Sampler and Swab Test Kits

User Guide

Introduction

Our samplers provide a means for simple, fast microbiological analyses of environmental waters, cooling tower waters, process waters, laboratory grade and electronics waters, dialysis water, and food and beverage products. Each sampler is constructed to combine both an intimate contact of a 0.45 µm membrane filter to a nutrient pad, and the incorporation of an air-vent on the upper back portion of the paddle. This configuration allows for the draw-through of 1 mL of sample to affix microorganisms to the filter surface for subsequent culturing within its transparent plastic case. The filter is grid-marked to aid in counting the microbial colonies grown on its surface. Each sampler assembly is pack-aged in a sealed plastic envelope.

Sampler Types

Description	Color Code	Catalogue No. 25/pk
Coli-Count™ Sampler	Blue	MC00 100 25
Yeast and Mold Sampler	Yellow	MY00 100 25
Heterotrophic Plate Count Sampler (HPC)	Red	MHPC 100 25

Notes for Sample Use

(a) Samples containing residual chlorine must be neutralized with sodium thiosulfate (0.1 mL of 10% solution/120 mL of sample) prior to testing with the Samplers.

(b) Where exact counts are not required, samples containing an estimated microorganism level of up to 400/mL may be tested with samplers without dilution. For exact counts, any sample containing more than 100/mL should be diluted. If a dilution level of 1:10 is required, simply fill Samplercase with the liquid up to the lower graduated line (1.8 mL) add sterile water (or buffer) to the upper line (18 mL), insert Sampler paddle and proceed with test. For dilutions of 1:100, pipette 0.18 mL into case and add sterile diluent to 18 mL mark.

(c) For most water samples, the Sampler paddle should be immersed in the sample for 30 seconds. For some applications, like viscous samples, the paddle may require immersion for up to 2 minutes to allow the 1 mL aliquot to wet thoroughly, and to allow removal of potential air bubbles under the membrane. If the entire membrane is properly wetted, the filter will appear dark gray, (a very light gray for Coli-Count™ Sampler).

(d) Do not immerse paddle longer than is required, otherwise a loss of medium through the membrane and into the sample may occur.

(e) Sample dilutions should be made with a sterile phosphate buffer (pH 7.2). If this is unavailable, sterile, chlorine-free tap water may be used. Non-sterile dilution waters may be sterilized by means of the Sterivex™-GP unit fitted with a 50mL syringe.

Testing Liquid Samples

1. Open the Sampler package, lift out the sampler and carefully remove the "paddle" from its case. To make it easier to remove the paddle, it is possible to hold the Sampler case with the membrane facing you and twist the handle towards you. Avoid touching the gridded filter surface. Write on the Sampler case with indelible marker the date, type and location of sampling.

2. Pour Sample liquid (or dilution) into the Sampler case, filling to the upper (18mL) graduation.

3. Insert the Sampler firmly into case containing sample, and carefully lay the unit with membrane facing down onto a flat surface. Make sure the membrane is uniformly wetted, and while in this position, the unit should not be agitated. Allow 30 seconds for sample to be drawn through filter and ensure there are no more bubbles coming out of the vent prior to removing the paddle from the sample. If the sample is viscous, the paddle should remain in the case for additional time (up to 2 minutes).

4. Remove the paddle and, with a firm snap of the wrist, shake off the excess liquid. Empty the case and reinsert the paddle. To prevent the paddle from drying out during incubation, it should be seated firmly in the case to form an air-tight seal.

5. Incubate the Sampler, gridded side down, using the time and temperature specified in the table shown in the "CultureIncubation Guide".

6. Remove Sampler from incubator. For examination and counting please refer to the "Filter Examination" section.

Testing Solid Samples

Solid samples can be tested by one of the following methods:

1. Weigh a given amount of the solid. Dilute with 100 mL of sterile water or phosphate buffer. Seal the bag and knead with the fingers for at least 2 minutes. Allow the solids to settle, aseptically pour the upper liquid layer into the Sampler case. Test with the Sampler in the usual manner. This technique is especially suited for pasty samples.

2. If the solid sample consists of hard particle-type materials such as nuts, the bag, diluent, and contents may be shaken vigorously for 2 minutes.

3. A very useful and convenient method for dispersing the microorganisms into the water or buffer is to place the seated bag into a sonic bath and run for a few minutes. This is recommended for particulate-type solids.

Culture-Incubation Guide

When performing coliform analyses with the Coli-Count™ sampler the time and temperature shown below must be followed. The other Samplers may be incubated at any temperature shown below as long as the temperature is consistently followed. Ideally, the mid-points of these ranges are preferable. Time of incubation for the Samplers (except Coli-Count™ sampler) should be at least 48 hrs. Incubation periods exceeding this will be dictated by practical time limitations. At all times, the incubation period should be consistent.

Sample Type	Incubation Conditions
Coli-Count™ Sampler	22-24 hours at 35°C +/- 0,2
Yeast and Mold	72 hours at 28° +/- 0,2 or 48 hours at 32°C +/- 0,2
HPC Total Count	7 days at room temperature or 72 hours at 25°C +/- 0,2 or 48 hours at 35°C +/- 0,2

Filter Examination

After incubation is complete, remove paddle from case, and examine filter surface with either a stereoscopic microscope with illuminator (at 10X-20X) or an illuminated magnifier (preferably ≥ 5X). The appearance of the microbial colonies will vary, depending upon the Sampler used, and the organisms recovered. Generally they will appear as follows:

Coli-Count™ Sampler	Coliforms are blue in color. Non-coli forms are green, gray, or cream color.
Yeast and Mold	Yeast usually have a satiny, opaque, green-yellow color. Molds will vary depending on length of incubation time. Bacteria are usually more glistening and transparent.
Total Count/ HPC	May vary. Most colonies are glistening, and translucent or transparent. Colors vary from colorless to white, cream, yellow or red.

Counting Colonies

Colonies growing on the filter surface of Samplers are counted as individual organisms. In recording your count when using the Coli-Count™ Sampler for coliform (or fecal coliform) analyses, count only the blue colonies. Coliform and fecal coliforms are always reported as the number per 100 mL sample. Therefore in non-diluted samples, count the number of blue colonies obtained and multiply this result by 100. If the sample is diluted, multiply the 100 mL count by the apropriate dilution factor.

For all other samples, the count per mL is the generally accepted system for recording your results. Therefore, for non-diluted samples, the number of colonies observed on the filter will be the number recorded (as sample count/mL). For diluted samples, the count obtained must be multiplied by the dilution factor.

For example:

number of colonies on filter	= 60
Sample dilution	= 1:1000 (. ˙ . dilution factor is 1000)
Sample count/mL	= 60 × 1000 = 60,000/mL

A rapid, approximate count can be made by comparing the filter to the examples shown in the "Colony Count Comparison Chart" section.

Swab Test Kits

The Swab Test Kit is a self-contained system, incorporating Samplers and units containing 18mL of sterile, phosphate buffer into which are fitted swab assemblies. The system is designed for use as swab tests for measuring bacterial levels on flat or irregular surfaces. They can be used in a variety of applications in food production, food handling establishments, and other facilities to assess the efficiency of sanitation measures used to eradicate microbial contamination. The buffer units contain neutralizing agents to counteract the adverse affect of any residual chlorine or quaternary ammonium compounds that may be present on surfaces after sanitization.

Swab Kit Types

Description	Catalogue No. 25 Tests
Coli-Count™ Swab Test Kit	MCSK 100 25
Yeast and Mold Swab Test Kit	MYSK 100 25
HPC Total Count Swab Test Kit	MSSK 100 25

NOTE:
Each kits consist of one box of 25 Samplers, and one box of 25 of the Swab Test Buffer Set (MMSB10025).

Instructions For Swab Test Kit Use

In testing the surfaces of equipment, cutting boards, etc., the Swab Test Kit provides an overall picture of the test site (employing *one* Swab Test only). Sampling an isolated spot may not be representative of the whole test area. The use of a swab provides high efficiency in penetrating crevices, rough and curved surfaces, and other hard-to-reach areas. For sanitization monitoring, the application of the swab/Sampler combination therefore provides the method of choice for sampling these critical areas.

1. Grasp the swab handle and, using an end-to-end rocking motion, remove swab from buffer case.

2. Roll tip of swab on inside of case to wring out excess buffer.

3. Randomly select 5 areas of the surface to be monitored, then holding the swab firmly, draw a letter "M" on the surface, rotating the swab tip during procedure. Each straight section of the letter "M" drawn should be 2" in length (the distance between swab tip end and base of handle).

4. Repeat this test for the four remaining areas selected. Each letter "M" swabbed represents 8 linear inches (2" X 4), thus 5 areas sampled is equal to 40 linear inches for each piece of equipment or surface area sampled. This method of sampling should be used each time the test is run in order to provide an equivalent comparison of results. Where the letter "M" cannot be applied (saw blades, slicers, etc.) swab 5 different areas of 8 linear inches each.

5. After swabbing the five selected points, insert swab firmly into case, and shake 30 times to dislodge organisms into buffer. Remove swab and discard.

6. Open test Sampler package, lift out Sampler, and carefully remove "paddle" from case without twisting the "paddle" handle away from the membrane side. Avoid touching gridded filter surface.

7. Insert the Sampler paddle firmly into case containing the buffer, and carefully lay the unit on a flat surface with membrane facing down. Do not agitate unit after placing down, and make certain the membrane is uniformly wetted.

8. After 30 seconds have elapsed, remove paddle from case and shake once or twice vigorously to remove excess buffer.

9. Reinsert Sampler firmly into dry Sampler case, marking date, type, and place of sampling on outside of case with grease pencil or indelible marker.

10. Incubate unit, gridded side down, at appropriate temperature and for appropriate time period indicated in the "Culture Incubation Guide" section.

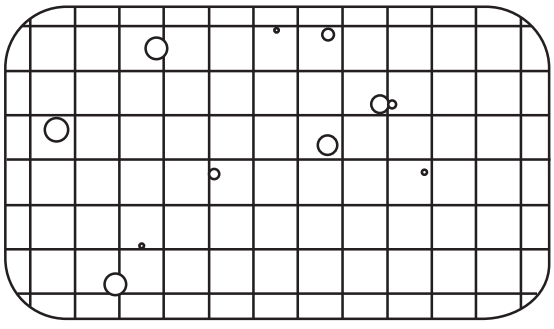
11. Count visible colonies and record results. Time may be saved by comparing the Samplers with those illustrated on comparison chart.

NOTE:
Since only 1 mL from the 18 mL of buffer containing the organisms was drawn through the Sampler filter, the realistic count for the area swabbed would be the count obtained X 18. However, this monitoring technique is to provide an index only of the efficiency of surface sanitization, therefore, the count obtained as is will suffice if this method is always followed.

Colony Count Comparison Chart

Small Colonies

To obtain appoximate count, align Sampler with drawing showing same density of colonies.



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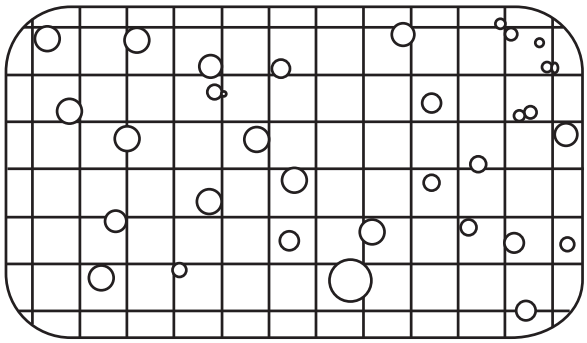

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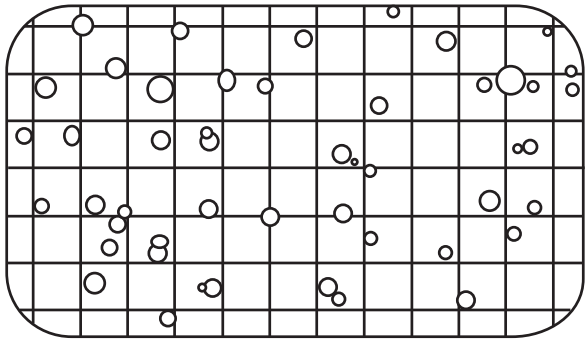

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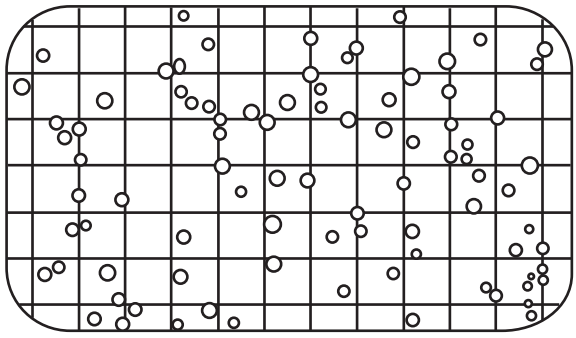

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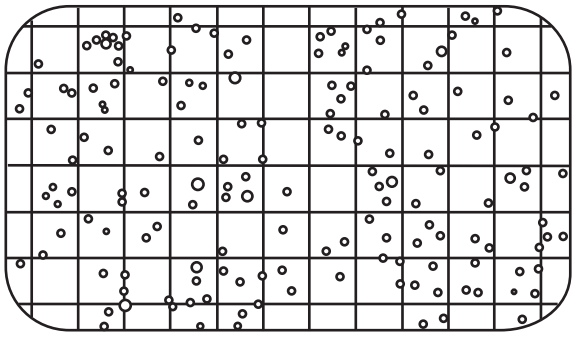

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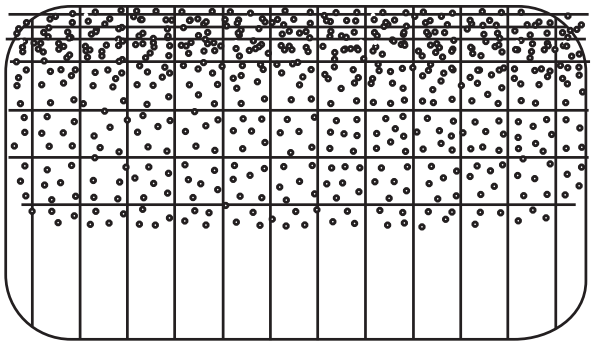
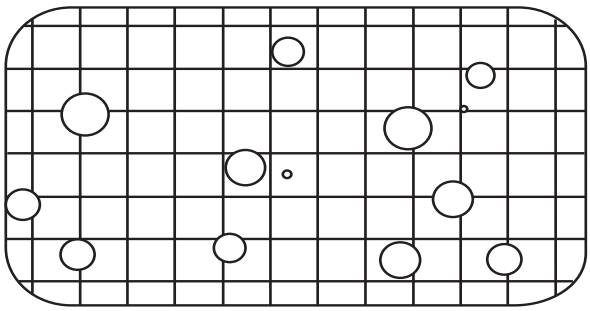


TNTC*

*Too numerous to count

Colony Count Comparison Chart
Large Colonies

To obtain approximate count, align Sampler with photo showing same density of colonies.



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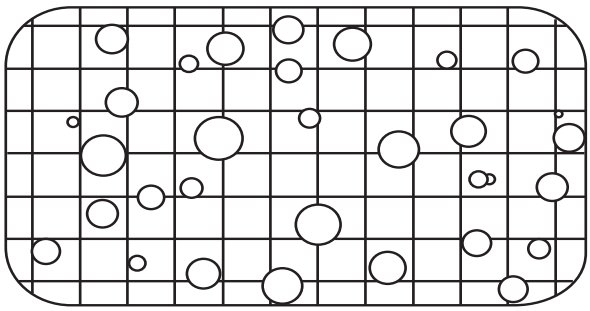

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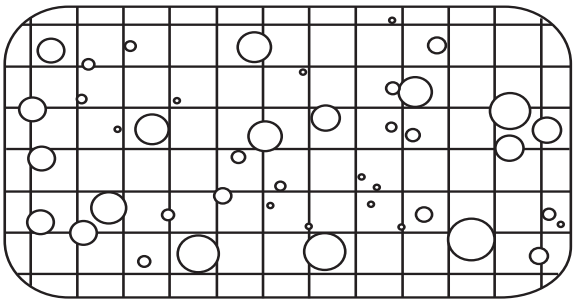

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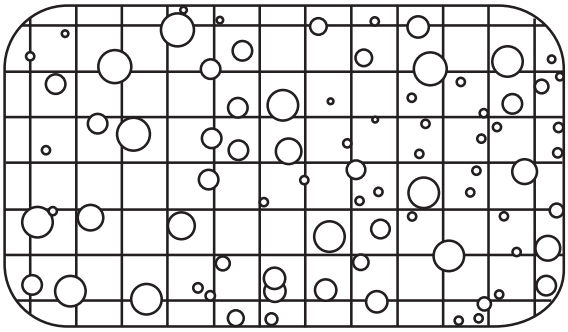

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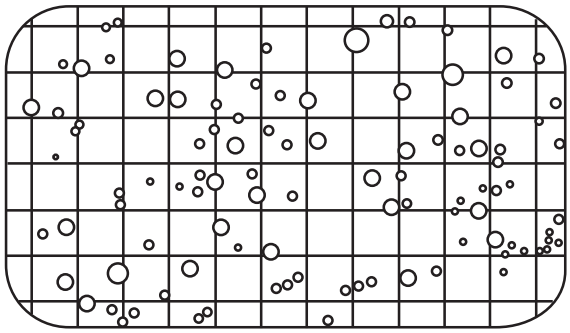

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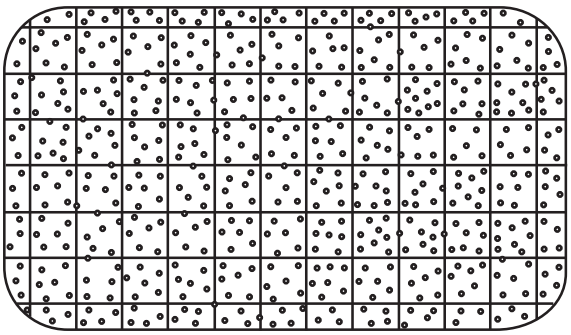

TNTC*

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Standard Product Warranty

The applicable warranty for the products listed in this publication may be found at: sigmaaldrich.com/terms (within the “Terms and Conditions of Sale” applicable to your purchase transaction).

Technical Assistance

For more information, go to sigmaaldrich.com/techservice.

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