , <i>P. aeruginosa</i> , <i>Staphylococcus</i> spp.			15	13-14	12	22-30	22-31	17-23	-	-	-	-	-	-	-	-	-
SD085	Netilil (Netilmicin Sulphate)	NET	10 mcg															
	<i>Enterobacteriales</i>			15	12-14	12	18-24	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			18	-	18	-	-	-	20-26	-	-	-	-	-	-	-	-
	Coagulase negative <i>Staphylococci</i>			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Pseudomonas</i> spp.			12	-	12	-	-	15-21	-	-	-	-	-	-	-	-	-
	<i>Acinetobacter</i> spp.			16	-	16	-	-	-	-	-	-	-	-	-	-	-	-
SD023	Nitrofurantoin	NIT	300 mcg															
	<i>Enterobacteriales</i> , <i>Staphylococcus</i> & <i>Enterococcus</i> spp.			17	15-16	14	20-25	18-22	-	-	-	-	-	-	-	-	23-29	-

▼ : In accordance to Performance Standards for Antimicrobial Disk Susceptibility Tests, CLSI & EUCAST.

■ : Zone size interpretative criteria given in Red colour is as per EUCAST standard (The European Committee on Antimicrobial Susceptibility Testing).

: QC limits are as per CLSI guideline (2018) & have been deleted in CLSI guideline (2019).

• : On receipt, store at -20°C.

On receipt all other products to be stored between -20°C to 8°C. For prolonged use, store at or below -20°C.

For *E. coli*, *S. aureus*, *P. aeruginosa* : Mueller Hinton Agar (MHA). For *Haemophilus* spp. : Haemophilus Test Medium;

For *S. pneumoniae* : Mueller Hinton Agar with 5% sheep blood; For *N. gonorrhoeae* : GC Agar Base with 1% defined growth supplement.

Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Symbol	Disc content	Interpretative Criteria			Quality Control Limits (mm)												
				Sensitive mm or more	Intermediate mm	Resistant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560	
SD086	Nitrofurantoin	NIT	100 mcg																
	<i>Enterobacterales</i> (Uncomplicated UTI only)			11	-	11	17-23	-	-	-	-	-	-	-	-	-	-	-	
	<i>Staphylococcus</i> spp. (Uncomplicated UTI only)			13	-	13	-	-	-	-	17-23	-	-	-	-	-	-	-	
	<i>Streptococcus</i> group A, B, C & G (Uncomplicated UTI only)			15	-	15	-	-	-	-	-	-	-	-	-	-	25-31	-	
	<i>Enterococcus</i> spp. (Uncomplicated UTI only)			15	-	15	-	-	-	-	-	18-24	-	-	-	-	-	-	
	<i>Aerococcus sanguinicola & urinae</i>			16	-	16	-	-	-	-	-	-	-	-	-	-	-		
SD196	Nitroxoline	NO	30 mcg																
	<i>Enterobacterales</i> (uncomplicated UTIs only)			15	-	15	18-24	-	-	-	-	-	-	-	-	-	-	-	
#SD057	Norfloxacin	NX	10 mcg																
	<i>Enterobacterales</i> , <i>P. aeruginosa</i> , <i>Staphylococcus</i> & <i>Enterococcus</i> spp.			17	13-16	12	28-35	17-28	22-29	-	-	-	-	-	-	-	15-21	-	
	<i>Enterobacterales</i> spp. (Uncomplicated UTI only)			24	-	24	28-35	-	-	-	-	-	-	-	-	-	-	-	
	<i>Staphylococcus</i> spp.			17	-	-	-	-	-	-	18-24	-	-	-	-	-	-	-	-
	<i>Enterococcus</i> spp.			12	-	12	-	-	-	-	-	16-22	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G, <i>S. pneumoniae</i>			12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Aerococcus sanguinicola & urinae</i>			10	-	-	-	-	-	-	-	-	-	-	-	-	18-24	-	
				17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	
*SD053	Novobiocin	NV	30 mcg	22	18-21	17	-	22-31	-	-	-	-	-	-	-	-	-	-	
SD087	Ofloxacin	OF	5 mcg																
	<i>Enterobacterales</i> , <i>P. aeruginosa</i> , <i>S. pneumoniae</i> , <i>Streptococcus</i> spp. <i>Viridians</i> group, <i>Streptococcus</i> spp. <i>beta haemolytic</i> group			16	13-15	12	29-33	-	17-21	-	-	-	-	-	-	-	16-21	-	
	<i>Staphylococcus</i> spp.			18	15-17	14	-	24-28	-	-	-	-	-	-	-	-	-	-	
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			16	-	-	-	-	-	-	-	31-40	-	-	-	-	-	-	
	<i>Neisseria gonorrhoeae</i>			31	25-30	24	-	-	-	-	-	-	-	-	-	43-51	-	-	
	<i>Enterobacterales</i>			24	22-23	22	29-33	-	-	-	-	-	-	-	-	-	18-24	-	
	<i>Staphylococcus</i> spp.			50	20-49	20	-	-	-	-	21-27	-	-	-	-	-	-	-	
	<i>Coagulase-negative Staphylococci</i>			50	24-49	24	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Haemophilus influenzae</i>			30	-	30	-	-	-	-	-	-	31-37	-	-	-	-	-	
	<i>Moraxella catarrhalis</i>			28	-	28	-	-	-	-	-	-	-	-	-	-	-	-	
SD088	Oxacillin	OX	1 mcg																
	<i>Staphylococcus</i> (<i>S. pseudintermedius</i>)			18	-	17	-	18-24	-	-	-	-	-	-	-	-	-	-	
	<i>S. pneumoniae</i>			20	-	-	-	-	-	-	-	-	-	-	-	-	<=12*	-	
	<i>S. pneumoniae</i>			20	-	-	-	-	-	-	19-25	-	-	-	-	-	8-14	-	
SD070	Pefloxacin	PF	5 mcg																
	<i>Enterobacterales</i> (<i>S. Typhi</i>)			24	-	23	25-33	-	-	-	-	-	-	-	-	-	-	-	
	<i>Enterobacterales</i>			24	-	24	26-32	-	-	-	-	-	-	-	-	-	-	-	
	<i>Vibrio</i> spp.			22	-	22	-	-	-	-	-	-	-	-	-	-	-	-	
SD028	Penicillin-G	P	10 units																
	<i>Staphylococcus</i> spp.			29	-	28	-	26-37	-	-	-	-	-	-	-	-	-	-	
	<i>Enterococcus</i> spp.			15	-	14	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Neisseria gonorrhoeae</i>			47	27-46	26	-	-	-	-	-	-	-	-	-	26-34	-	-	
	<i>Streptococcus</i> spp. <i>beta haemolytic</i> group			24	-	-	-	-	-	-	-	-	-	-	-	-	24-30	-	
SD089	Penicillin G	P	1 unit																
	<i>Staphylococcus</i> spp.			26	-	26	-	-	-	12-18	-	-	-	-	-	-	-	-	
	<i>Streptococcus</i> group A, B, C & G (indications other than meningitis)			18	-	18	-	-	-	-	-	-	-	-	-	-	16-22	-	
	<i>Streptococcus</i> group A, B, C & G (meningitis)			19	-	19	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Streptococcus</i> spp. <i>viridans</i> group			21	-	21	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Haemophilus influenzae</i>			12	-	-	-	-	-	-	-	6-9	15-21	-	-	-	-	-	
	<i>Listeria monocytogens</i>			13	-	13	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Pasteurella multocida</i>			17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Corynebacterium</i> spp.			29	-	29	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Aerococcus sanguinicola & urinae</i>			21	-	21	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Kingella kingae</i>			25	-	25	-	-	-	-	-	-	-	-	-	-	-		
#SD066	Piperacillin	PI	100 mcg																
	<i>Enterobacterales</i> & <i>Acinetobacter</i> spp.			21	18-20	17	24-30	-	-	12-18	-	-	-	-	-	-	-	-	
	<i>P. aeruginosa</i>			21	15-20	14	-	-	25-33	-	-	-	-	-	-	-	-	-	
SD066A	Piperacillin	PI	30 mcg																
	<i>Enterobacterales</i>			20	-	20	21-27	-	-	-	-	-	-	-	-	-	-	-	
	<i>Pseudomonas</i> spp.			50	18-49	18	-	-	-	-	-	-	-	-	-	-	-	-	
SD210	Piperacillin/ Tazobactam	PIT	100/ 10 mcg																
	<i>Enterobacterales</i> & <i>Acinetobacter</i> spp.			25	21-24	20	24-30	27-36	-	24-30	-	-	-	-	-	-	-	-	
	<i>P. aeruginosa</i>			21	15-20	14	-	-	25-33	-	-	-	-	-	-	-	-	-	
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			21	-	-	-	-	-	-	-	-	33-38	-	-	-	-	-	

▼ : In accordance to Performance Standards for Antimicrobial Disk Susceptibility Tests, CLSI & EUCAST.

■ : Zone size interpretative criteria given in Red colour is as per EUCAST standard (The European Committee on Antimicrobial Susceptibility Testing).

* : Not included in CLSI chart; FDA approved performance standards for Antimicrobial Discs obtained from drug manufacturers.

θ : Deterioration in Oxacillin disc content is best assessed with QC Organism *S. aureus* ATCC 25923, with an acceptable zone diameter of 18-24 mm.

: Interpretative criteria and QC limits are as per CLSI guideline (2018) & have been deleted in CLSI guideline (2019).

• : On receipt, store at -20°C.

On receipt all other products to be stored between -20°C to 8°C.

For prolonged use, store at or below -20°C.

Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Sym-bol	Disc content	Interpretative Criteria			Quality Control Limits (mm)											
				Sen-sitive mm or more	Inter-mediate mm	Resi-stant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560
SD292E	Piperacillin / Tazobactam	PIT	30/6 mcg															
	<i>Enterobacteriales</i>			20	19	20	21-27	-	-	21-27	-	-	-	-	-	14-20	-	-
	<i>Pseudomonas</i> spp.			50	18-49	18	-	-	23-29	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i>			27	-	27	-	-	-	-	-	-	-	-	32-40	-	-	-
	<i>Achromobacter xylosoxidans</i>			26	-	26	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Vibrio</i> spp.			26	-	26	-	-	-	-	-	-	-	-	-	-	-	-
SD029	Polymyxin-B	PB	300 Units	-	-	-	13-19	-	-	14-18	-	-	-	-	-	-	-	-
SD178	Pristinomycin (Quinupristin/Dalfopristin)	RP	15 mcg															
	<i>Staphylococcus, Enterococcus</i> spp., <i>S. pneumoniae, Streptococcus</i> spp. beta haemolytic group & <i>Streptococcus</i> spp. Viridians group			19	16-18	15	-	21-28	-	-	-	-	15-21	-	-	-	19-24	-
	<i>Staphylococcus</i> spp.			21	-	21	-	-	-	-	21-27	-	-	-	-	-	-	-
	<i>Enterococcus</i> spp.			22	-	22	-	-	-	-	-	11-17	-	-	-	-	-	-
SD030	Rifampicin	RIF	5 mcg															
	<i>Staphylococcus, Enterococcus</i> spp.,			20	17-19	16	8-10	-	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			20	17-19	16	-	26-34	-	-	-	-	22-30	-	-	-	-	-
	<i>Neisseria meningitidis</i>			25	20-24	19	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			19	17-18	16	-	-	-	-	-	-	-	-	-	-	25-30	-
	<i>Staphylococcus</i> spp.			30	-	30	-	-	-	-	30-36	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G			21	15-20	15	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			22	17-21	17	-	-	-	-	-	-	-	-	-	-	-	26-32
	<i>Haemophilus influenzae</i>			18	-	18	-	-	-	-	-	-	-	21-27	-	-	-	-
	<i>Corynebacterium</i> spp.			30	25-29	25	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Aerococcus sanguinicola</i> & <i>urinae</i>			25	-	25	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Kingella kingae</i>			20	-	20	-	-	-	-	-	-	-	-	-	-	-	
SD162	Sparfloxacin	SPX	5 mcg															
	<i>Enterobacteriales</i>			-	-	-	30-38	-	21-29	-	-	-	-	32-40	-	-	43-51	-
	<i>Staphylococcus, S. pneumoniae</i>			19	16-18	15	-	27-33	-	-	-	-	-	-	-	-	21-27	-
SD181	Spectinomycin	SPT	100 mcg															
	<i>Neisseria gonorrhoeae</i>			18	15-17	14	-	-	-	-	-	-	-	-	-	23-29	-	-
SD236	Streptomycin	HLS	300 mcg															
	<i>Enterococcus</i> spp.			10	7-9	6	-	-	-	-	-	14-20	-	-	-	-	-	-
	<i>Enterococcus</i> spp.			-	-	-	-	-	-	-	-	14-20	-	-	-	-	-	-
SD031	Streptomycin	S	10 mcg															
	<i>Enterobacteriales</i>			15	12-14	11	12-20	14-22	-	-	-	-	-	-	-	-	-	-
SD032	Sulphafurazole (Sulfisoxazole)	SF	300 mcg															
	<i>Enterobacteriales</i> & <i>Staphylococcus</i>			17	13-16	12	15-23	24-34	-	-	-	-	-	-	-	-	-	-
SD213	Teicoplanin	TEI	30 mcg															
	<i>Enterococcus</i> spp.			14	11-13	10	-	15-21	-	-	-	-	-	-	-	-	-	-
	<i>Enterococcus</i> spp.,			16	-	16	-	-	-	-	-	15-21	-	-	-	-	-	-
	<i>Streptococcus</i> spp. viridans group			16	-	16	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G			15	-	15	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae</i>			17	-	17	-	-	-	-	-	-	-	-	-	-	18-24	-
SD037	Tetracycline	TE	30 mcg															
	<i>Enterobacteriales, Acinetobacter</i>			15	12-14	11	18-25	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus, Enterococcus</i> spp. & <i>Neisseria meningitidis</i>			19	15-18	14	-	24-30	-	-	-	-	-	-	-	-	-	-
	<i>Haemophilus influenzae</i> & <i>Haemophilus parainfluenzae</i>			29	26-28	25	-	-	-	-	-	-	14-22	-	-	-	-	-
	<i>Neisseria gonorrhoeae</i>			38	31-37	30	-	-	-	-	-	-	-	-	-	30-42	-	-
	<i>S. pneumoniae,</i>			28	25-27	24	-	-	-	-	-	-	-	-	-	-	27-31	-
	<i>Streptococcus</i> spp. beta haemolytic group & <i>Viridians</i> group			23	19-22	18	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			22	-	22	-	-	-	-	23-31	-	-	-	-	-	-	-
	<i>Streptococcus</i> group A, B, C & G			23	-	23	-	-	-	-	-	-	-	-	-	-	-	-
	<i>S. pneumoniae, Haemophilus influenzae</i>			25	-	25	-	-	-	-	-	-	-	28-34	-	-	28-34	-
	<i>Corynebacterium</i> spp.,			24	-	24	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Pasteurella multocida</i>			24	-	24	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Campylobacter jejuni</i> & <i>coli</i>			30	-	30	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Moraxella catarrhalis</i>			28	25-27	25	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Kingella kingae</i>			28	-	28	-	-	-	-	-	-	-	-	-	-	-	-
<i>Burkholderia pseudomallei</i>			50	23-49	23	-	-	-	-	-	-	-	-	-	-	-	-	
	<i>Vibrio</i> spp.			20	-	20	-	-	-	-	-	-	-	-	-	-	-	
SD201	Ticarcillin / Clavulanic Acid	TCC	75/10mcg															
	<i>Enterobacteriales</i> & <i>Acinetobacter</i>			20	15-19	14	24-30	-	-	21-25	-	-	-	-	-	-	-	-
	<i>P. aeruginosa</i>			24	16-23	15	-	-	20-28	-	-	-	-	-	-	-	-	-
	<i>Staphylococcus</i> spp.			23	-	22	-	29-37	-	-	-	-	-	-	-	-	-	-
	<i>Enterobacteriales</i>			23	20-22	20	24-30	-	-	21-25	-	-	-	-	-	-	-	-
	<i>Pseudomonas</i> spp.			50	18-49	18	-	-	20-28	-	-	-	-	-	-	-	-	-

▼ : In accordance to Performance Standards for Antimicrobial Disk Susceptibility Tests, CLSI & EUCAST.
 ■ : Zone size interpretative criteria given in Red colour is as per EUCAST standard (The European Committee on Antimicrobial Susceptibility Testing).
 • : On receipt, store at -20°C.

On receipt all other products to be stored between -20°C to 8°C. For prolonged use, store at or below -20°C.

For *E. coli, S. aureus, P. aeruginosa* : Mueller Hinton Agar (MHA). For *Haemophilus* spp. : Haemophilus Test Medium;
 For *S. pneumoniae* : Mueller Hinton Agar with 5% sheep blood; For *N. gonorrhoeae* : GC Agar Base with 1% defined growth supplement.

Zone Size Interpretative Chart▼

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Interpretative Criteria			Quality Control Limits (mm)											
				Sen- sitive mm or more	Inter- mediate mm	Resi- stant mm or less	<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853	<i>E. coli</i> ATCC 35218	<i>S. aureus</i> ATCC 29213	<i>E. faecalis</i> ATCC 29212	<i>H. influenzae</i> ATCC 49247	<i>H. influenzae</i> ATCC 49766	<i>K. pneumoniae</i> ATCC 700603	<i>N. gonorrhoeae</i> ATCC 49226	<i>S. pneumoniae</i> ATCC 49619	<i>C. jejuni</i> ATCC 33560
SD074	• Ticarcillin	TI	75 mcg	–	–	–	24-30	–	21-27	6	–	–	–	–	–	–	–	–
	<i>Enterobacteriales</i>			–	–	–	24-30	–	–	–	–	–	–	–	–	–	–	–
SD278	Tigecycline	TGC	15 mcg	–	–	–	20-27	20-25	9-13	–	–	–	23-31	–	–	30-40	23-29	–
	<i>Enterobacteriales, Enterococcus spp.</i>			18	–	18	20-27	–	–	–	–	20-26	–	–	–	–	–	–
	<i>Staphylococcus spp.</i>			19	–	19	–	–	–	–	19-25	–	–	–	–	–	–	–
	<i>Streptococcus group A, B, C & G</i>			19	–	19	–	–	–	–	–	–	–	–	–	–	24-30	–
SD044	Tobramycin	TOB	10 mcg															
	<i>Enterobacteriales, P. aeruginosa, Acinetobacter & Staphylococcus spp.</i>			15	13-14	12	18-26	19-29	20-26	–	–	–	–	–	–	–	–	–
	<i>Enterobacteriales</i>			16	–	16	18-26	–	–	–	–	–	–	–	–	–	–	–
	<i>Staphylococcus spp.</i>			18	–	18	–	–	–	–	20-26	–	–	–	–	–	–	–
	<i>Coagulase negative Staphylococci</i>			22	–	22	–	–	–	–	–	–	–	–	–	–	–	–
	<i>Pseudomonas spp.</i>			18	–	18	–	–	20-26	–	–	–	–	–	–	–	–	–
	<i>Acinetobacter spp.</i>			17	–	17	–	–	–	–	–	–	–	–	–	–	–	–
SD039	Trimethoprim	TR	5 mcg															
	<i>Enterobacteriales, Staphylococcus spp.</i>			16	11-15	10	21-28	19-26	–	–	–	–	–	–	–	–	–	–
	<i>Enterobacteriales (Uncomplicated UTI only)</i>			15	–	15	21-28	–	–	–	–	–	–	–	–	–	–	–
	<i>Staphylococcus spp.</i>			14	–	14	–	–	–	–	22-28	–	–	–	–	–	–	–
SD268	Urofloxacin (Prulifloxacin)	PRU	5 mcg	–	–	–	32-38	20-26	27-33	–	–	–	–	–	–	–	–	–
	<i>Enterococcus spp.</i>			17	15-16	14	–	–	–	–	–	–	–	–	–	–	–	–
SD045	Vancomycin	VA	30 mcg	–	–	–	–	–	17-21	–	–	–	–	–	–	–	–	–
	<i>S. pneumoniae, Streptococcus spp. beta haemolytic group & Streptococcus spp. Viridians group</i>			17	–	–	–	–	–	–	–	–	–	–	–	–	20-27	–
SD155	Vancomycin	VA	5 mcg															
	<i>Enterococcus spp.</i>			12	–	12	–	–	–	–	–	10-16	–	–	–	–	–	–
	<i>Streptococcus group A, B, C & G</i>			13	–	13	–	–	–	–	–	–	–	–	–	–	–	–
	<i>S. pneumoniae</i>			16	–	16	–	–	–	–	–	–	–	–	–	–	17-23	–
	<i>Streptococcus spp. viridans group</i>			15	–	15	–	–	–	–	–	–	–	–	–	–	–	–
	<i>Corynebacterium spp.</i>			17	–	17	–	–	–	–	–	–	–	–	–	–	–	–
	<i>Aerococcus sanguinicola & urinae</i>			16	–	16	–	–	–	–	–	–	–	–	–	–	–	–
<i>Bacillus spp.</i>			10	–	10	–	–	–	–	–	–	–	–	–	–	–	–	

▼ : In accordance to Performance Standards for Antimicrobial Disk Susceptibility Tests, CLSI & EUCAST.
 ■ : Zone size interpretative criteria given in Red colour is as per EUCAST standard (The European Committee on Antimicrobial Susceptibility Testing).
 • : On receipt, store at -20°C.
 On receipt all other products to be stored between -20°C to 8°C. For prolonged use, store at or below -20°C.
 For *E. coli*, *S. aureus*, *P. aeruginosa* : Mueller Hinton Agar (MHA). For *Haemophilus spp.* : Haemophilus Test Medium;
 For *S. pneumoniae* : Mueller Hinton Agar with 5% sheep blood; For *N. gonorrhoeae* : GC Agar Base with 1% defined growth supplement.

References:
 1. Bauer, Kirby, Sherris and Turck, 1966, Am. J. Clin. Path., 45 : 493.
 2. Clinical & Laboratory Standards Institute, Performance Standards for Antimicrobial Disk Susceptibility Tests, M100S, 33rd Ed., CLSI Vol.- 43 No.3, Mar-2023.
 For more details refer to this volume. For more details refer to this volume.
 3. EUCAST, Breakpoint tables for interpretation of MICs & zone diameters, version 13.0, valid from 01.01.2023.
 4. Routine & extended internal quality control for MIC determination & Disc diffusion as recommended by EUCAST, version 13.0, valid from 01.01.2023.

Zone size interpretative chart for Antifungal agent

(Based on results obtained on Mueller Hinton Agar + 2% Glucose + 0.5mcg/ml Methylene Blue Dye Medium)

Code	Antifungal Agent	Symbol	Disc content	Zone diameter, Nearest Whole (mm)			Quality Control Limits (mm)			
				Resistant mm or less	S-DD*	Susceptible mm or more	<i>C. albicans</i> ATCC 90028	<i>C. parapsilosis</i> ATCC 22019	<i>C. tropicalis</i> ATCC 750	<i>C. krusei</i> ATCC 6258
SD298	Casposfungin	CAS	5 mcg	—	—	—	18-27	14-23	20-27	19-26
SD232	Fluconazole	FLC	25 mcg	14	15-18	19	28-39	22-33	26-37	—
SD277	Voriconazole	VRC	1 mcg	13	14-16	17	31-42	28-37	—	16-25

* S-DD - Susceptible - Dose Dependent

References: 1) Method for Antifungal Disk Diffusion Susceptibility Testing of Yeasts; Approved Guidelines - Third Edition Vol.38 No.24, Dec - 2018 CLSI document M44-A2.
 For more details refer to this volume.
 2) Zone Diameter Interpretive Standards, Corresponding Minimal Inhibitory Concentration (MIC) Interpretive Breakpoints, and Quality Control Limits for Antifungal Disk Diffusion Susceptibility Testing of Yeasts, Third Informational Supplement CLSI document – M44-S3 – Aug 2009.

Zone Size Interpretative Chart

Product Code	Antimicrobial Agent	Symbol	Disc content (mcg)	Diameter of zone of inhibition in (mm) Quality Control Limits			
				<i>Escherichia coli</i> ATCC 25922	<i>Pseudomonas aeruginosa</i> ATCC 27853	<i>Klebsiella pneumoniae</i> ATCC BAA 1144	<i>Klebsiella pneumoniae</i> ATCC 700063
SD860	Meropenem/EDTA	MRE	10/750	28-35	27-33	–	–
SD299	Meropenem/ Phenyl Boronic Acid	MRB	10/200	28-35	27-33	–	–
SD300	Meropenem/Cloxacillin	MCL	10/200	28-35	27-33	–	–
SD301	Cefotaxime/Cloxacillin	CTC	30/200	29-35	–	≥28	–
SD302	Ceftazidime/Cloxacillin	CZC	30/200	25-32	–	≥25	–
SD303	Cefotaxime/Clavulanic acid/ Cloxacillin	CCC	30/200/200	29-35	–	≥28	≥28

SD304	Kit V for ESBL Identification (As per EUCAST)	Symbol	Disc content (mcg)	Diameter of zone of inhibition in (mm) Quality Control Limits	
				<i>Escherichia coli</i> ATCC 25922	<i>Klebsiella pneumoniae</i> ATCC 700063
SD040	Cefotaxime	CTX	30	29-35	17-25
SD724	Cefotaxime/Clavulanic acid	CEC	30/10	30-37	≥28
SD062	Ceftazidime	CAZ	30	25-32	10-18
SD207	Ceftazidime/Clavulanic acid	CAC	30/10	27-34	≥23
SD219	Cefepime	CPM	30	31-37	16-22
SD234	Cefepime/Clavulanic acid	CFC	30/10	32-40	≥27

SD305	Kit VI for ESBL Identification (As per CLSI)	Symbol	Disc content (mcg)	Diameter of zone of inhibition in (mm) Quality Control Limits	
				<i>Escherichia coli</i> ATCC 25922	<i>Klebsiella pneumoniae</i> ATCC 700063
SD040	Cefotaxime	CTX	30	29-35	17-25
SD724	Cefotaxime/Clavulanic acid	CEC	30/10	30-37	≥28
SD062	Ceftazidime	CAZ	30	25-32	10-18
SD207	Ceftazidime/Clavulanic acid	CAC	30/10	27-34	≥23

SD306	AmpC Detection Kit	Symbol	Disc content (mcg)	Diameter of zone of inhibition in (mm) Quality Control Limits		
				<i>Escherichia coli</i> ATCC 25922	<i>Klebsiella pneumoniae</i> ATCC BAA 1144	<i>Klebsiella pneumoniae</i> ATCC 700063
SD040	Cefotaxime	CTX	30	29-35	–	17-25
SD301	Cefotaxime/Cloxacillin	CTC	30/200	29-35	≥28	–
SD062	Ceftazidime	CAZ	30	25-32	–	–
SD302	Ceftazidime/Cloxacillin	CZC	30/200	25-32	≥25	–

SD307	ESBL + AmpC Detection Kit	Symbol	Disc content (mcg)	Diameter of zone of inhibition in (mm) Quality Control Limits		
				<i>Escherichia coli</i> ATCC 25922	<i>Klebsiella pneumoniae</i> ATCC BAA 1144	<i>Klebsiella pneumoniae</i> ATCC 700063
SD040	Cefotaxime	CTX	30	29-35	–	17-25
SD724	Cefotaxime/Clavulanic acid	CEC	30/10	30-37	–	≥28
SD301	Cefotaxime/Cloxacillin	CTC	30/200	29-35	≥28	–
SD303	Cefotaxime/Clavulanic acid/Cloxacillin	CCC	30/200/200	29-35	≥28	≥28

SD308	KPC+MBL Detection Kit (As per EUCAST)	Symbol	Disc content (mcg)	Diameter of zone of inhibition in (mm) Quality Control Limits		
				Increase in zone of diameter with the combination of inhibitor		
				KPC Positive	MBL Positive	AmpC+porin loss or efflux
SD727	Meropenem	MRP	10	R	R	R
SD299	Meropenem + Phenylboronic acid	MRB	10/200	≥ 4 mm	< 4 mm	≥ 4 mm
SD300	Meropenem/Cloxacillin	MCL	10/200	< 5 mm	< 5 mm	≥ 5 mm
SD860	Meropenem/EDTA	MRE	10/750	< 5 mm	≥ 5 mm	< 5 mm

Quality Control Limits for Antibiotics[▲]

Based on Results obtained using Mueller Hinton Agar

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Diameter of zone of inhibition in mm		
				Quality Control Limits		
				<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853
SD082	Amikacin	AK	10 mcg	16-23	18-24	15-23
SD001	• Amoxicillin	AMX	10 mcg	19-25	28-36	—
SD129	• Amoxicillin	AMX	25 mcg	23-30	28-36	—
SD076	• Amoxicillin	AMX	30 mcg	25-32	28-36	—
SD281	• Amoxycylav (Amoxicillin/ Clavulanic acid)	AMC	50/10 mcg	24-30	30-38	—
SD264	• Amoxicillin/Sulbactam	AMS	30/15 mcg	28-38	32-43	—
SD078	• Amoxycylav	AMC	10 mcg	19-25	28-36	—
SD077	• Ampicillin	AMP	25 mcg	20-30	32-40	—
SD113	• Ampicillin/Cloxacillin	AX	10 mcg	16-22	35-37	—
SD124	Azithromycin	AZM	30 mcg	—	24-30	—
SD094	• Azlocillin	AZ	30 mcg	—	—	22-28
SD263	• Aztreonam	AT	50 mcg	29-37	—	24-33
SD003	Bacitracin	B	10 units	—	12-22	—
SD105	Bacitracin	B	8 units	—	12-22	—
SD825	Biapenem	BPM	10 mcg	27-35	32-40	28-36
				<i>E. faecalis</i> ATCC 29212 = 21-28 <i>K. pneumoniae</i> ATCC 700603 = 25-32		
SD079	• Cefaloridine (Cephaloridine)	CR	10 mcg	17-21	29-37	—
SD005	• Cefaloridine (Cephaloridine)	CR	30 mcg	17-21	29-37	—
SD262	• Cefepime	CPM	50 mcg	32-40	26-34	27-35
SD234	• Cefepime/Clavulanic acid	CFC	30/10 mcg	32-40	24-30	25-31
SD247	• Cefepime/Tazobactam	CPT	80/10 mcg	31-39	30-35	27-34
SD257	• Cefepime/Tazobactam	CPT	30/10 mcg	33-39	24-30	26-32
SD820	• Cefixime	CFM	10 mcg	24-29	—	—
SD266	• Cefixime/Clavulanic acid	CMC	5/10 mcg	24-32	—	—
SD203	• Cefoperazone/Sulbactam	CFS	75/30 mcg	27-33	23-30	23-29
				<i>K. pneumoniae</i> ATCC 700603 = 24-30		
SD254	• Cefoperazone/Sulbactam	CFS	75/10 mcg	27-33	23-30	23-29
				<i>K. pneumoniae</i> ATCC 700603 = 19-27		
SD259	• Cefoperazone/Sulbactam	CFS	50/50 mcg	28-36	24-33	22-29
				<i>K. pneumoniae</i> ATCC 700603 = 26-32		
SD253	• Cefoperazone/Tazobactam	CST	75/10 mcg	27-32	23-30	22-28
SD040A	• Cefotaxime (Cephotaxime)	CTX	10 mcg	29-35	25-31	18-22
SD285	• Cefoxitin/Cloxacillin	CXX	30/200 mcg	26-34	36-50	—
SD724	• Cefotaxime/Clavulanic acid	CEC	30/10 mcg	30-37	29-36	—

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Diameter of zone of inhibition in mm		
				Quality Control Limits		
				<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853
SD310	Cefotaxime/Sulbactam	CXS	30/10 mcg	29-35	25-31	18-22
				<i>K. pneumoniae</i> ATCC 700603 = 22-28 <i>Acinetobacter baumannii</i> ATCC 19606 = 26-32		
SD738	• Cefpirome	CFP	30 mcg	28-34	29-37	23-29
SD235	• Cefpirome/Clavulanic acid	CPC	30/7.5 mcg	29-35	29-37	17-23
SD160	• Cefradine (Cephadrine)	CH	25 mcg	17-22	29-37	—
SD704	• Cefradine (Cephadrine)	CH	30 mcg	17-22	29-37	—
SD207	• Ceftazidime/Clavulanic acid	CAC	30/10 mcg	27-34	<i>K. pneumoniae</i> ATCC 700603 = ≥ 23mm	
SD269	• Ceftazidime/Tazobactam	CAT	80/10 mcg	25-32	19-28	23-30
SD252	• Ceftazidime/Tazobactam	CAT	30/10 mcg	25-32	17-24	22-29
SD109	• Ceftriaxone	CTR	10 mcg	29-35	22-28	17-23
SD261	• Ceftriaxone/Sulbactam	CIS	30/15 mcg	31-37	24-30	16-21
SD256	• Ceftriaxone/Tazobactam	CIT	30/10 mcg	29-35	24-32	17-24
SD251	• Ceftriaxone/Tazobactam	CIT	80/10 mcg	29-35	24-32	17-24
SD311	Cefuroxime/Clavulanic Acid	CCV	30/10 mcg	20-26	27-35	—
				<i>K. pneumoniae</i> ATCC 700603 = 16-21		
SD081	Chloramphenicol	C	10 mcg	17-25	19-26	—
SD131	Chloramphenicol	C	50 mcg	23-29	25-32	—
SD153	Chloramphenicol	C	25 mcg	21-27	23-30	—
SD007	Chlortetracycline	CT	30 mcg	18-25	19-28	—
SD080	Ciprofloxacin	CIP	10 mcg	30-40	27-35	28-35
SD142	Ciprofloxacin	CIP	30 mcg	30-40	27-35	28-35
SD060A	Ciprofloxacin	CIP	1 mcg	26-36	20-28	22-30
SD164	Clindamycin	CD	10 mcg	—	28-34	—
SD008	Cloxacillin	COX	1 mcg	—	18-24	—
SD075	Cloxacillin	COX	5 mcg	—	18-30	—
SD143	Cloxacillin	COX	10 mcg	—	23-34	—
SD165	Cloxacillin	COX	30 mcg	—	30-40	—
SD284	Cloxacillin	COX	200 mcg	—	36-50	—
SD009	Colistin (Methane Sulphonate)	CL	10 mcg	11-15	—	11-15
SD108	Colistin (Methane Sulphonate)	CL	25 mcg	13-18	—	13-18
SD097	Colistin (Methane Sulphonate)	CL	50 mcg	15-20	—	15-20
SD297	Colistin Sulphate	CS	10 mcg	11-17	—	11-17
SD071	Co-Trimazine (Human)	CM	25 mcg	21-28	19-26	—
SD052	• Diclloxacin	D/C	1 mcg	—	18-30	—
SD120	Doxycycline Hydrochloride	DO	10 mcg	12-18	23-29	—

Quality Control Limits for Antibiotics[▲]

Based on Results obtained using Mueller Hinton Agar

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Diameter of zone of inhibition in mm		
				Quality Control Limits		
				<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853
SD150	Enrofloxacin	EX	10 mcg	30-40	22-30	—
SD156	Enrofloxacin	EX	5 mcg	30-40	22-30	—
SD083	Erythromycin	E	10 mcg	—	22-30	—
SD222	Erythromycin	E	5 mcg	—	22-30	—
SD140	Floxidin	FL	20 mcg	30-40	25-30	—
SD141	Floxidin	FL	30 mcg	30-40	25-30	—
SD179	Fosfomycin	FO	50 mcg	19-25	25-33	—
SD014	Framycetin	F	100 mcg	18-24	18-24	16-21
SD015	Furazolidone	FR	50 mcg	20-25	18-22	—
SD197	Furazolidone	FR	100 mcg	20-25	18-22	—
SD042	Furoxone	FX	100 mcg	20-25	18-22	—
SD169	Fusidic Acid	FC	30 mcg	—	26-37	—
SD166	Gentamicin	GEN	50 mcg	21-28	25-33	20-25
SD753	Gatifloxacin	GAT	10 mcg	30-37	27-33	20-28
SD740	Gatifloxacin	GAT	30 mcg	32-40	31-37	24-32
SD265	• Imipenam/Cilastin	IC	10/10 mcg	28-35	—	24-31
SD282	• Imipenam/EDTA	IE	10/750 mcg	25-31	—	19-27
SD214	Isepamicin	IP	30 mcg	20-28	24-32	19-24
SD223	Kanamycin	K	5 mcg	16-22	19-26	—
SD018	Lincomycin	L	2 mcg	—	15-22	—
SD084	Lincomycin	L	10 mcg	—	15-22	—
SD098	Lincomycin	L	15 mcg	—	22-32	—
SD125	Lomefloxacin	LOM	30 mcg	27-33	23-29	22-28
SD260	Lomefloxacin	LOM	15 mcg	28-36	24-32	22-30
SD177	Mecillinam	MEC	25 mcg	24-36	—	—
SD068	Methanamine Mandalate	ME	3 mg	13-18	14-22	—
SD136	• Methicillin	MET	10 mcg	—	17-22	—
SD137	• Methicillin	MET	30 mcg	—	22-32	—
SD748	Mupirocin	MUP	5 mcg	—	18-24	—
SD258	Nadifloxacin	NAD	5 mcg	28-34	29-37	25-32
SD022	Neomycin	N	30 mcg	17-23	18-26	—
SD103	Nitrofurantoin	NIT	30 mcg	15-20	18-22	—
SD023A	Nitrofurantoin	NIT	50 mcg	15-21	14-20	—
SD090	Nitrofurantoin	NIT	200 mcg	20-25	18-22	—
SD024	Nitrofurazone	NR	100 mcg	20-25	18-22	—
SD184	Norfloxacin	NX	5 mcg	28-35	17-28	22-29
SD053	Novobiocin	NV	30 mcg	—	22-31	—

Product Code	Antimicrobial Agent	Sym- bol	Disc content	Diameter of zone of inhibition in mm		
				Quality Control Limits		
				<i>E. coli</i> ATCC 25922	<i>S. aureus</i> ATCC 25923	<i>P. aeruginosa</i> ATCC 27853
SD121	Novobiocin	NV	5 mcg	—	22-31	—
SD069	Ofloxacin	OF	2 mcg	29-33	24-28	17-21
SD026	Oleandomycin	OL	15 mcg	—	19-28	—
SD043	• Oxacillin	OX	5 mcg	—	27-35	—
SD027	Oxytetracycline	O	30 mcg	18-25	19-28	—
SD144	• Penicillin G	P	2 units	—	26-37	—
SD175	Pipemidic Acid	PA	30 mcg	18-25	13-19	11-16
SD185	Pipemidic Acid	PA	20 mcg	18-25	13-19	11-16
SD132	• Piperacillin	PI	75 mcg	24-30	—	25-33
SD106	Polymyxin B	PB	50 units	12-16	—	11-17
SD139	Polymyxin B	PB	100 units	12-16	—	11-17
SD267	Prulifloxacin (Ulifloxacin)	PRU	10 mcg	28-34	19-27	24-32
SD096	Rifampicin	RIF	2 mcg	8-10	26-34	—
SD127	Rifampicin	RIF	30 mcg	9-12	32-40	—
SD128	Rifampicin	RIF	15 mcg	8-10	26-34	—
SD126	Roxithromycin	RO	30 mcg	—	22-30	—
SD059	Sisomicin	SS	10 mcg	17-24	19-26	17-22
SD054	Spiramycin	SR	30 mcg	—	22-29	—
SD101	Spiramycin	SR	100 mcg	—	22-29	—
SD091	Streptomycin	S	25 mcg	15-23	17-25	—
SD056	Sulfasomidine	SO	300 mcg	18-26	24-34	—
SD033	Sulphamethizole	SM	300 mcg	18-26	24-34	—
SD055	Sulphamethoxypyridazine	ST	300 mcg	18-26	24-34	—
SD036	Sulphaphenazole	SP	200 mcg	18-26	24-34	—
SD092	Sulphadiazine	SZ	100 mcg	12-20	16-26	—
SD034	Sulphadiazine	SZ	300 mcg	18-26	24-34	—
SD133	Tetracycline	TE	10 mcg	18-25	24-30	—
SD154	Tobramycin	TOB	30 mcg	18-26	19-29	19-25
SD135	Trimethoprim	TR	1.25 mcg	12-18	10-16	—
				<i>E. faecalis</i> ATCC 29212 = 14-22 <i>S. aureus</i> ATCC 29213 = 12-18		
SD093	Trimethoprim	TR	10 mcg	21-28	19-26	—
SD148	Trimethoprim	TR	25 mcg	21-28	19-26	—
SD149	Trimethoprim	TR	30 mcg	21-28	19-26	—
SD038	Triple Sulpha	S3	300 mcg	15-23	24-34	—
SD199	Tylosine	TL	15 mcg	—	22-30	—
SD163	Vancomycin	VA	10 mcg	—	17-21	—
SD182	Virginamycin	VI	15 mcg	—	22-30	—

Quality Control Limits for Antibiotics[▲]

Based on Results obtained using Mueller Hinton Agar

Cultural Response : Average diameter of zone of inhibition observed on Brucella agar with Hemin and Vitamin K1 supplement with 5 % v/v sterile defibrinated sheep blood (M1039). Incubated anaerobically at 35°C for 24 - 48 hours..

Product Code	Antimicrobial Agent	Symbol	Disc content	Quality Control Limits		
				<i>Clostridium perfringens</i> ATCC 12924	<i>Clostridium perfringens</i> ATCC 13124	<i>Bacteroides fragilis</i> ATCC 25285
SD020	Metronidazole	MT	5 mcg	26-34	26-34	38-44
SD099	Metronidazole	MT	4 mcg	26-34	26-34	38-44
SD730	Metronidazole	MT	50 mcg	30-38	30-38	38-46

ZONE SIZE INTERPRETATIVE CHART

Product Code	Antimicrobial Agent	Symbol	Disc content	Interpretative criteria		Quality Control Limits*	
				Sensitive	Resistant	<i>Bacteroides fragilis</i> ATCC 25285	<i>Fusobacterium necrophorum</i> ATCC 25286
SD837	Kanamycin	K	1000 mcg	≥ 10 mm	< 10 mm	Resistant (< 10 mm zone)	Sensitive (≥ 10 mm zone)

*: Expected diameter of zone of inhibition, as per Quality Control results obtained on Brucella Blood Agar w/ Hemin and Vitamin K1 (M1039).

Quality Control Limits for Antifungal Agent

(Based on results obtained on Mueller Hinton Agar + 2% Glucose + 0.5mcg/ml Methylene Blue Dye Medium)

Product Code	Antimicrobial Agent	Symbol	Disc content	Quality Control Limits					
				<i>C. albicans</i> ATCC 90028	<i>C.parapsilosis</i> ATCC 22019	<i>C.tropicalis</i> ATCC 750	<i>C.krusei</i> ATCC 6258	<i>C.albicans</i> ATCC 10231	<i>S.cerevisiae</i> ATCC 9763
SD111	Amphotericin-B	AP	100 units	10 – 17	11-20	8-12	9-14	10-18	11-18
SD233	Amphotericin-B	AP	20 mcg	10-15	10-17	8-10	8-12	10-16	8-12
SD270	Amphotericin-B	AP	50 mcg	12-15	13-17	13-17	14-20	15-23	16-25
SD115	Clotrimazole	CC	10 mcg	18-32	16-30	10-20	14-24	12-18	17-25
SD114	Fluconazole	FLC	10 mcg	27-38	22-33	16-25	—	18-22	—
SD221	Itraconazole	IT	10 mcg	16-20	11-18	8-13	8-15	18-22	—
SD276	Itraconazole	IT	30 mcg	18-22	20-24	11-18	8-15	18-22	—
SD224	Ketoconazole	KT	10 mcg	20-32	14-29	17-28	10-14	18-22	—
SD275	Ketoconazole	KT	30 mcg	32-36	26-32	26-32	19-26	31-40	—
SD274	Ketoconazole	KT	50 mcg	37-45	36-44	27-34	19-26	31-40	—
SD273	Miconazole	MIC	30 mcg	22-26	13-17	14-20	19-26	20-27	20-28
SD272	Miconazole	MIC	50 mcg	26-32	23-29	14-20	19-26	20-27	20-28
SD025	Nystatin	NS	100 units	19-27	16-25	16-21	15-20	15-23	17-25
SD271	Nystatin	NS	50 mcg	19-23	19-23	13-17	19-26	16-25	22-27

Limitation of Test:

These discs are used for semi-quantitative *in vitro* susceptibility testing by the agar disc diffusion test. The values obtained by this test can be considered as a guide to therapy selection only after taking into consideration several other factors; and must be the sole decision and responsibility of the physician along with the clinical experience in treating the infection. These tests are comparable to the standards as per the given specifications and set of experiment standards as far as possible. Please refer to CLSI & EUCAST standards for detailed limitation of susceptibility test on the clinical use of an antibiotic in various therapeutic conditions.

Note:

- Ampicillin disc is used for testing susceptibility to Amoxicillin as well.
- Cephalothin disc is used for testing susceptibility to Cephapirin, Cephaloridine, Cephalixin, Cefaclor, Cephoxitin, Cefazolin, Cephadrine and Cephadroxil as well.
- The Sulfisoxazole (Sulphafurazole) disc can be used to represent any of the currently available sulfonamide preparations.
- The category "Intermediate" should be reported. Infections with bacteria of intermediate susceptibility may be considered moderately susceptible and may respond to antimicrobial agents with a wide safe dosage range.
- Since certain strains of *Providencia* spp. have been reported to give false susceptible results with Cefprozil discs, strains of this genus should not be tested & reported with this disc.
- All *Staphylococcal* isolates with zone diameters of 14 mm or less should be tested by an MIC method.

▲ : Concentration of Antibiotics not as per CLSI & not as per EUCAST.

On receipt all other products to be stored between -20°C to 8°C. For prolonged use, store at or below -20°C.

- When testing Vancomycin against *Enterococci*, plates should be held a full 24 hrs & examined using transmitted light; the presence of a haze or any growth within the zone of inhibition indicates resistance.
- Ofloxacin susceptible *S. pneumoniae* will also be susceptible to Levofloxacin.
- Susceptibility & resistance to Azithromycin, Clarithromycin & Dirithromycin can be predicted by using Erythromycin for *Streptococci*.

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