

Instruction for Use

NOVASTREAK Microbial Contamination Monitoring Device (Cat. No. BD-521)

Xylose Lysine Desoxycholate Agar (XLD Agar) and Salmonella ID Agar



INTENDED USE

NOVASTREAK MCMD BD-521 is a convenient semi-quantitative screening culture device for sampling and assessing microbial contamination of food and dairy products, industrial fluids and surfaces of sanitary importance. A unique streaking mechanism permits the isolation of single colonies even when the original bacterial population of the sample was as high as 10^7 organisms per milliliter. NOVASTREAK MCMD BD-521 is intended for use in the food industry.

SUMMARY AND EXPLANATION

NOVASTREAK MCMD BD-521 comprises a plastic paddle with two types of agar attached back-to-back, housed in a closed transparent plastic tube. A ring with elongated prongs is attached to the end of the paddle so that there are prongs on each side of the slide. The ends of the prongs are dipped into the liquid sample. Upon re-insertion into the plastic tube, the prongs are prevented from moving and the agar surfaces are inoculated with the sample as the paddle passes over the prongs. The result is a series of streaks of decreasing bacterial concentration, which permits isolation of single colonies even when the original bacterial population of the sample was as high as 10^7 organisms per milliliter. NOVASTREAK MCMD BD-521 can be used to monitor microbial growth wherever the potential may exceed 10^2 microorganisms in ml of sample. NOVASTREAK MCMD BD-521 unit consists of two different agar modifications: Xylose Lysine Desoxycholate Agar (XLD Agar) and Salmonella ID Agar, attached back-to-back on a plastic sampling paddle, which is permanently fastened to the cap for comfort of handling during use.

SAMPLING

SAMPLE TYPE	MATERIAL TO BE TESTED	PROCEDURE	READING
Liquid samples	Milk (raw and pasteurized)	Dip sampling procedure	Compare with Colony Density Chart No. 2
	Industrial water (waste, recycled, cooling or process water), dairy products (starter cultures, sour cream, yogurt and other fermented products)	General streaking procedure	Compare with Colony Density Chart No. 1
Viscous and friable samples	Syrups, pasts and dehydrated products (vegetables, fruit, egg powder, milk powder, powdered soups, instant desserts, cocoa, etc.)	Dilute 1:1 or 1:10 in sterile water with following General streaking procedure	Compare with Colony Density Chart No. 1 and multiply the result by 2 or 10
Solid samples	Raw material, frozen and chilled products (meat, fish and sea food products)	Homogenize and suspended 1:1 or 1:10 in sterile water with following General streaking procedure	Compare with Colony Density Chart No. 1 and multiply the result by 2 or 10
Surfaces	Utensils, work surfaces	Touch surface with paddle for several seconds	Compare with Colony Density Chart No. 3

GENERAL PROCEDURE

A. STREAKING SAMPLING

1. Unscrew the NOVASTREAK MCMD cap. Pull the paddle out. Do not touch any part but the cap.
2. Hold the paddle vertically and dip the white prongs into the sample up to about half of their length (see below).
3. Return the paddle to its container in a quick, continuous and vertical motion and tighten cap.
4. Transport the tube to laboratory for incubation and examination
5. Before incubation, loosen cap one-half turn.
6. Incubate the entire container at $(35^{\circ}\text{C} \pm 2^{\circ}\text{C})$ for 18-24 hours in a vertical position.
7. Interpret the results by simple visual comparison of bacterial growth on the agar surface with Colony Density Chart No. 1 provided. **No actual colony counting is necessary.**

B. DIP SAMPLING (DIPLIDE TECHNIQUE)

1. Unscrew the NOVASTREAK MCMD cap. Pull the paddle out. Do not touch any part but the cap.
2. Immediately return the paddle to the tube (in order to move the prongs out of the way) and then pull the paddle out again.

3. Dip the culture paddle into a diluted/undiluted sample or pour the sample over agar surfaces, if the volume of sample is not adequate to fully immerse the agar surfaces.
4. Replace inoculated culture paddle in its protective NOVASTREAK MCMD vial and close cap.
5. Transport *NOVASTREAK* MCMD vial to laboratory for incubation and examination.
6. Place inoculated *NOVASTREAK* MCMD vial upright in incubator (35°C±2°C) for 18-24 hours. Before incubation, loosen cap one-half turn.
7. Interpret the results by simple visual comparison of bacterial growth on the agar surface with Colony Density Chart No. 2 provided. **No actual colony counting is necessary.**

C. SURFACE CONTACT SAMPLING

1. Unscrew the *NOVASTREAK* MCMD cap. Pull the paddle out. Do not touch any part but the cap.
2. Immediately return the paddle to the tube (in order to move the prongs out of the way) and then pull the paddle out again.
3. Gently touch the agar faces onto the surface to be tested. The agar should remain in contact for about 20 seconds.
4. Replace inoculated culture paddle in its protective *NOVASTREAK* MCMD vial and close cap.
5. Transport *NOVASTREAK* MCMD vial to laboratory for incubation and examination.
6. Place inoculated *NOVASTREAK* MCMD vial upright in incubator (35°C±2°C) for 18-24 hours. Before incubation, loosen cap one-half turn.
7. Interpret the results by simple visual comparison of bacterial growth on the agar surface with Colony Density Chart No. 3 provided. **No actual colony counting is necessary.**

MATERIALS PROVIDED

CAT. No	REAGENTS	COLOR OF REAGENTS	EXPECTED TYPES OF MICROORGANISMS
BD-521	Side 1: XLD Agar Side 2: <i>Salmonella</i> ID Agar	Agar Color: Orange Agar Color: Yellow	<i>Salmonella</i> , <i>Shigella</i> <i>Salmonella</i>

CLASSICAL COMPOSITION (g/liter)

1. **XLD Agar:** Xylose 3.5; L-lysine 5; Lactose 7.5; Sucrose 7.5; Sodium chloride 5; Yeast extract 3; Phenol red 0.08; Sodium desoxycholate 2.5; Sodium thiosulfate 6.8; Ferric Ammonium citrate 0.8; Agar 13.5.
2. ***Salmonella* ID Agar** (Lab M's confidential information).

APPLICATION FIELDS

MATERIAL TO BE TESTED	TYPE OF MICROORGANISMS		
	Total Coliforms Count	Total Bacterial Count	Yeast & Molds
Water (waste, recycled, cooling or process water)	•	•	•
Raw Milk	•	•	
Dairy Products (pasteurized milk, starter cultures, sour cream, yogurts and other fermented dairy products)	•	•	•
Meat, fish, sea food (raw material, frozen and chilled products)	•	•	
Surfaces	•	•	•
Syrups, pasts and dehydrated products (vegetables, fruit, egg powder, milk powder, powdered soups, instant desserts, cocoa, etc.)	•	•	•

MATERIAL REQUIRED BUT NOT PROVIDED

Incubator (35 ± 2°C)

Incubation Stand

WARNING AND PRECAUTIONS

1. For *In Vitro* Diagnostic Use.
2. Use aseptic technique and established laboratory procedure in handling and disposing of infectious material.

STORAGE

1. Store *NOVASTREAK* MCMD at 2-8°C up to 6 months, refer to product label.
2. Protect contents from direct light to ensure product stability through the expiration date, shown on the tube cap or packaging label.

KIT CONTENTS

REAGENTS	EXPECTED RESULTS
Xylose Lysine Decarboxylase (XLD) Agar is recommended for the isolation and differentiation of enteric pathogens, especially <i>Shigella</i> . Differentiation of <i>Shigella</i> and <i>Salmonella</i> from non-pathogenic bacteria is accomplished by three reactions: xylose fermentation, lysine decarboxylation, and hydrogen sulfide production.	<i>E. coli</i> and non-pathogenic coliforms may be partly inhibited or show large, flat, yellow colonies. <i>Shigella</i> produces red colonies, as do hydrogen sulfide-negative salmonellae. Hydrogen sulfide producing salmonella grow as red colonies with black centers.
Salmonella ID Agar . Developed for the improved isolation of <i>Salmonella</i> spp. from food, <i>Salmonella</i> ID Agar utilizes a dual chromogenic technique to give a simple but effective color change to differentiate <i>Salmonella</i> from all other <i>Enterobacteriaceae</i> .	Based on DCA Hynes, <i>Salmonellae</i> turn green as they can only metabolize the X-alfa-gal chromogen, whereas all other <i>Enterobacteriaceae</i> turn black due to their ability to metabolize both chromogens.

DISPOSAL

The used *NOVASTREAK* MCMD is disposed by standard methods of biohazard disposal.

EXPIRATION DATE

1. The expiration date applies to the product in its intact container when stored as directed.
2. Do not use *NOVASTREAK* MCMD exhibiting any of the following characteristics: discoloration, dehydration, wrinkling or shrinkage of an agar surface; microbial growth prior to inoculation; or an atypical cultural response in Quality Control procedures.

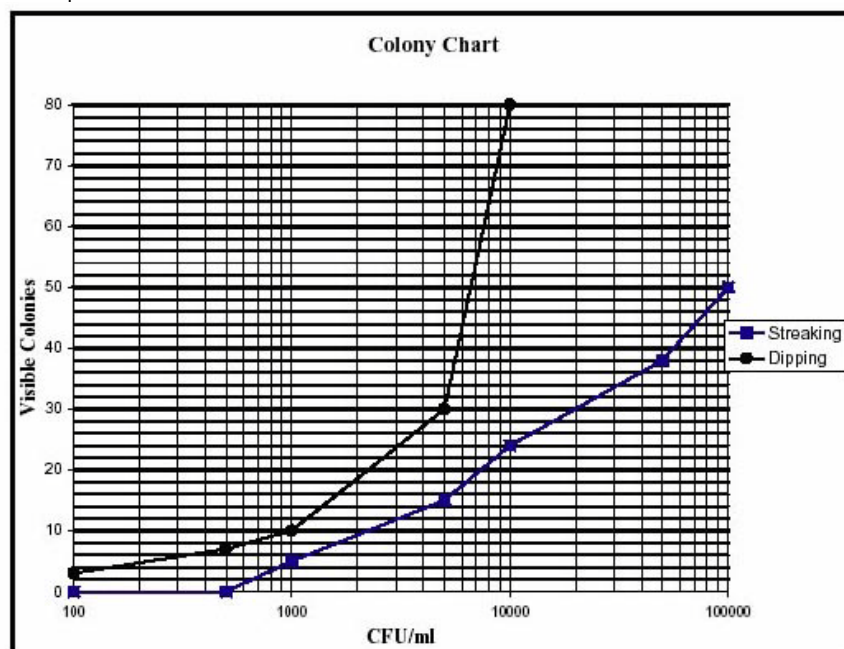
INCUBATION CONDITIONS

REAGENTS	OBJECT	TEMPERATURE (°C)	PRELIMINARY RESULTS (Hrs)	FINAL RESULTS (Hrs)
XLD Agar	<i>Salmonella</i> , <i>Shigella</i>	35-37	18	24
<i>Salmonella</i> ID Agar	<i>Salmonella</i>	35-37	18	24

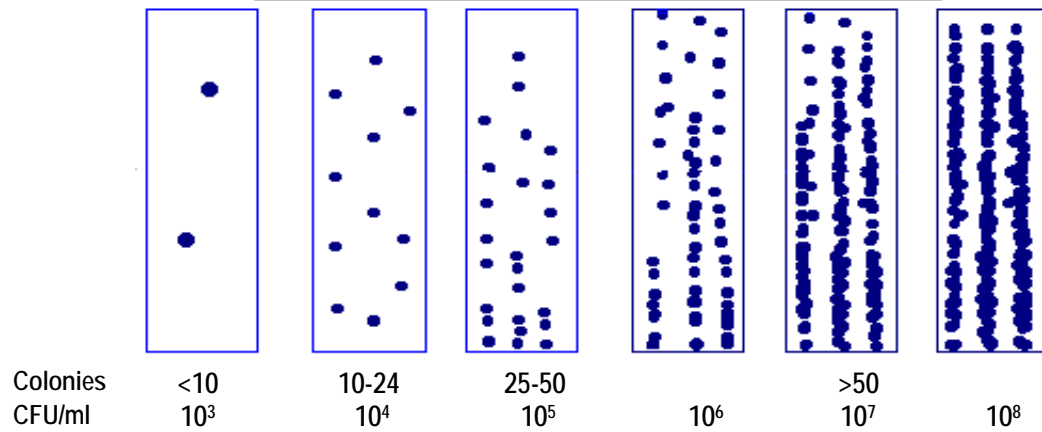
INTERPRETATION OF RESULTS

1. BACTERIAL COUNT

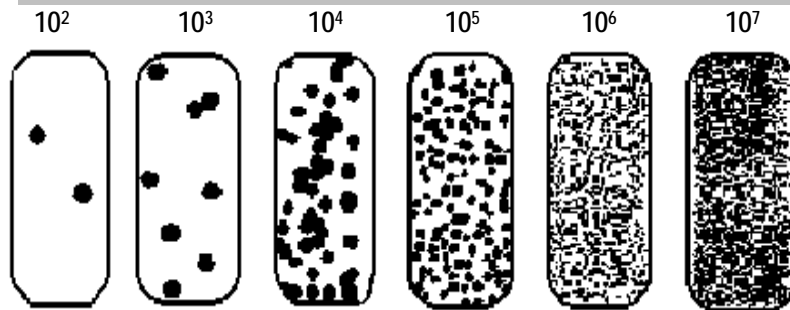
If more than 200 colonies grow on the *NOVASTREAK* MCMD, the growth may become semi-confluent and the presence of more than 100,000 bacteria per ml is indicated. If fewer than 20 colonies are counted, less than 10,000 bacteria per ml is indicated.



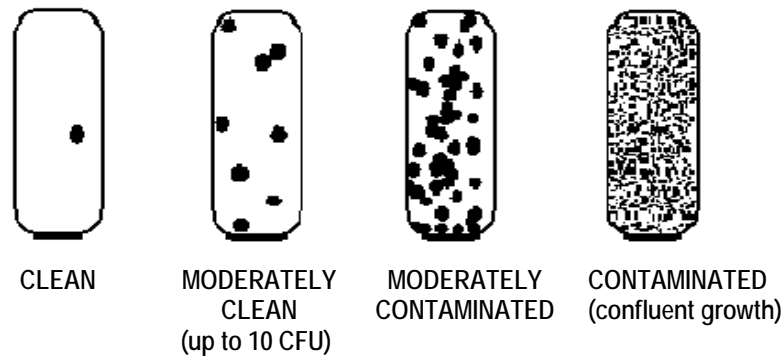
COLONY DENSITY CHART No. 1 FOR SAMPLING BY STREAKING



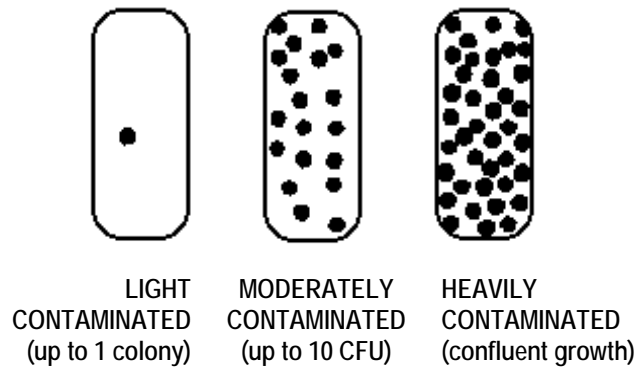
COLONY DENSITY CHART No. 2 FOR TOTAL GROWTH BY DIP SAMPLING



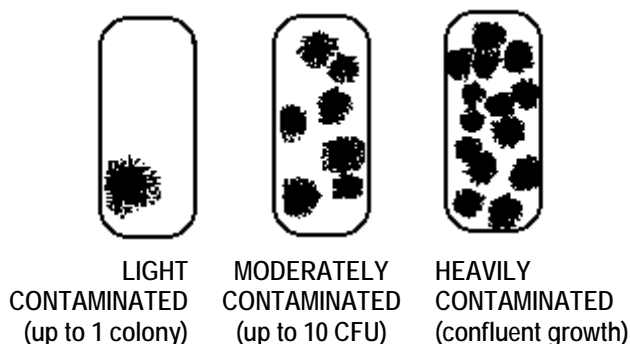
COLONY DENSITY CHART No. 3 FOR TOTAL GROWTH BY SURFACE CONTACT SAMPLING



COLONY DENSITY CHART OF YEAST GROWTH BY SURFACE CONTACT SAMPLING



COLONY DENSITY CHART OF MOLD GROWTH BY SURFACE CONTACT SAMPLING



2. COLONIES MORPHOLOGY

Preliminary identification of the microorganisms made on the base of type and color of the colonies.

ORGANISMS	XLD(Agar Color: Yellow, Orange)	Salmonella ID Agar (Agar Color: Yellow)
<i>E.coli</i> , <i>Coliforms</i>	Partial growth, yellow colonies	Black colonies
<i>Proteus spp</i>	Black colonies	Black colonies
<i>Salmonella spp</i>	Transparent colonies with black centers	Green colonies
<i>Shigella spp.</i>	Red colonies	Black colonies
<i>S. aureus</i>	No growth	No growth

PRECAUTIONS

1. For laboratory use.
2. Follow proper established laboratory procedures in handling and disposing of infectious materials.

QUALITY CONTROL

XLD Agar:

1. **Identity Specifications:** (1) sterility of media: as per sterility test of Standard Operating Procedures; (2) physical appearance: Orange-red, slightly opalescent; (3) pH of media: pH 7.5±0.2; (4) weight of media 3.15±0.1g;
2. **Cultural Response:** (5) inoculate challenged media with the following microorganisms (as per inoculation procedure of Standard Operating Procedure):

Microorganisms	ATCC No.	Growth	Appearance
<i>Staphylococcus aureus</i>	25923	Inhibition	None
<i>Escherichia coli</i>	25922	Partial inhibition	Yellow colonies or none
<i>Shigella flexneri</i>	12022	Growth	Red colonies
<i>Salmonella typhimurium</i>	14028	Growth	Red to purple with black center colonies

Salmonella ID Agar:

1. **Identity Specifications:** (1) sterility of media: as per sterility test of Standard Operating Procedures; (2) physical appearance: Yellow, slightly opalescent; (3) pH of media: pH 7.2±0.2; (4) weight of media: 3.15±0.1g;
2. **Cultural Response:** 5) inoculate challenged media with the following microorganisms (as per inoculation procedure of Standard Operating Procedure):
- 3.

Microorganisms	ATCC No.	Growth	Appearance
<i>Escherichia coli</i>	25922	Growth	Black colonies
<i>Salmonella typhimurium</i>	14028	Growth	Green colonies
<i>Enterococcus faecalis</i>	19433	Inhibition	None
<i>Proteus vulgaris</i>	13315	Growth	Black colonies