



Neogen® Petrifilm®

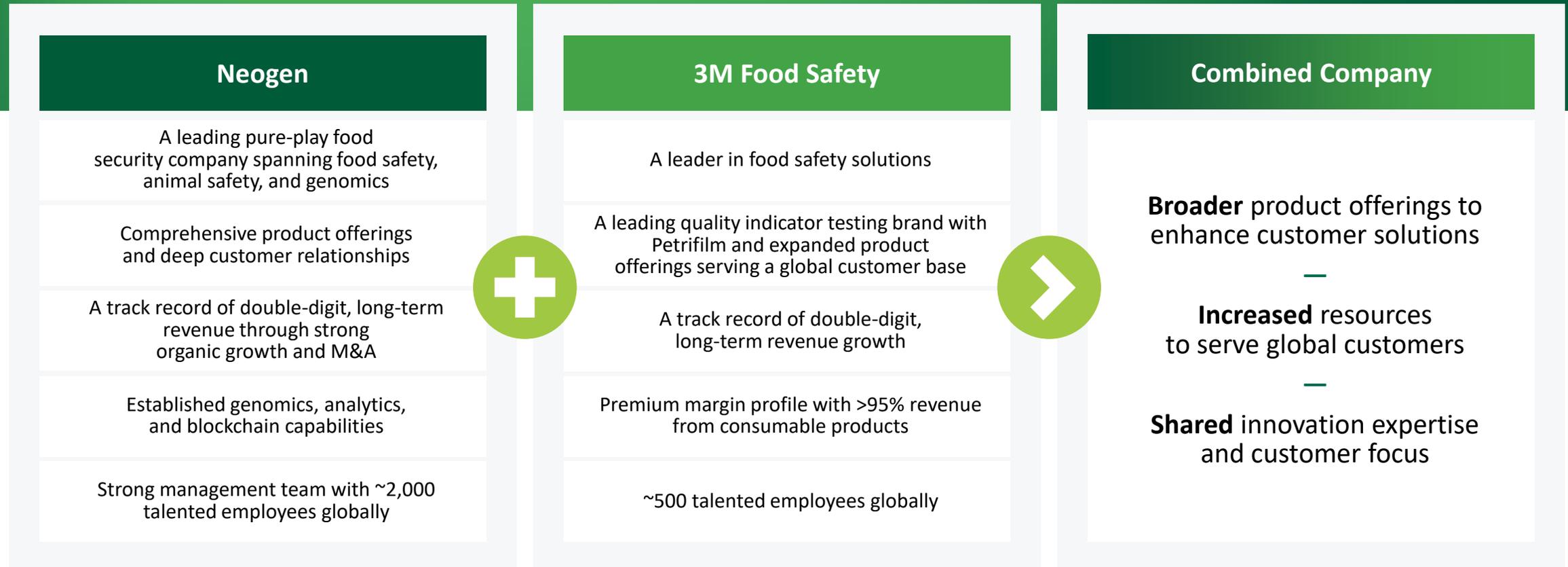
15th January 2025

Matt Bricknell

Professional Service Specialist

Your Trusted Partner for Solutions & Support

With the acquisition of the 3M Food Safety division, Neogen is now a dedicated global leader in food security.



Comprehensive Food Safety Solutions

Helping food safety and quality teams do more

Indicator Organism Testing



Microbial Detection



Culture Media



Sample Collection



Hygiene Monitoring



Allergen Testing



Natural Toxin Testing



UHT/ESL Testing



Pathogen Detection



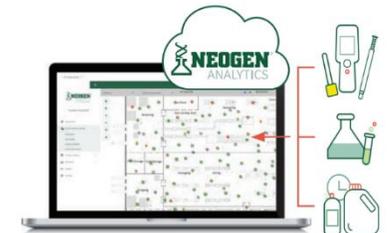
Genomics



Food Quality Analysis

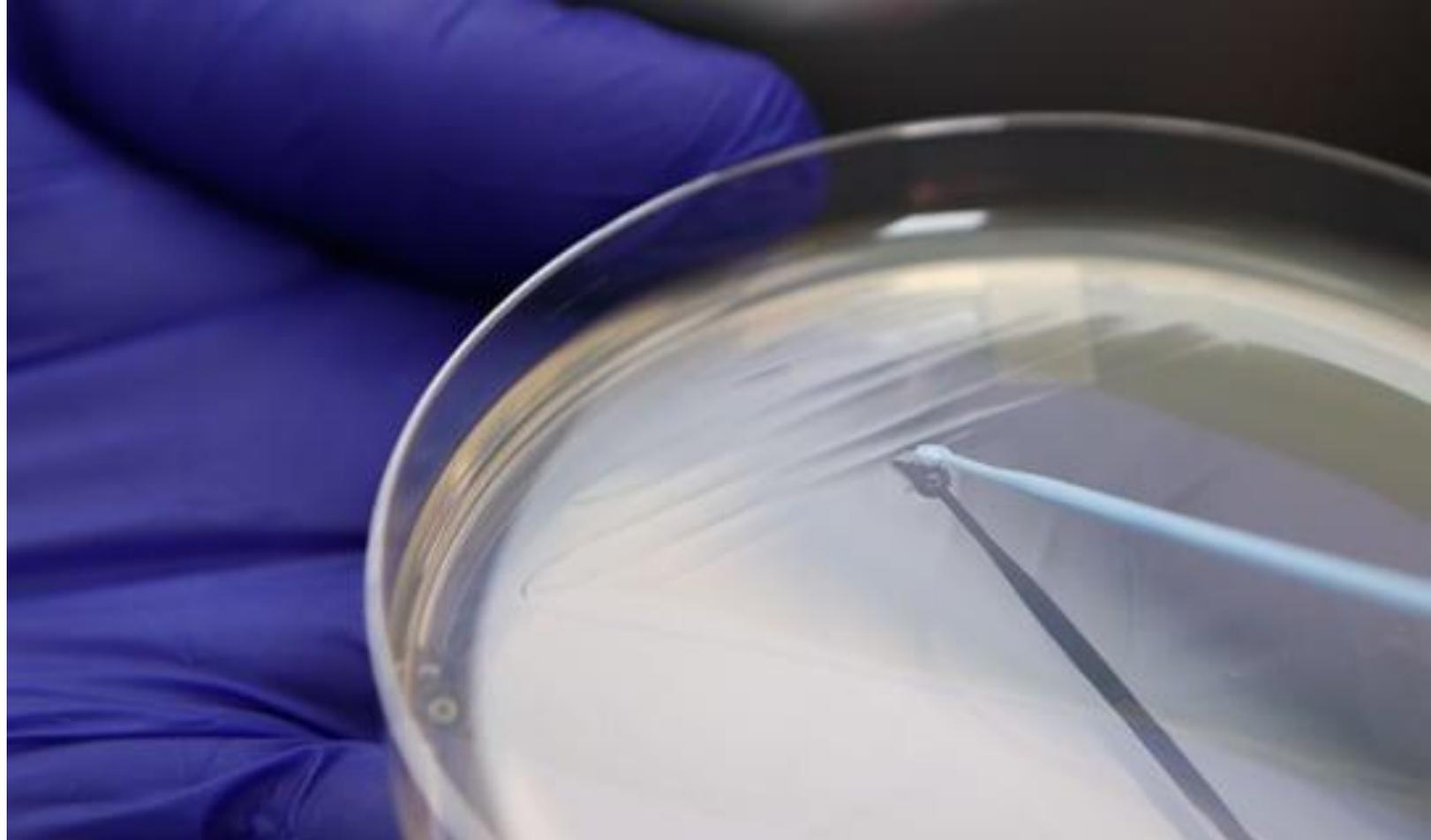


Neogen Analytics



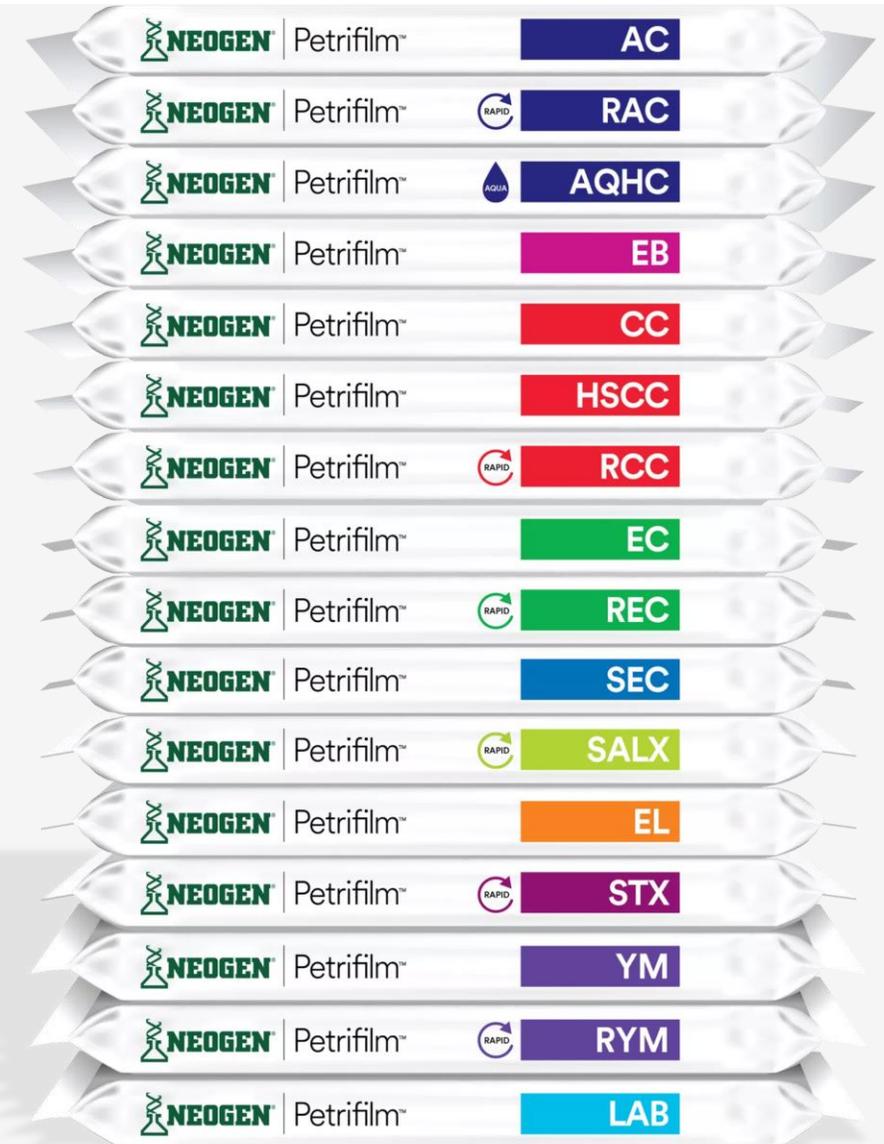
What do our Customers need in a Quantitative Indicator system?

- Fast time to results
- Consistency and reliability
- Technical support/Training
- Best quality
- Ease of use/product design
- Fewer steps (efficiency)
- Regulatory approvals
- Sustainability
- Robust software/hardware
- Storage space



What are Petrifilm Plates?

- A Petrifilm Plate is a sample-ready culture media system
- Each slim pack offers consistent, uniform testing media
- Just open it up and get right to work
- Find new freedom with time to focus on what's really important: quality and efficiency
- Ready to use — reduce or eliminate time-consuming agar prep
- Proven testing methods for consistent, reliable results
- Compact size uses less storage/incubator space



A History of Innovation and Success

The Neogen Petrifilm Aerobic Count Plate, introduced in 1984, fundamentally changed the way microbiologists all over the world perform indicator testing.

1984



Aerobic Count Plate
United States Patent
4,565,783
January 21, 1986



Coliform
Count Plate

1993



High-Sensitivity
Coliform Count
Plate

2001



Select *E. coli*
Count Plate

2004



Environmental
Listeria Plate

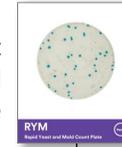
Petrifilm
Plate Reader

2013



Salmonella
Express
System

Rapid Yeast
and Mold
Count Plate



2014



Rapid
Aerobic
Count Plate

2021



Petrifilm Plate
Reader
Advanced

1989



E. coli/Coliform
Count Plate

1990



Yeast and Mold
Count Plate

1995



Rapid Coliform
Count Plate



Enterobacteriaceae
Count Plate

2002



Staph Express
Count Plate

2011



Aqua Yeast
and Mold
Count Plate



Aqua
Heterotrophic
Count Plate



Aqua
Coliform
Count

2016



Lactic Acid
Bacteria
Count Plate

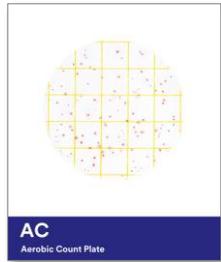
2018



Rapid *E. coli*/
Coliform Count
Plate

Neogen Petrifilm Plates — Broad Portfolio Offering

Standard Plates



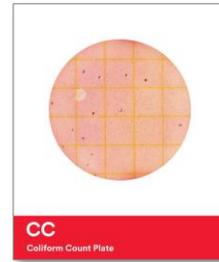
AC
Aerobic Count Plate



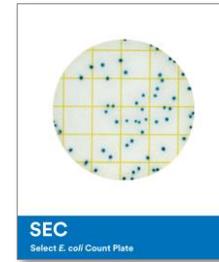
YM
Yeast and Mold Count Plate



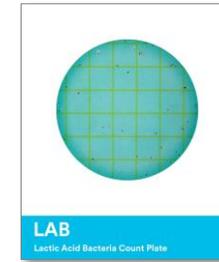
EB
Enterobacteriaceae
Count Plate



CC
Coliform Count Plate



SEC
Select *E. coli*
Count Plate



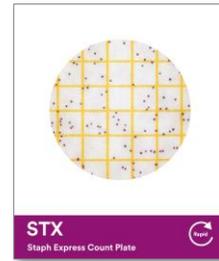
LAB
Lactic Acid Bacteria
Count Plate



EC
E. coli/Coliform
Count Plate



HSCC
High-Sensitivity Coliform
Count Plate



STX
Staph Express
Count Plate

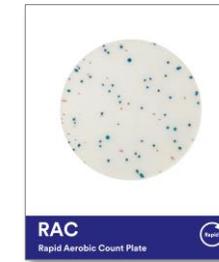


EL
Environmental *Listeria*
Plate

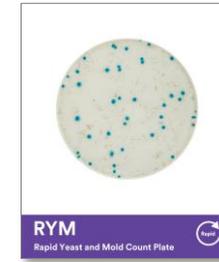


AQHC
Aqua Heterotrophic
Count Plate

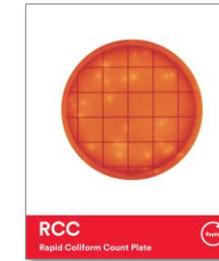
Rapid Plates



RAC
Rapid Aerobic
Count Plate



RYM
Rapid Yeast and Mold
Count Plate



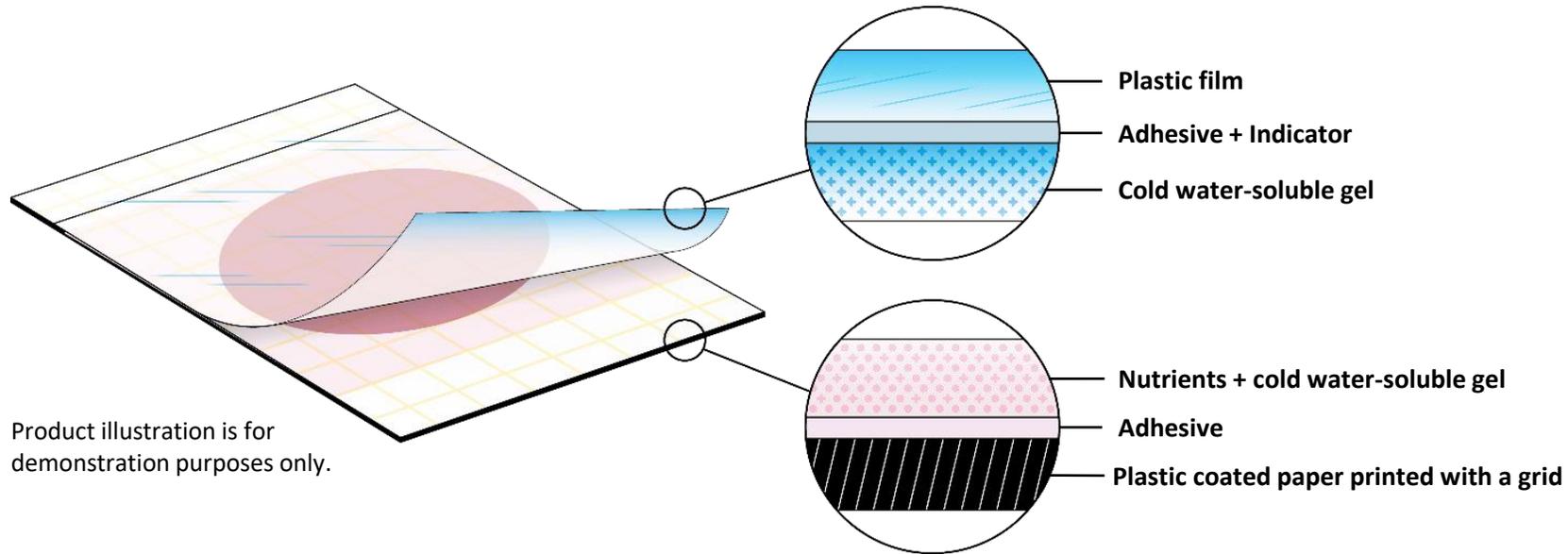
RCC
Rapid Coliform
Count Plate



REC
Rapid *E. coli*/
Coliform Count
Plate

*All product naming information on plate images in this presentation is for illustration purposes only.

Composition of Petrifilm Plates



Nutrients

- Allow organisms to grow
- Source of energy, protein, vitamins, and/or minerals

Selective Agents

- Prevent or slow down (inhibit) growth of unwanted organisms
- Allow growth of other target organisms

Indicators

- Allow us to see colonies
- Differentiation between two or more types of organisms

A Comparison of Methods

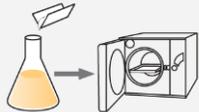
Spread Plate Process

Prepare agar



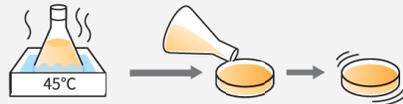
Weigh out powder

Add water and mix



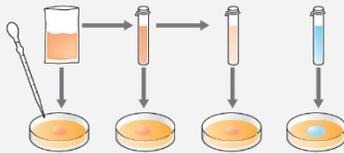
Autoclave

Temper



Pour plates, allow to solidify

Prepare sample



Dilution(s)

Incubate



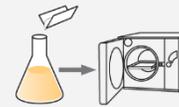
Pour Plate Process

Prepare agar



Weigh out powder

Add water

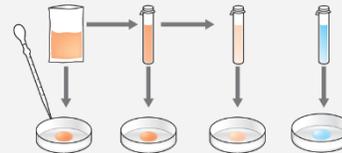


Autoclave

Temper

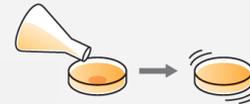


Prepare sample



Dilution(s)

Pour agar



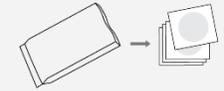
Wait for agar to solidify

Incubate



Petrifilm Plate Process

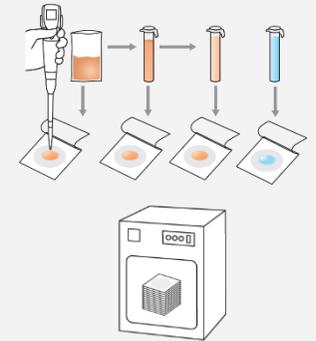
Open plate package



Prepare sample

Dilution(s)

Incubate



Petrifilm Plate Reader Advanced

Efficient: Petrifilm Plate enumeration in six seconds or less — up to 900 plates per hour

Proactive: Up to 94% reduced time to enumerate Petrifilm® Plates

Versatile: Enumerates 11 Petrifilm® Plates plus the Petrifilm® Staph Express Disk

Robust software/hardware

Advancing the efficiency of food safety

Automate the imaging, enumeration, and storage of results of Petrifilm Plate tests.

Designed to be easy to clean and maintain

Fixed artificial intelligence (AI) networks to enumerate Petrifilm® Plates

LED bar indicates reader status

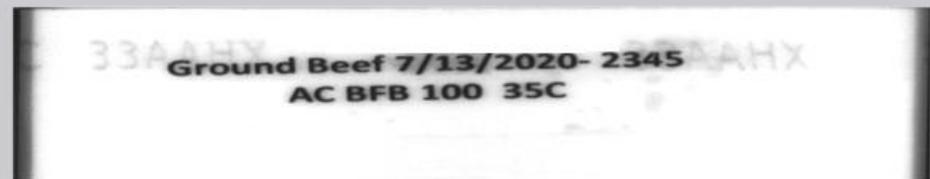
Reads ten barcode symbologies



reddot winner 2023

< Back

Results from This plate 1 of 1



Add Reclassify Erase Undo Redo Reset Zoom Hide Save

Current Plate

Plate Type: AC
 Sample ID: 7/13/2020- 2345
 Read Time: 04/11/2020 08:11:00 AM
 Reading
 Dilution: 1:100
 Product Specification: Ground Beef

[Edit Info](#)
 [Mark as Reviewed](#)

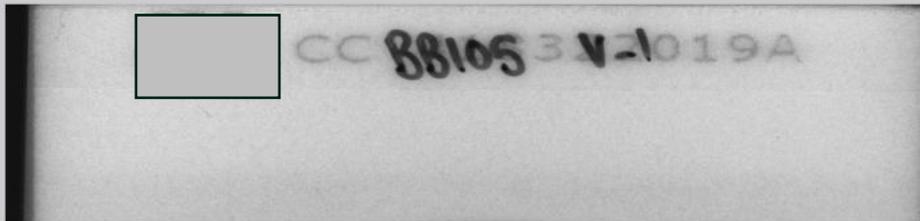
	Raw	Edited	Calculated	Status
Total AC	131	131	13100	
Colonies	131	131		

Comments

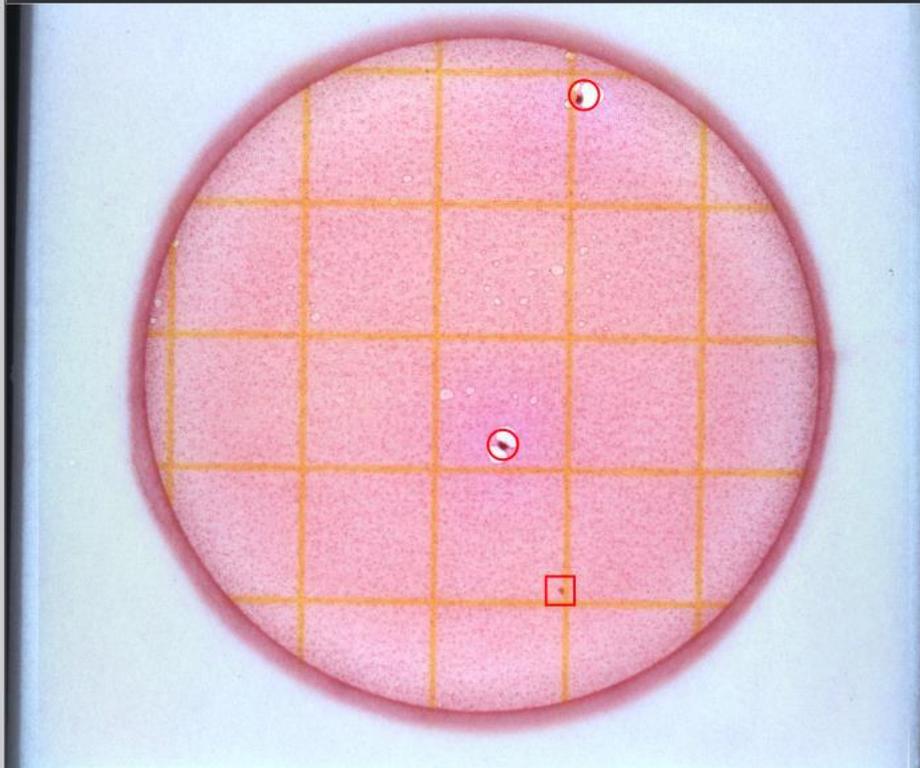
Enter comments here...

< Back

Results from This plate 1 of 1 < >



Add
Reclassify
Erase
Undo
Redo
Reset
Zoom
Hide
Save



Current Plate

Plate Type
CC
Dilution
1:10

Edit Info

Read Time 27/07/2022 03:13:26 PM
Reading -

Mark as Reviewed

	Raw	Edited	Calculated	Stat
▼ Total CC	3	3	30	
Red With Gas	2	2		
Red Without Gas	1	1		

Comments

Enter comments here...

Recognized by the Industry

In this business, trust is everything. That's why Neogen Food Safety continues to pursue method validations from internationally recognized third-party agencies, such as AOAC® International and validation by AFNOR Certification, in addition to recognitions from government and regulatory organizations worldwide

Our International Recognitions	7 AOAC PTM	13 AFNOR
	19 AOAC OMA	1 MicroVal

Petrifilm: Maximizing Efficiency* and Sustainability*

A commitment to improving our business, our planet, and every life.

YOUR BUSINESS:



Enhance productivity by **48%** on average 



Count up to **900** plates per hour with reader 



Data in up to **1/2** the time



Up to **85%** less space than agar

A sustainable solution for the environment.

THE ENVIRONMENT:



76% 
Energy



75% 
CHG emissions



79% 
Water



66% 
Waste

*Versus traditional methods

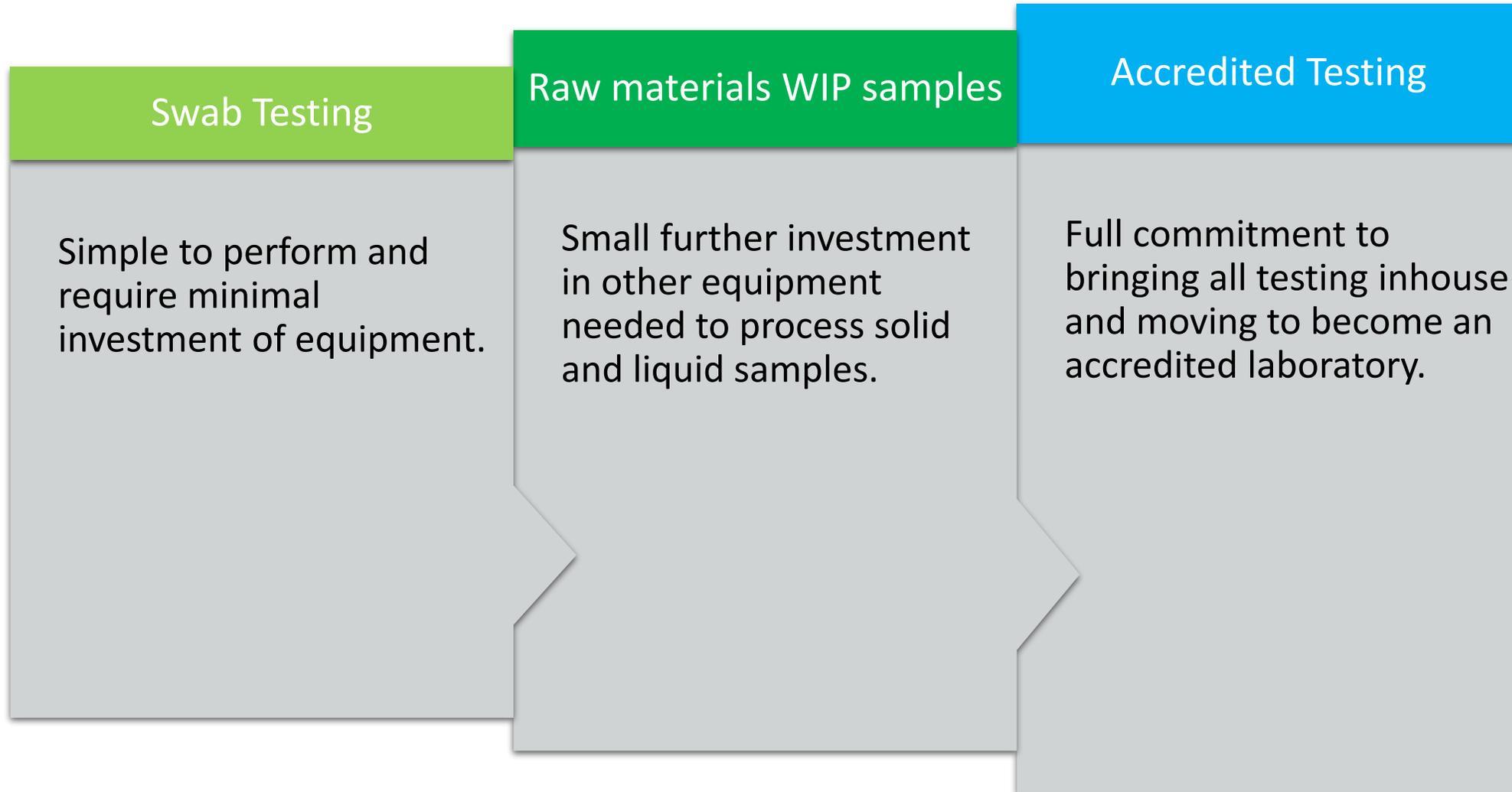
People Buy from Brands They Trust

In Summary

- Fast time to results
- Consistency and reliability
- Technical support/training
- Best quality
- Ease of use/product design
- Fewer steps (Efficiency)
- Regulatory approvals
- Sustainability
- Robust Software/hardware
- Storage space



Introducing Petrifilm – A Staged Approach



Using Petrifilm

Minimum Requirements for Using Petrifilm

Equipment

- Bench space
- 1000µl pipettor (1ml)
- Incubators at each temperature (30°C/37°C/25°C/42°C)
- Clinical waste bin
- Thermometers for fridges/incubators
- Fridge to store samples and plates
- Balance for weighing up samples
- Beaker or other sample bag holder
- Homogeniser (to mix solid samples)
- Rack to hold bags



Minimum Requirements for Using Petrifilm

Consumables

- Petrifilm plates
- Neogen Swab Sampler 10ml Letheen
- Sterile tips for Pipette
- Marker pen
- Neogen 9ml Flip-top MRD (for secondary dilutions)
- Bulk pre-sterilised MRD (for primary dilutions)
- Sterile sampling devices (for weighing out samples)
- Sterile homogeniser bags
- Sterile sample containers



Using Petrifilm

- Store unopened pouches below 8°C. 18-month shelf life from manufacture.
- Open pouches stored at room temperature sealed with tape (1 month life) or frozen in airtight container (original expiry date)
- Use the correct spreader.
 - Standard spreader Coliform/Select E.coli/Aerobic count/Enterococcus
 - Flat spreader 6425 (sold separately) Rapid Aerobic count/Rapid Yeast&Mold/Staph Express

Kit Instructions



Petrifilm®

6410/6411/6416/6443

Product Instructions

-  **(EN)** Coliform Count Plate
-  **(FR)** Test pour la numération des Coliformes
-  **(DE)** Coliforme Zählplatte
-  **(IT)** Piastra per il conteggio dei coliformi
-  **(ES)** Placa para recuento de coliformes
-  **(NL)** Coliform Telplaat
-  **(SV)** Odlingssplatta för koliformer
-  **(DA)** Coliform Tælleplade

▼ [Insert](#)

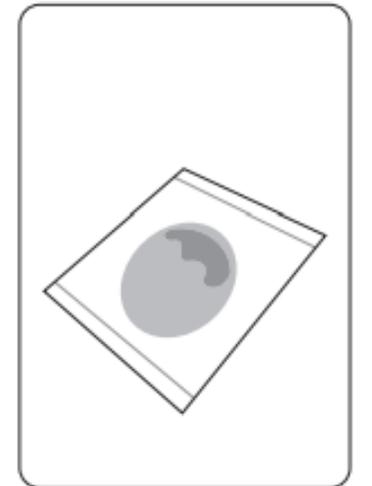
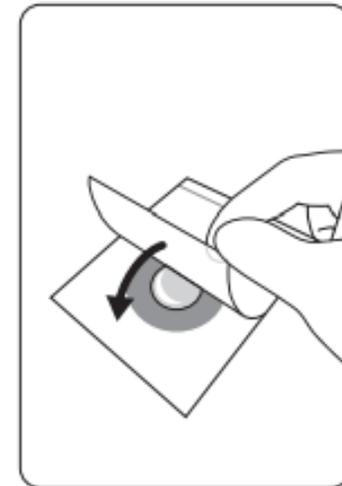
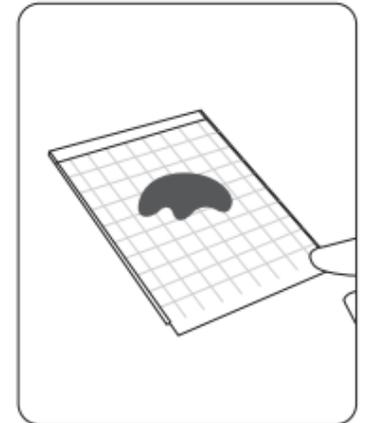
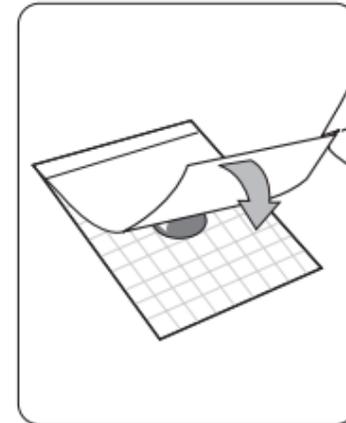
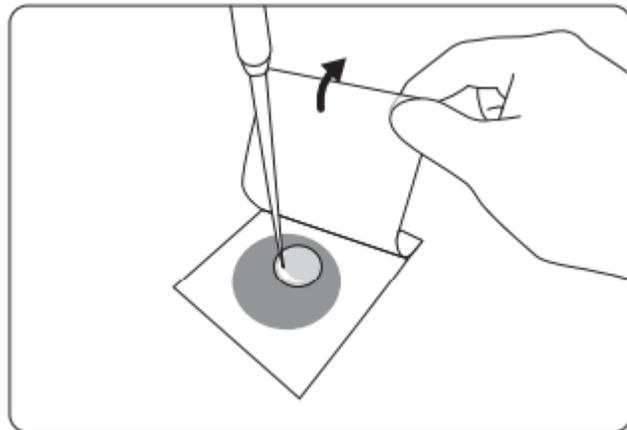
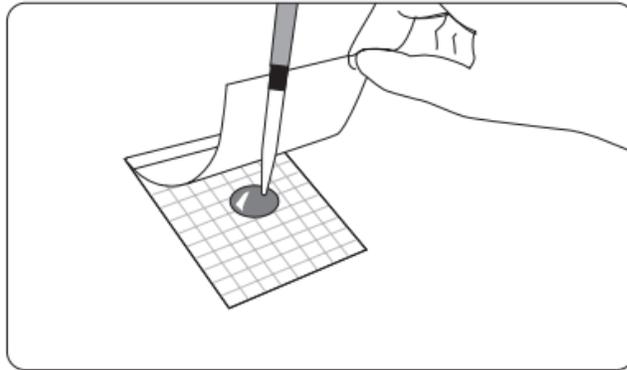
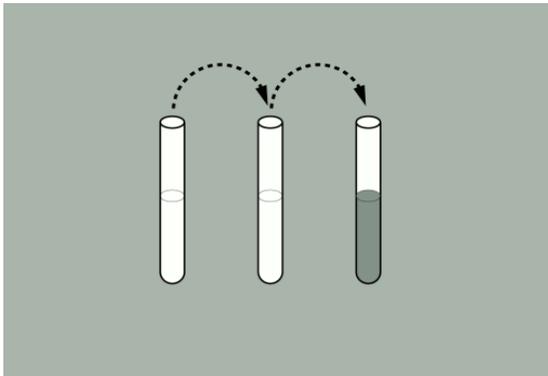
Petrifilm™ Coliform Count (CC) Plate Product Instructions (Multiple languages)

Using Petrifilm - Inoculation

Inoculate 1ml of the required dilution onto the centre of the plate

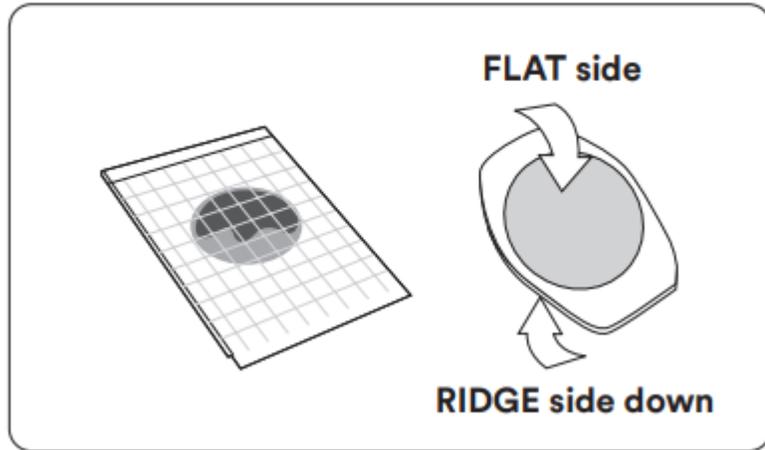
Close the plate either by dropping or rolling the top film

Make serial dilutions

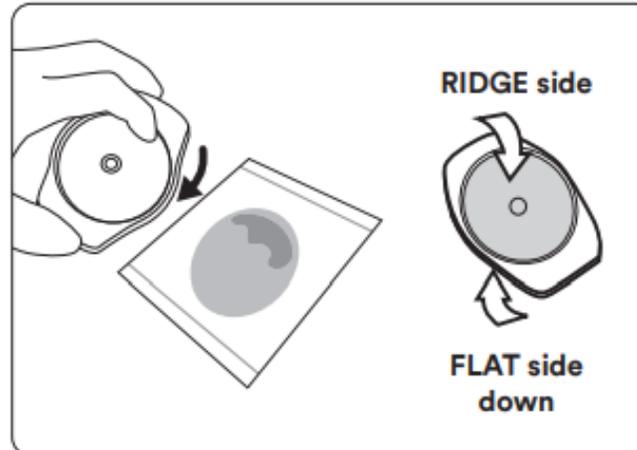


Using Petrifilm - Spreading

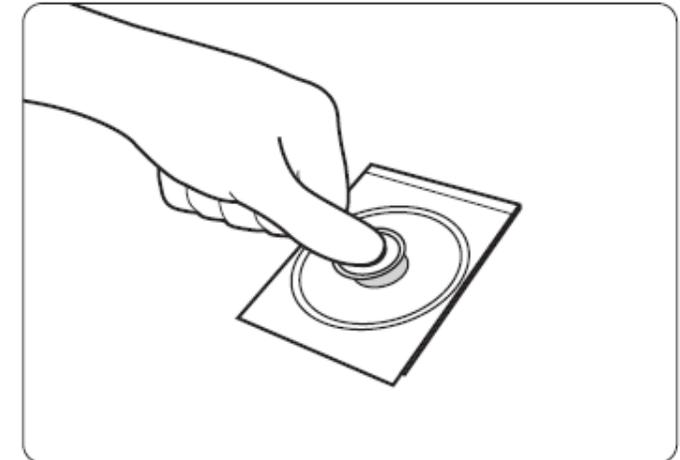
Aerobic Count Plate



Enterobacteriaceae Count Plate
Coliform Count Plate
Select E.coli Plate

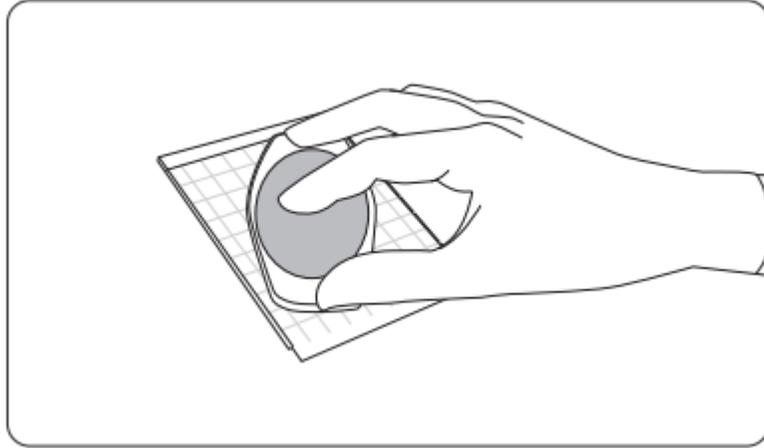


Rapid Yeast and Mold Count Plate*
Staph Express Count Plate*
Lactic Acid Bacteria Plate*
Rapid Aerobic Count Plate*
Rapid E. coli/Coliform Count Plate*

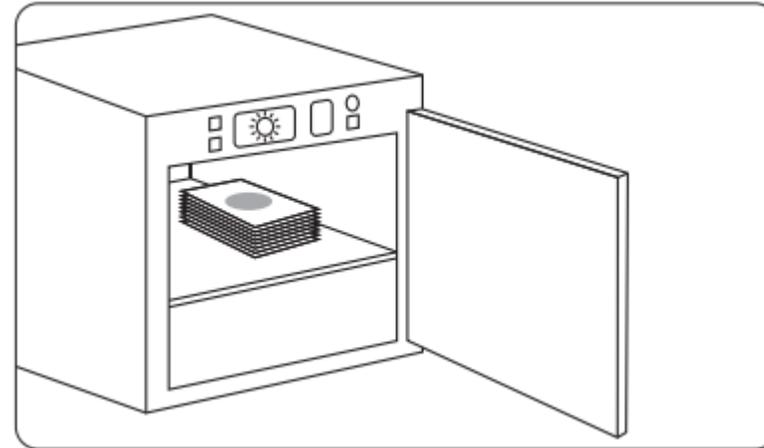


* ordered separately

Using Petrifilm - Spreading



Spread the sample by pressing gently on the centre of the spreader



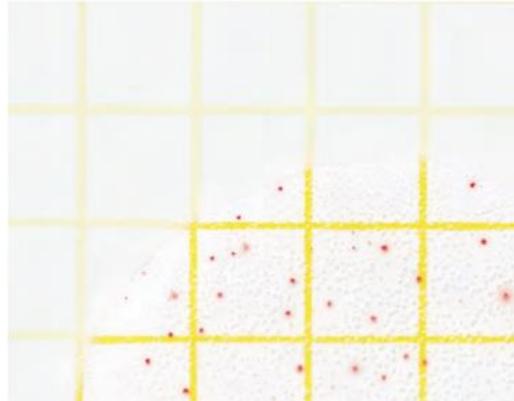
Place the Petrifilm® Plates horizontally in the incubator

Interpretation



Interpretation Guide

The Neogen® Petrifilm® Aerobic Count Plate is a ready-made culture medium system that contains modified Standard Methods nutrients, a cold-water-soluble gelling agent and an indicator that facilitates colony enumeration. Petrifilm Aerobic Count Plates are used for the enumeration of aerobic bacteria.



Interpretation Guide

The Neogen® Petrifilm® Coliform Count Plate is a sample-ready culture medium system which contains modified Violet Red Bile nutrients, a cold-water-soluble gelling agent and a tetrazolium indicator that facilitates colony enumeration.



Documents

To access certificates, please use our [technical document search page](#).

▼ [Brochure](#)

Petrifilm Coliform Count (CC) Plate Interpretation Guide

Interpretation - Aerobic Count

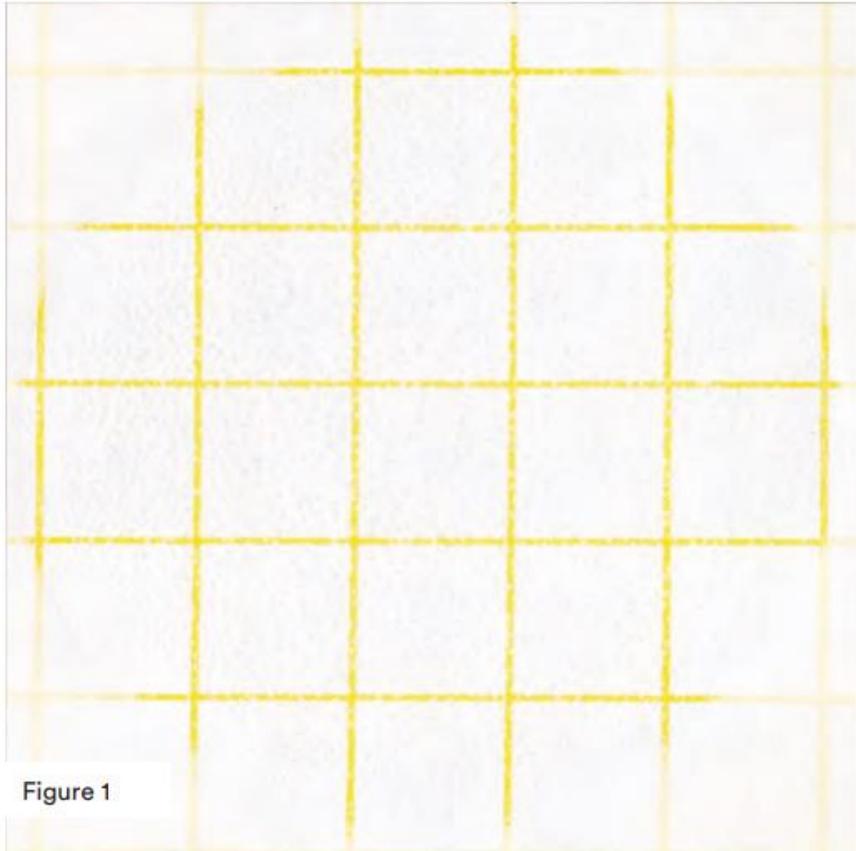


Figure 1

Aerobic bacteria count = 0

Petrifilm Aerobic Count Plate without colonies.

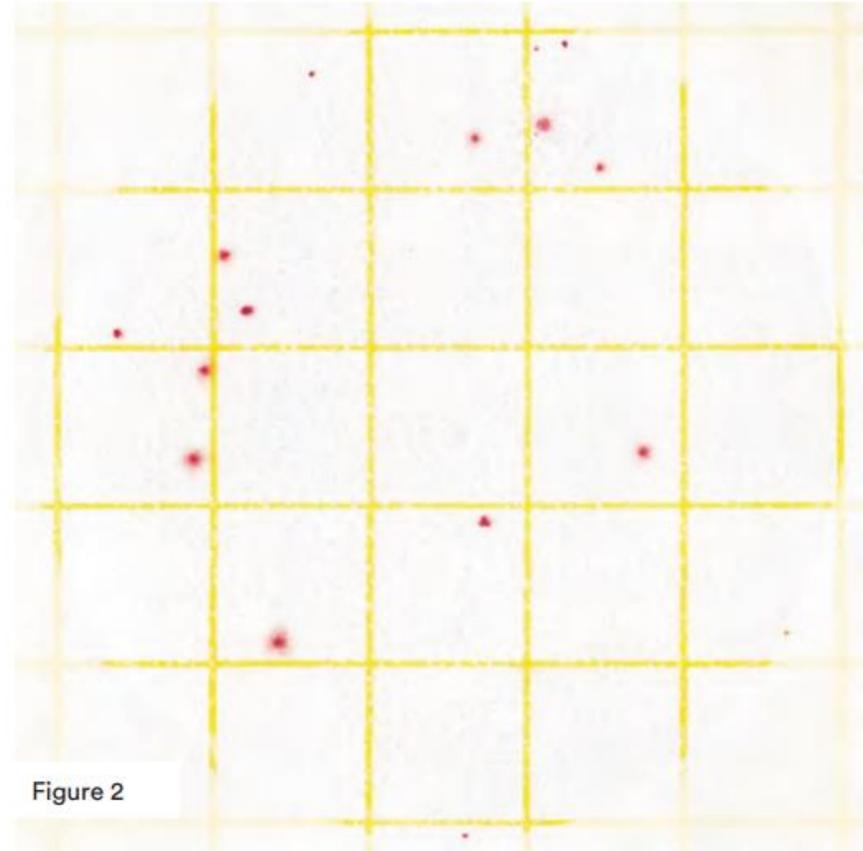


Figure 2

Aerobic bacteria count = 16

Petrifilm Aerobic Count Plate with a few bacterial colonies.

Interpretation - Aerobic Count

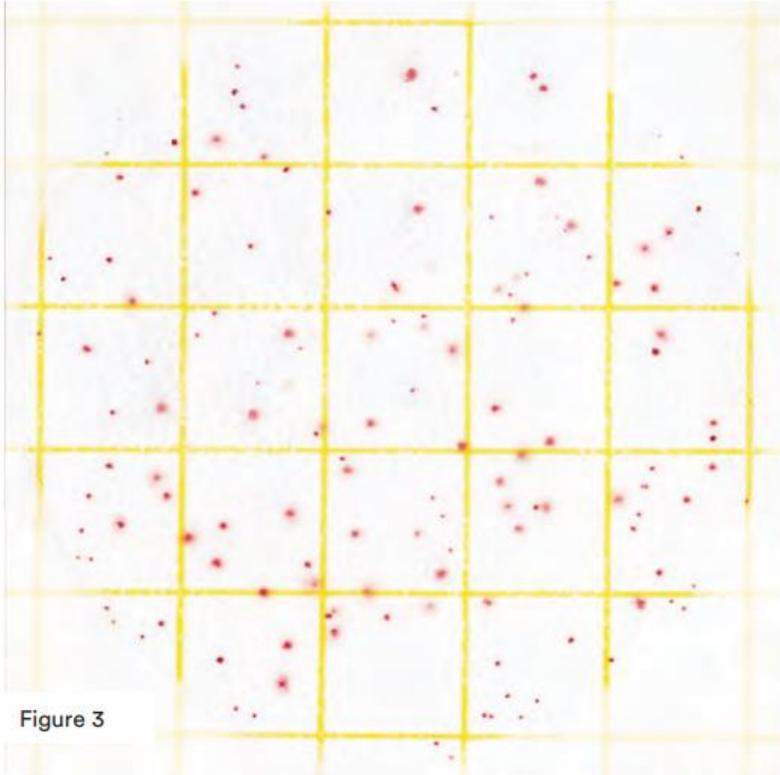


Figure 3

Aerobic bacteria count = 143

The preferable counting range on a Petrifilm Aerobic Count Plate is less than or equal to 300 colonies.

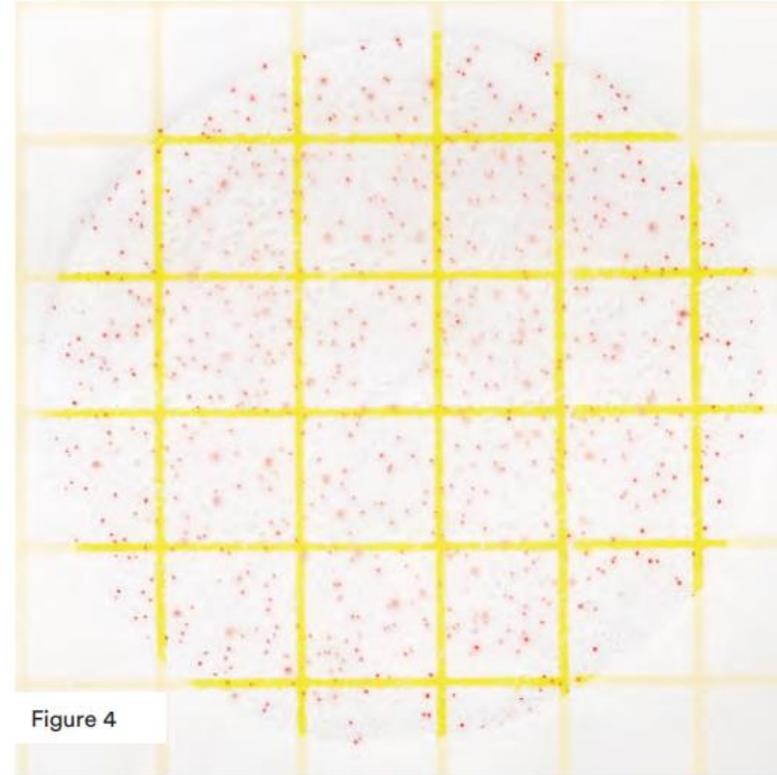


Figure 4

Estimated aerobic bacteria count = 560

When colonies number more than 300, estimate the count. Determine the average number of colonies in one square (1cm²) and multiply it by 20 to obtain the total count per plate. The inoculated area on a Petrifilm Aerobic Count Plate is approximately 20cm².

For a more accurate count, further dilution of the sample may be necessary.

Interpretation - Coliform

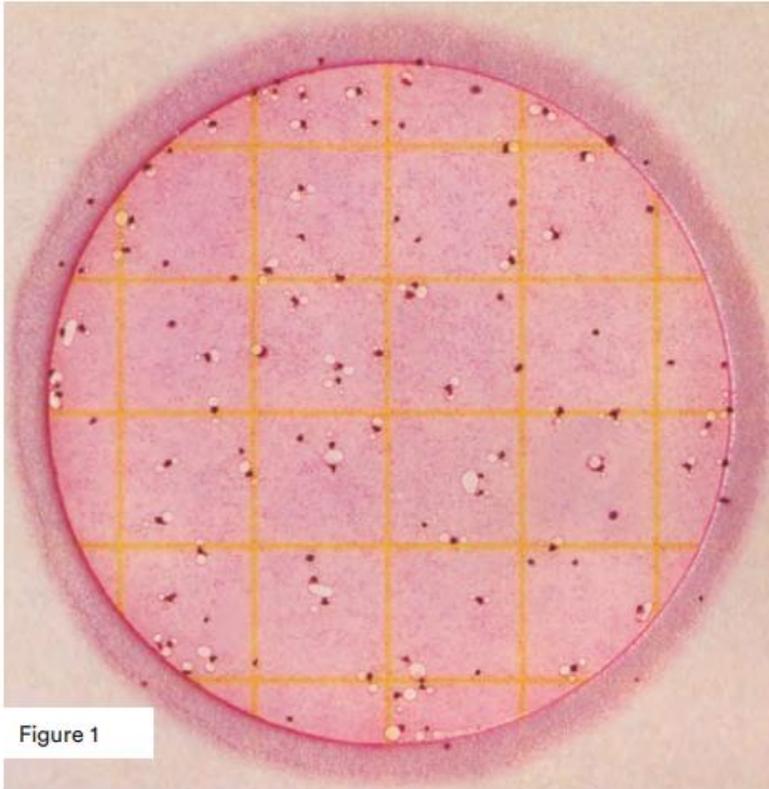


Figure 1

Total colonies with gas = 69

Total colonies = 94

The definition of coliforms may vary by country.

Please refer to section above and product instructions for definitions.

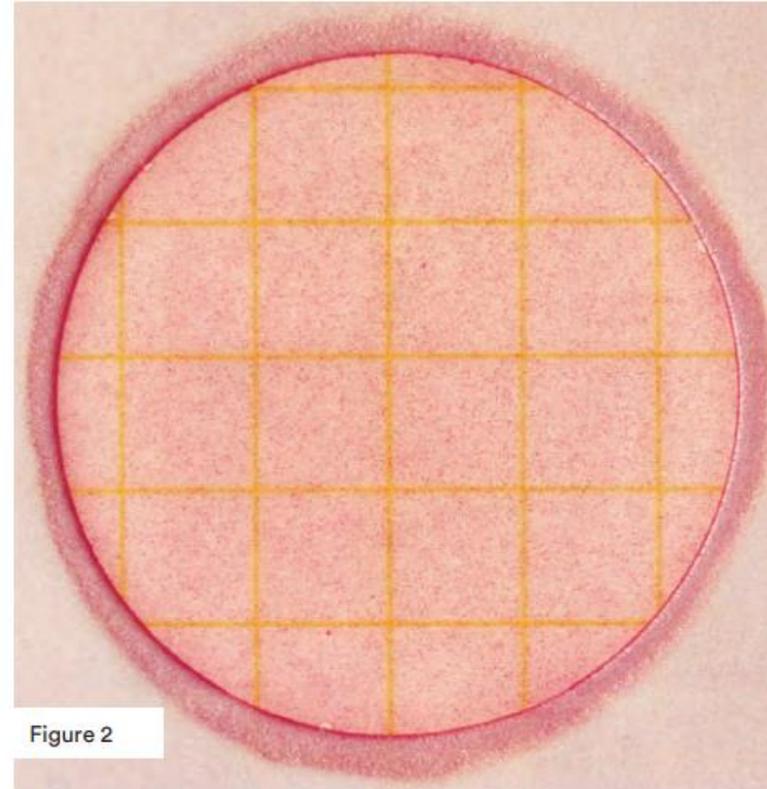


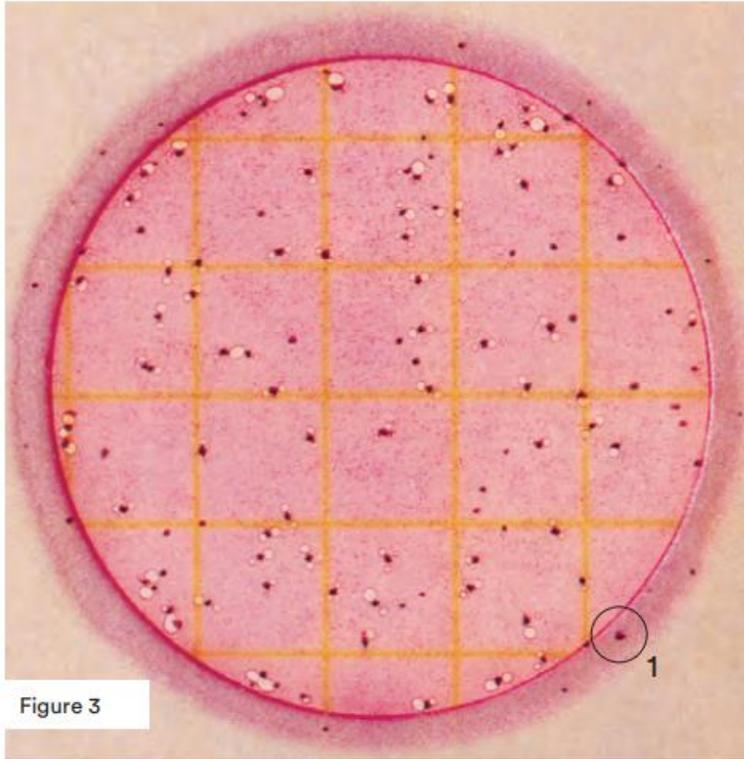
Figure 2

No growth = 0

Notice the changes in gel color in Figures 2–5. As the coliform count increases, the gel color deepens.

Background bubbles are a characteristic of the gel and are not a result of coliform growth.

Interpretation - Coliform

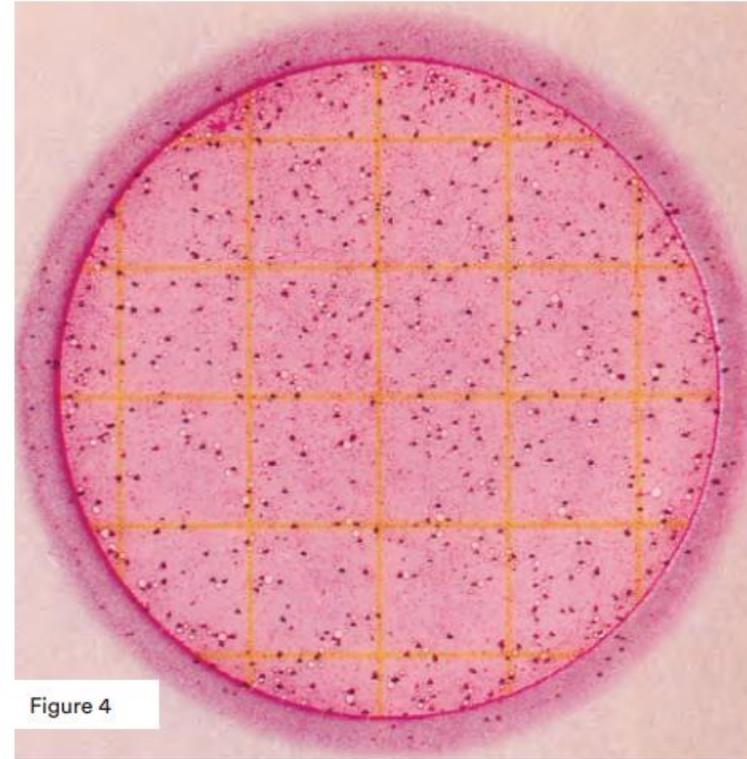


Total colonies with gas = 79

Total colonies = 109

The recommended counting limit on Petrifilm Coliform Count Plates is less than 150.

Do not count colonies that appear on the foam barrier because they are removed from the selective influence of the medium (see Circle 1).



Estimated total coliform count = 220

The circular growth area is approximately 20cm². Estimates can be made on plates containing greater than 150 colonies by counting the number of colonies in one or more representative squares and determining the average number per square. Multiply the average number by 20 to determine the estimated count per plate.

For a more accurate count, further dilution of sample may be necessary.

Interpretation - Enterobacteriaceae

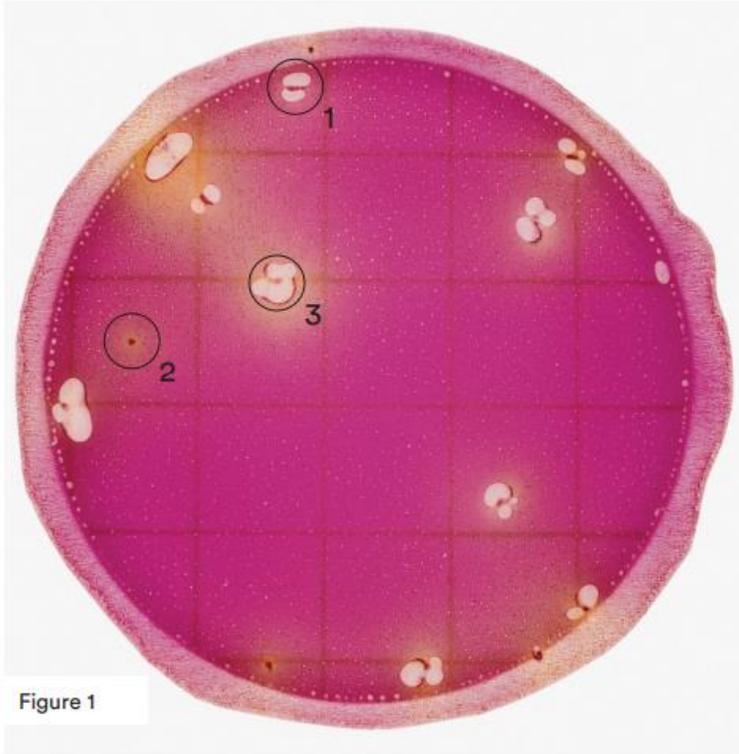


Figure 1

***Enterobacteriaceae* count = 13**

Figure 1 illustrates the three types of typical colonies. Sometimes gas disrupts the colony so that the colony “outlines” the gas bubbles.

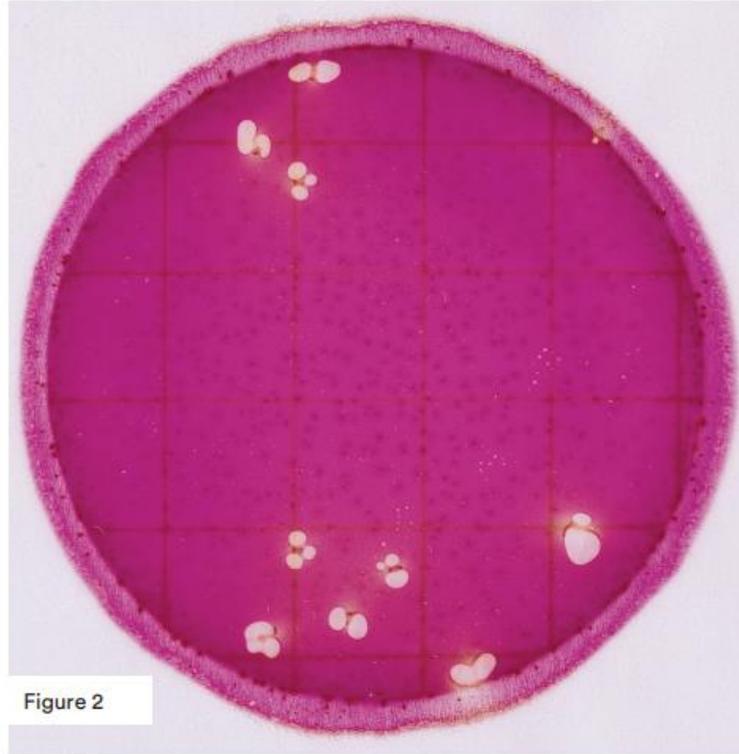


Figure 2

***Enterobacteriaceae* count = 9**

Figure 2 shows a Petrifilm *Enterobacteriaceae* Count Plate with a few *Enterobacteriaceae* colonies and a high number of non-*Enterobacteriaceae*, Gram-negative colonies. Do not count colonies on the foam dam since they are removed from the selective influence of the medium.

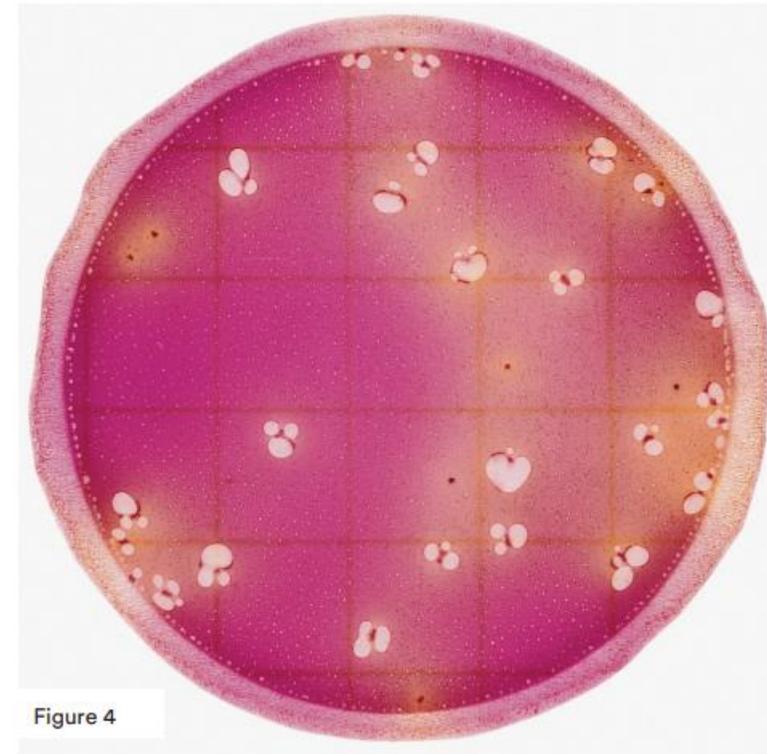


Figure 4

***Enterobacteriaceae* count = 35**

Interpretation - Enterobacteriaceae

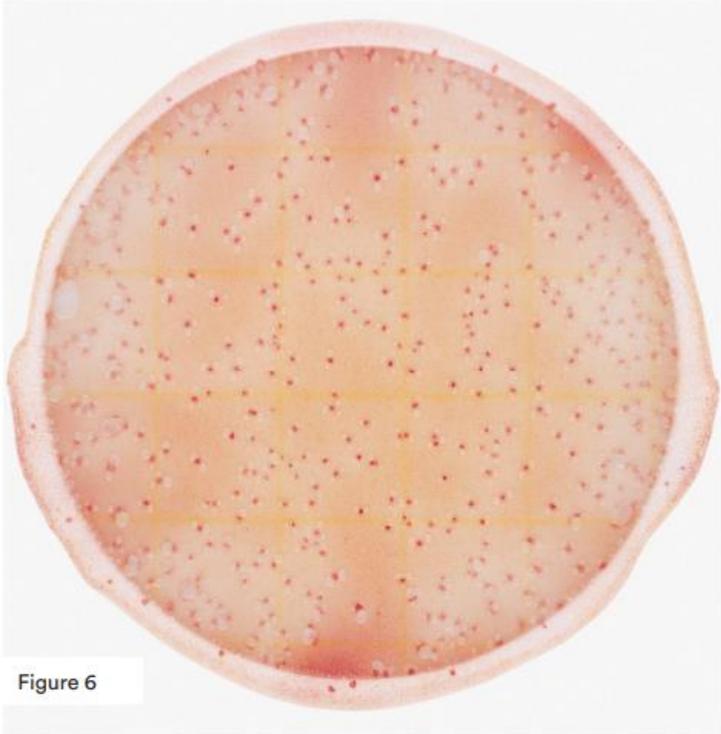


Figure 6

Enterobacteriaceae count = TNTC

Petrifilm *Enterobacteriaceae* Count Plates with more than 100 colonies are considered too numerous to count (TNTC). When colonies are present in large numbers, plates will have a deepening of the gel color or may turn completely yellow, and either or both of the following characteristics: many small, indistinct colonies and/or many gas bubbles. When this occurs, record results as TNTC.

For a more accurate count, further dilution of the sample may be necessary.

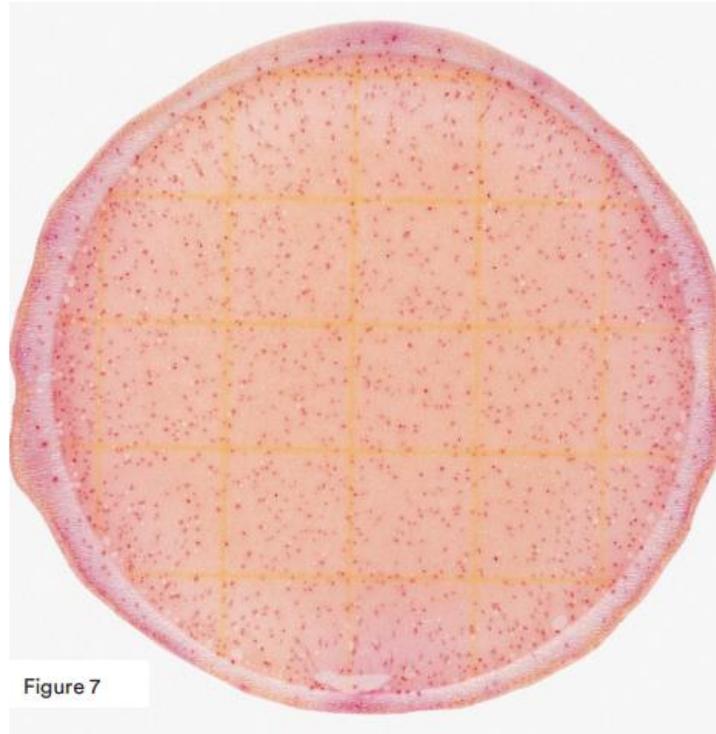


Figure 7

Enterobacteriaceae count = TNTC

In Figure 7, the count is so high that acid zones and gas bubbles are not easily seen. A lightening of the gel color indicates that the result is TNTC.

For a more accurate count, further dilution of the sample may be necessary.

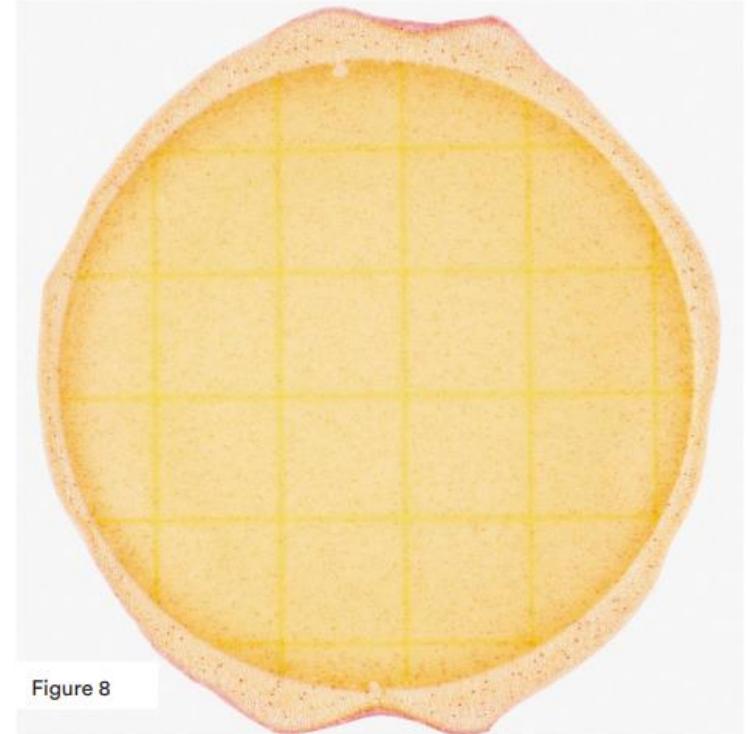


Figure 8

Enterobacteriaceae count = TNTC

The Petrifilm *Enterobacteriaceae* Count Plate in Figure 8 has two characteristics indicating TNTC colonies: lightening of the gel color and many small colonies.

For a more accurate count, further dilution of the sample may be necessary.

Interpretation – Select *E. coli*

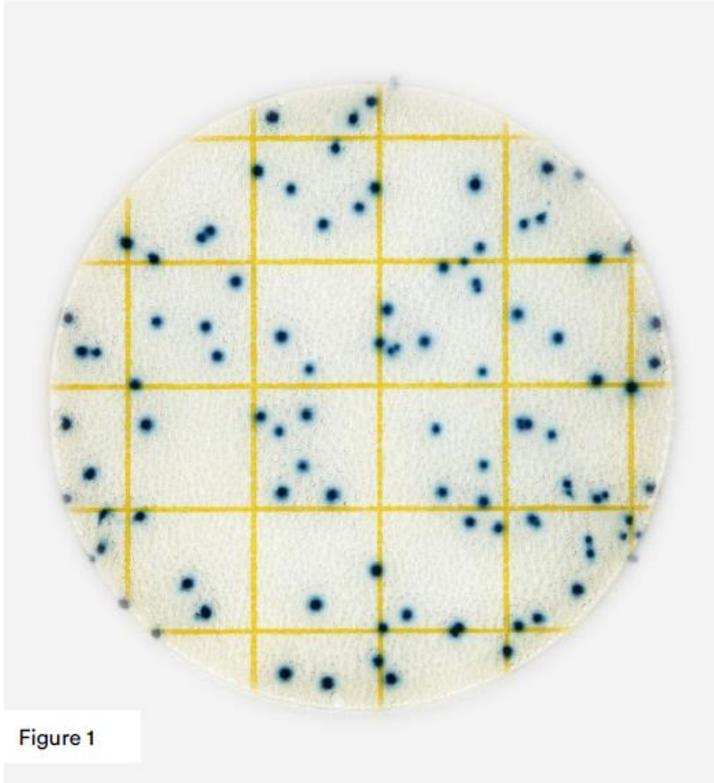


Figure 1

***E. coli* count = 97**

About 97% of *E. coli* strains are thermotolerant and produce beta-glucuronidase, an enzyme that reacts with BCIG indicator in Petrifilm Select *E. coli* Count Plates to produce dark green to blue-green colonies.

Petrifilm Select *E. coli* Count Plates will not detect *E. coli* O157 as most strains are atypical. They are glucuronidase negative, and will not produce a blue-green colony.



Figure 2

***E. coli* count = 0**

Colonies other than *E. coli* are difficult to see because they are colorless to a light grey-beige.

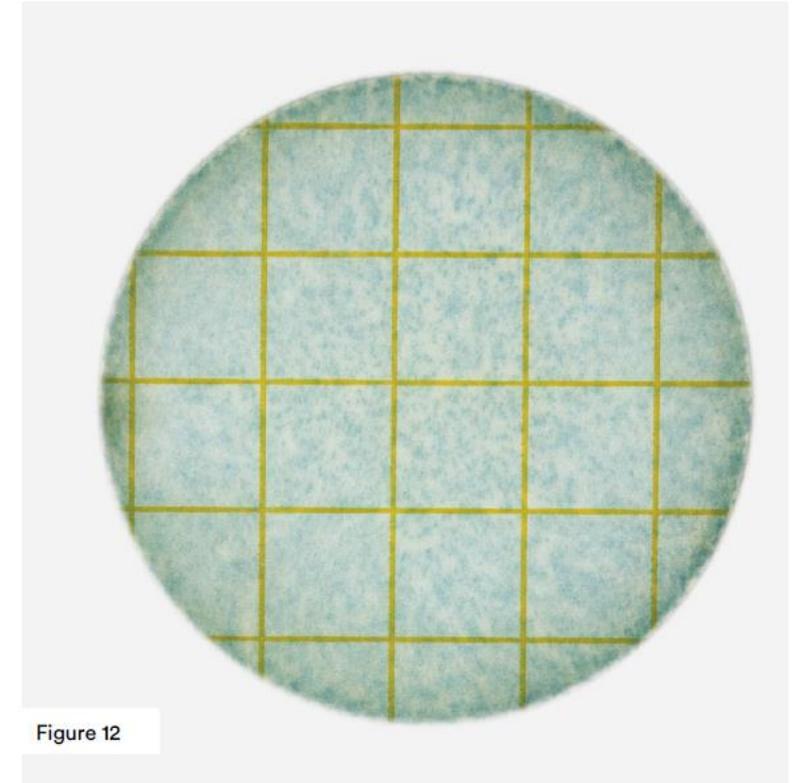


Figure 12

***E. coli* count = Too numerous to count (TNTC)**

When present in large numbers, *E. coli* may appear as small, indistinct colonies.

For a more accurate count, further dilution of the sample may be necessary.

Interpretation – Rapid *E. coli*/Coliform Count Plate

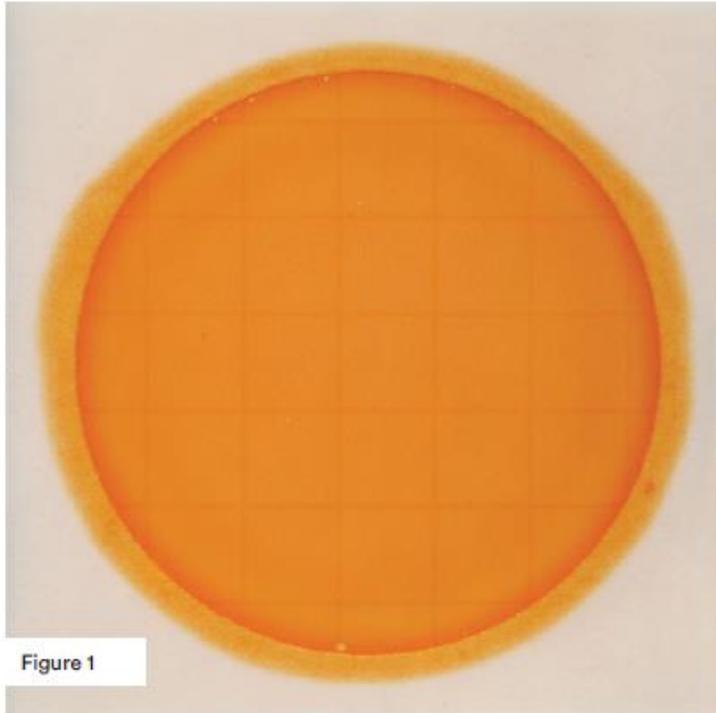


Figure 1

***E. coli* count = 0**
Total coliform count = 0
Petrifilm Rapid *E. coli*/Coliform Count Plate without colonies.

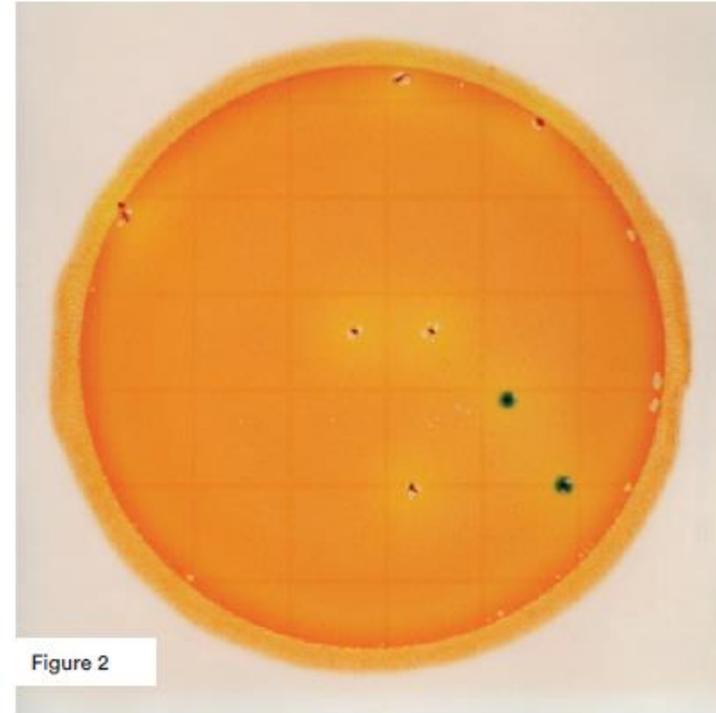


Figure 2

***E. coli* count = 2**
(blue colonies with and without gas)
Total coliform count = 8
(red colonies with gas and blue colonies)
Total coliform count = 8
(red colonies and blue colonies)

E. coli are blue to blue-green colonies with and without associated gas bubbles. The definition of coliforms may vary by country. Please refer to the section above and product instructions for definitions.

Do not count colonies on the foam barrier because they are removed from the selective influence of the medium.

Interpretation – Rapid *E. coli*/Coliform Count Plate

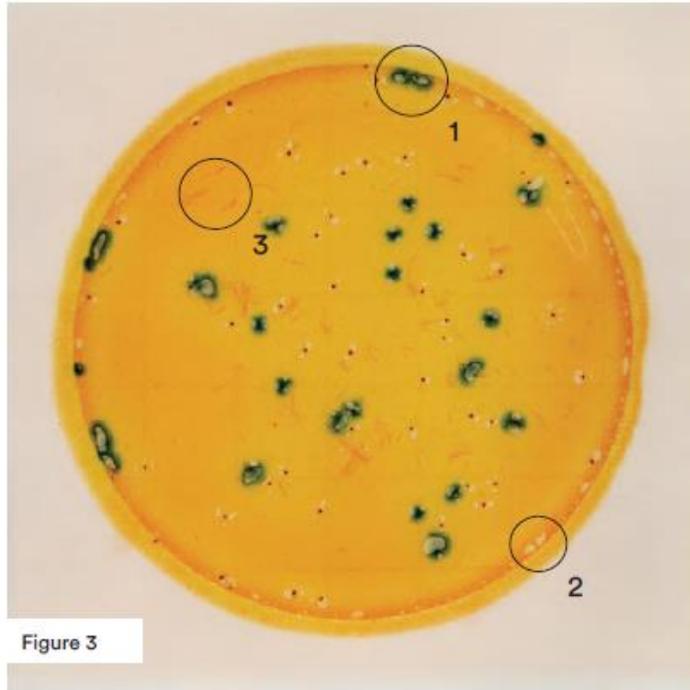


Figure 3

***E. coli* count = 25** (blue colonies with and without gas)
Total coliform count = 71 (red colonies with gas and blue colonies)
Total coliform count = 75 (red and blue colonies)

Two distinct colonies can be seen in Circle 1, although the blue precipitate from both colonies have merged together. The gas bubble formed by each colony has disrupted the colony so that the colony “outlines” the bubble.

Artifact bubbles may result from improper inoculation or from trapped air within the sample. They are irregularly shaped and are not associated with a colony (Circle 2).

Food particles are irregularly shaped and are not associated with gas bubbles (Circle 3).

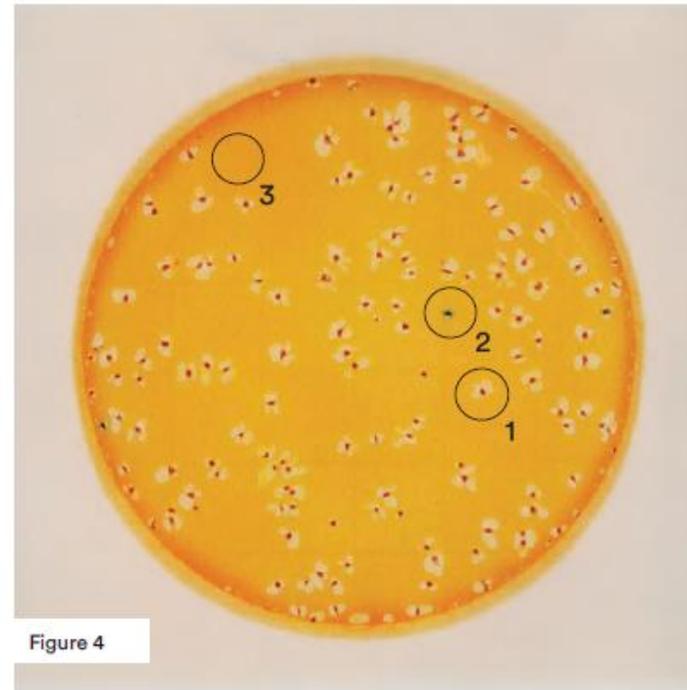


Figure 4

***E. coli* count = 3** (blue colonies with and without gas)
Estimated total coliform count = 145

The circular growth area is approximately 30 cm². Estimates can be made on Petrifilm Rapid *E. coli*/Coliform Count Plates containing greater than 100 colonies. Count the number of colonies in one or more representative squares and determine the average number per square. Multiply the average number by 30 to determine the estimated count. In this picture, three types of colonies can be seen: Red colonies with gas (Circle 1), blue colonies with gas (Circle 2), and very tiny, pale pink colonies without gas. The tiny, pale pink colonies without gas are non-coliform and should not be counted (Circle 3).

Further a more accurate count, further dilution of the sample may be necessary.

Interpretation – Rapid *E. coli*/Coliform Count Plate

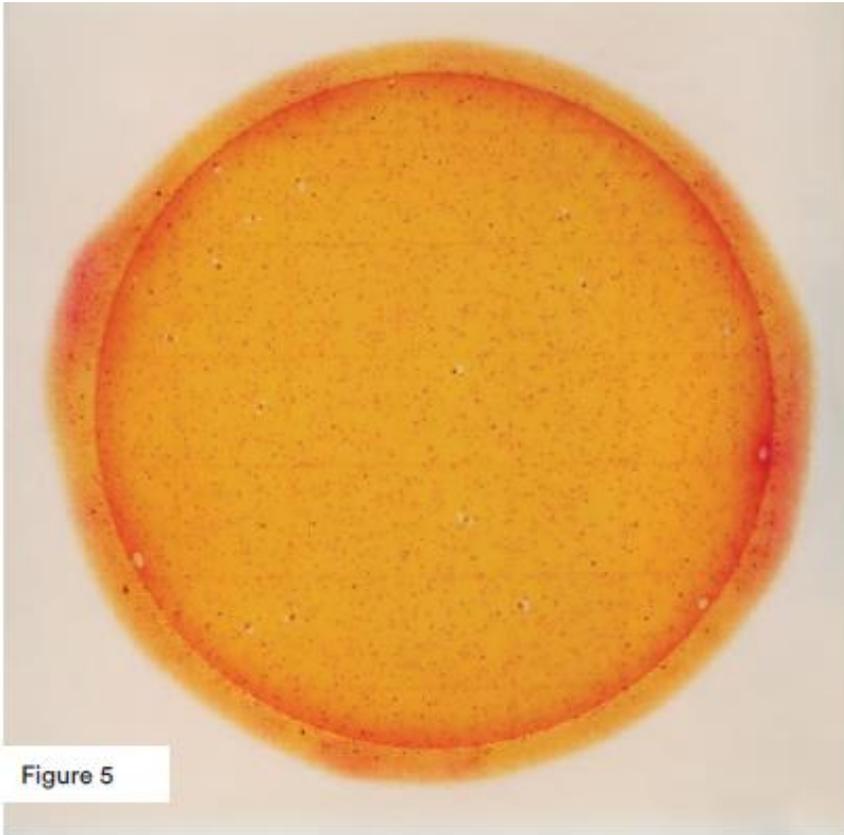


Figure 5

***E. coli* count = 0**

Total coliform count = Too Numerous To Count (TNTC)

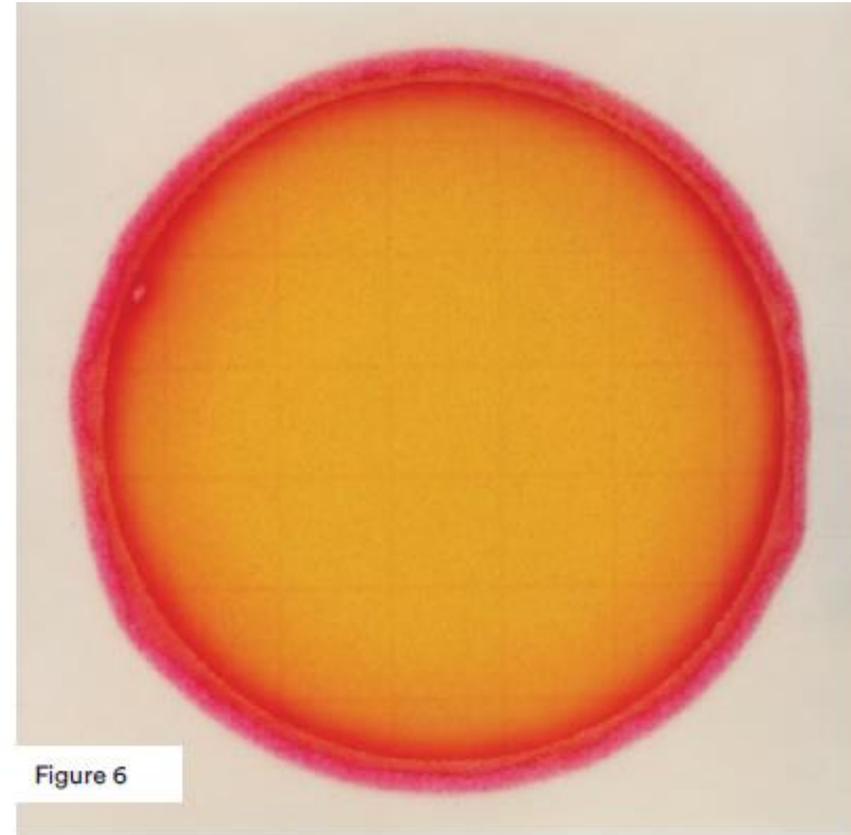


Figure 6

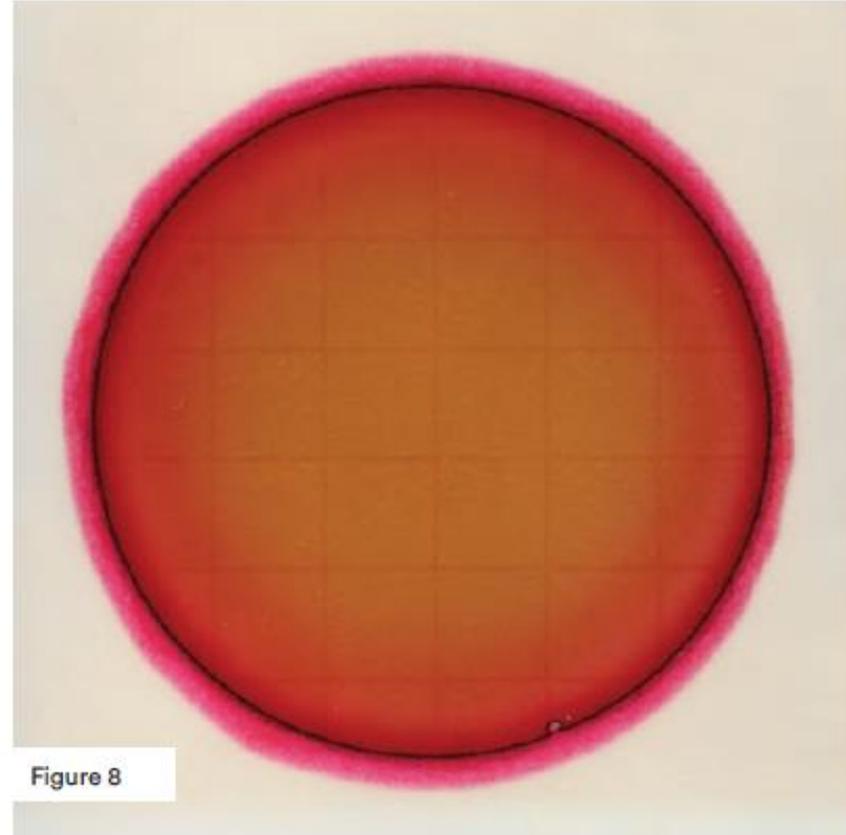
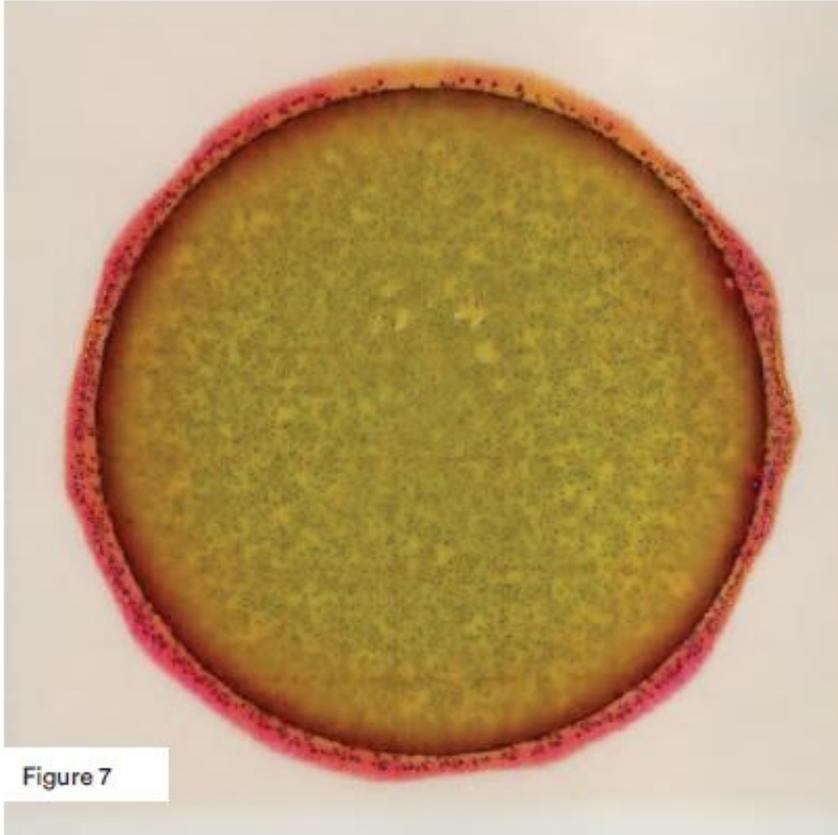
***E. coli* count = cannot be determined**

Total coliform count = TNTC

The counting range for total coliform is less than or equal to 100 total colonies. Plates with colony counts TNTC may have one or more of the following characteristics: lightening of the gel color to yellow, many small, indistinct red or blue colonies and/or many gas bubbles. High concentrations of *E. coli* or coliforms may cause the outer edge of the growth area to turn pink to pink orange.

For a more accurate count, further dilution of the sample may be necessary.

Interpretation – Rapid *E. coli*/Coliform Count Plate



***E. coli* count = TNTC (blue colonies with and without gas)**

Total coliform count = TNTC

The counting range for *E. coli* is less than or equal to 100 blue to blue-green colonies. Plates with colony counts TNTC may have one or more of the following characteristics: lightening of the gel color to yellow, many small, indistinct red or blue colonies and/or many gas bubbles. High concentrations of *E. coli* or coliforms may cause the outer edge of the growth area to turn pink to pink orange.

For a more accurate count, further dilution of the sample may be necessary.

Interpretation – Rapid Yeast and Mold

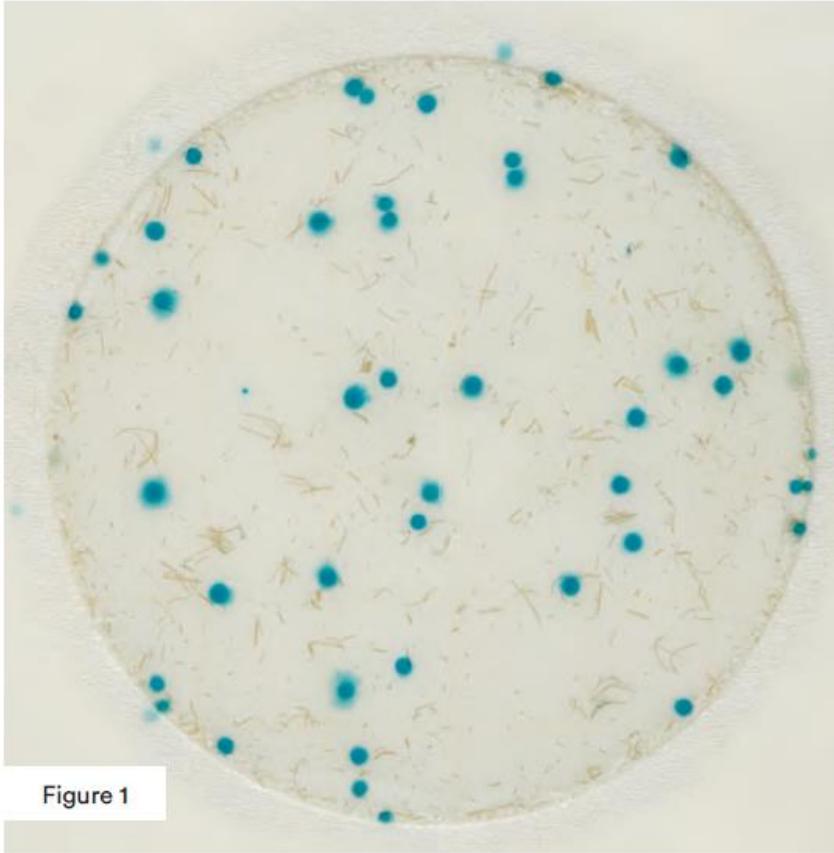


Figure 1

Yeast count = 44

The colonies are examples of characteristic **yeast**: small colonies, colonies have defined edges, pink-tan to blue-green in color, colonies appear raised (3 dimensional) and colonies have a uniform color.

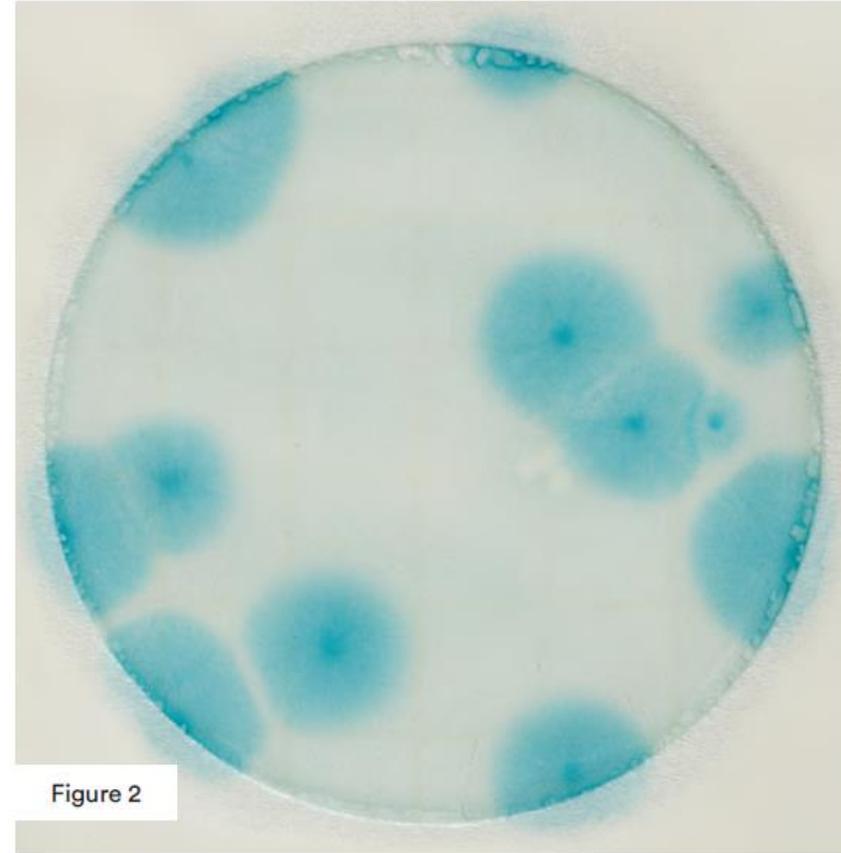


Figure 2

Mold count = 12

The colonies are examples of characteristic **mold**: large colonies, colonies have diffuse edges, blue-green to variable upon prolonged incubation, colonies appear flat and colonies have a dark center with diffused edge.

Interpretation – Rapid Aerobic Count

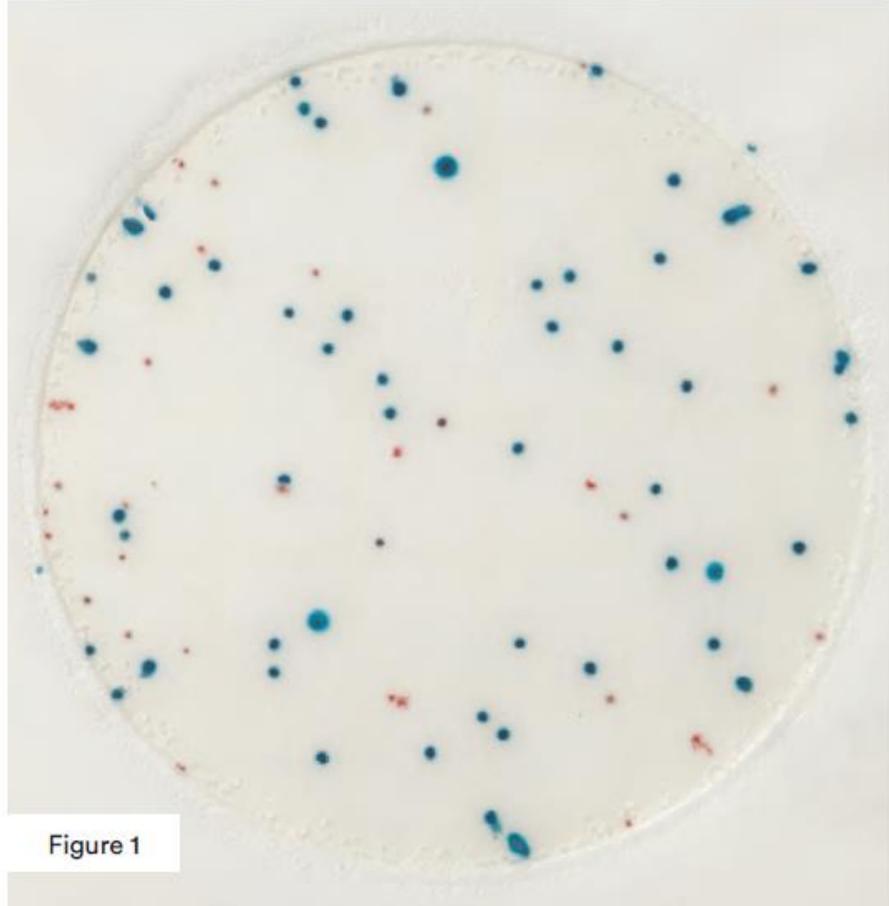


Figure 1

Aerobic bacteria count = 88

Blue and red indicator dyes in the plate color the colonies.
Count all colonies regardless of their size or color intensity.

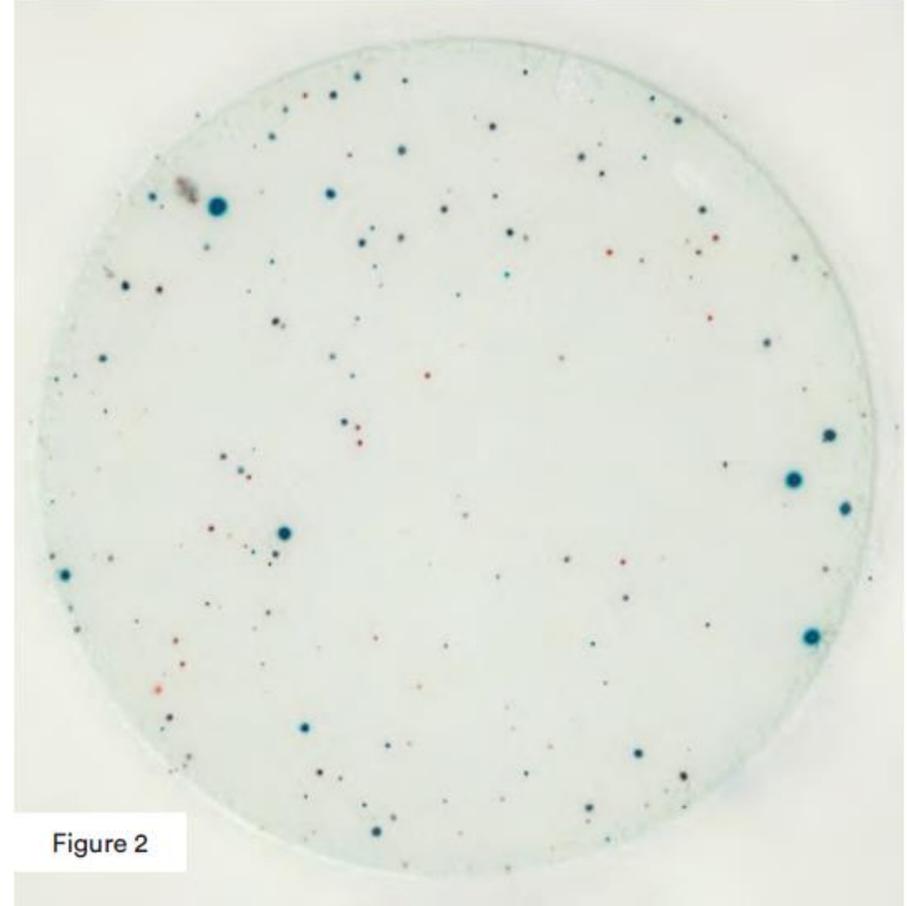
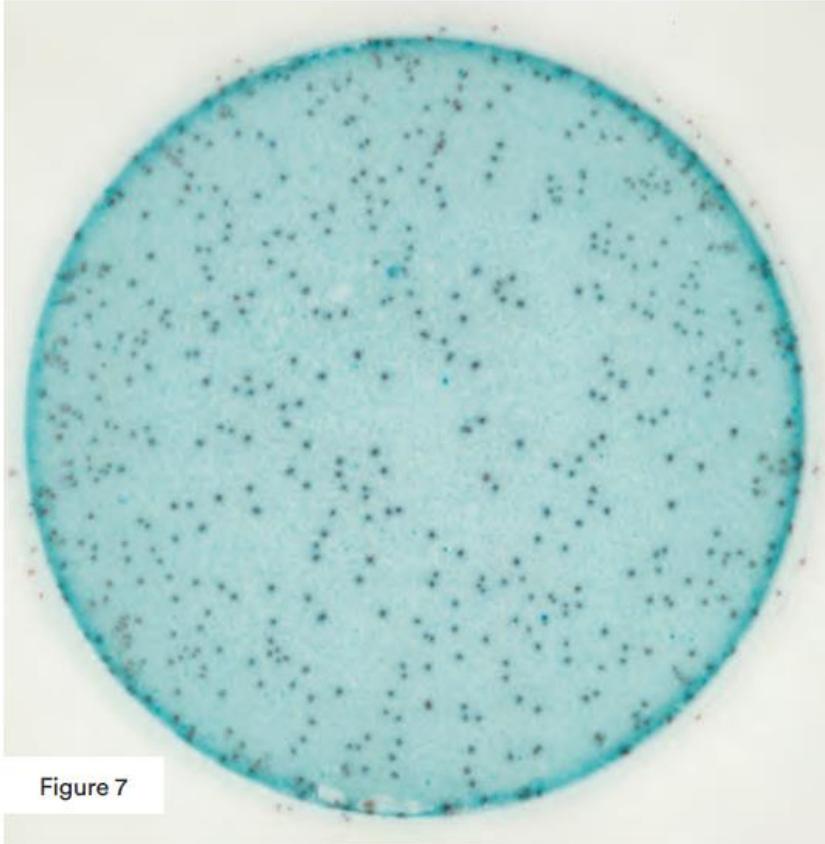


Figure 2

Aerobic bacteria count = 204

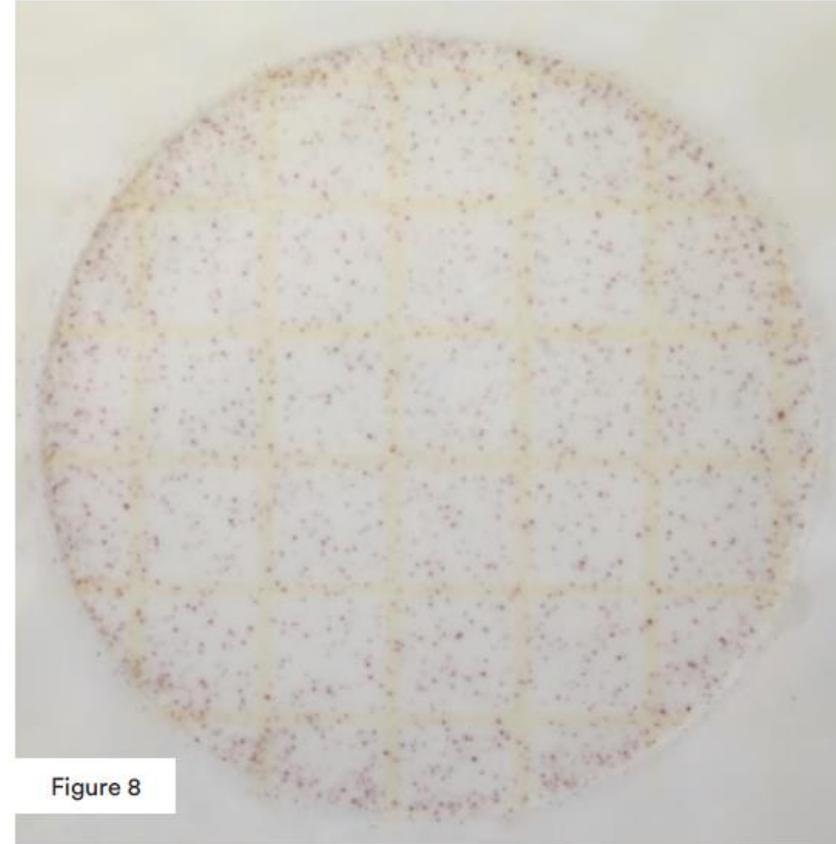
Interpretation – Rapid Aerobic Count



Aerobic bacteria count = TNTC

High concentrations of colonies on the Petrifilm Rapid Aerobic Count Plates will cause the entire growth area to become blue or red. Occasionally, on overcrowded Petrifilm Rapid Aerobic Count Plates, the center may lack visible colonies, but many small colonies can be seen on the edges. When any of these occurs, record results as too numerous to count (TNTC).

For a more accurate count, further dilution of sample may be necessary.

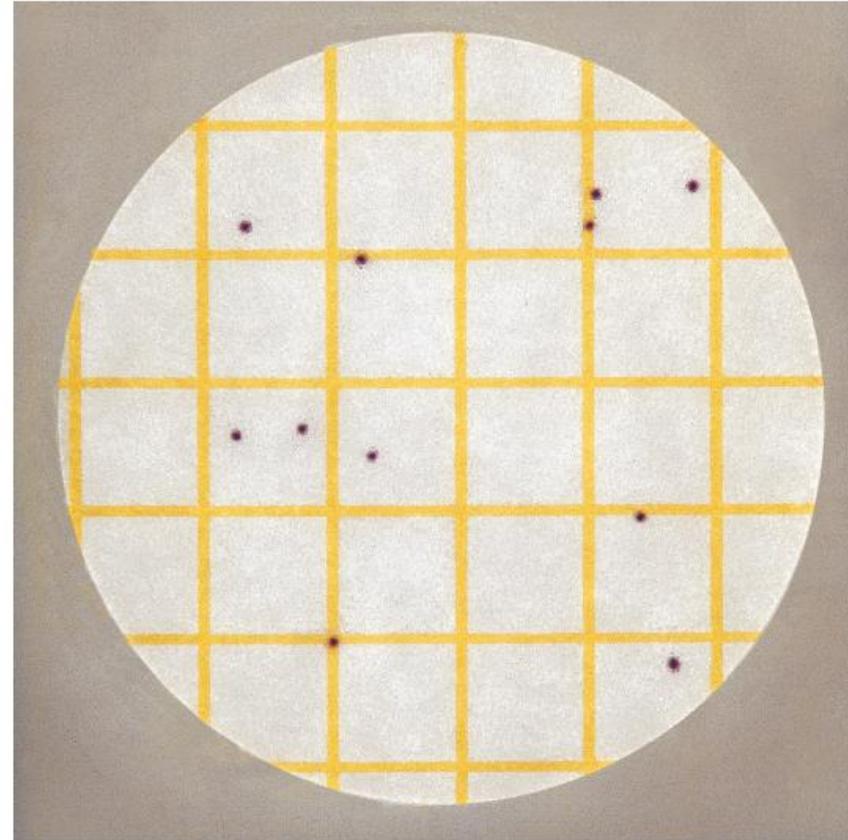


Aerobic bacteria count = TNTC

Interpretation – Staph Express

The Petrifilm Staph Express Count Plate is a sample ready culture medium system which contains a cold-water-soluble gelling agent. The chromogenic, modified Baird-Parker medium in the plate is selective and differential for *Staphylococcus aureus* (*S. aureus*) but may also indicate *Staphylococcus hyicus* (*S. hyicus*) or *Staphylococcus intermedius* (*S. intermedius*).

Red-violet colonies are *S. aureus*, *S. hyicus* or *S. intermedius*. If you encounter background flora in your testing, the Petrifilm Staph Express Disk may be used to identify *S. aureus* from all suspect colonies.



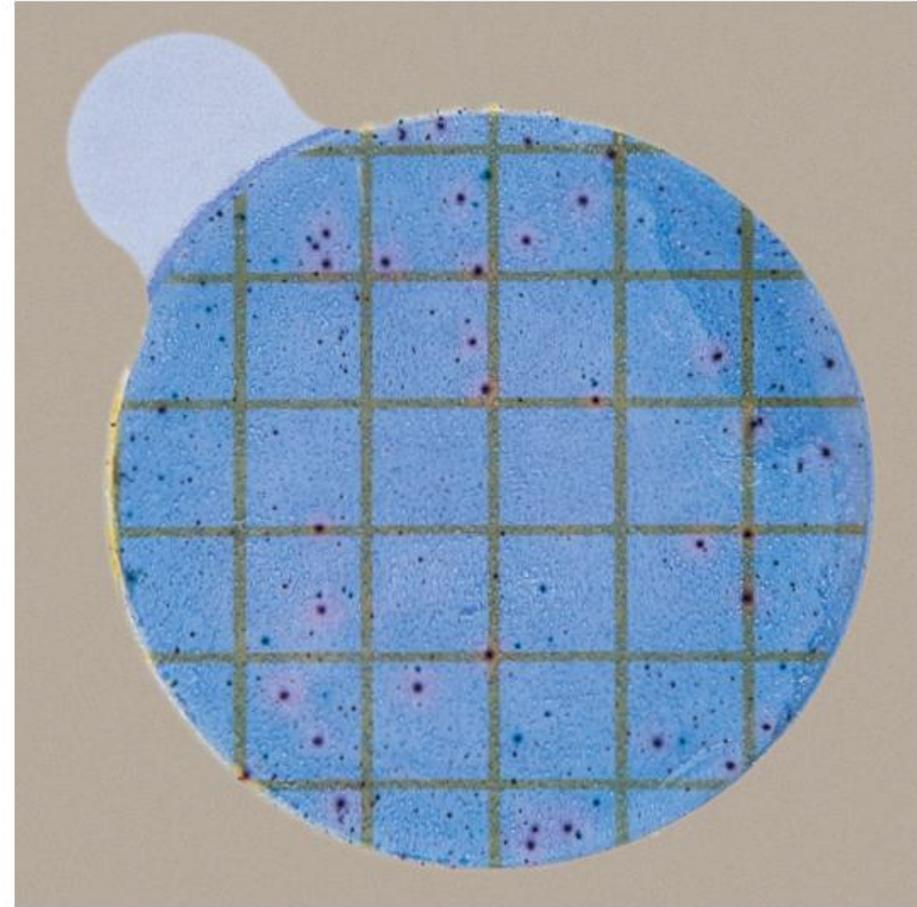
***S. aureus* count = 11**

This picture shows only red-violet colonies. Count all red-violet colonies as *S. aureus*. The test is complete.

Interpretation – Staph Express

The Petrifilm Staph Express Disk should be used whenever colonies other than red-violet are present on the plate—for example, black or blue-green colonies—as they may obscure *S. aureus*. Black colonies may or may not be *S. aureus*. Blue-green colonies are not *S. aureus*.

The Petrifilm Staph Express Disk contains Toluidine Blue O and deoxyribonucleic acid (DNA). Deoxyribonuclease (DNase) positive organisms degrade the DNA which reacts with the Toluidine Blue O to form pink zones. DNase positive organisms include *S. aureus*, *S. hyicus*, and *S. intermedius* and comprise the majority of the group of organisms commonly known as coagulase-positive staphylococci. Most other types of bacteria do not produce pink zones.



***S. aureus* count = 33**

Interpretation – Lactic Acid Bacteria

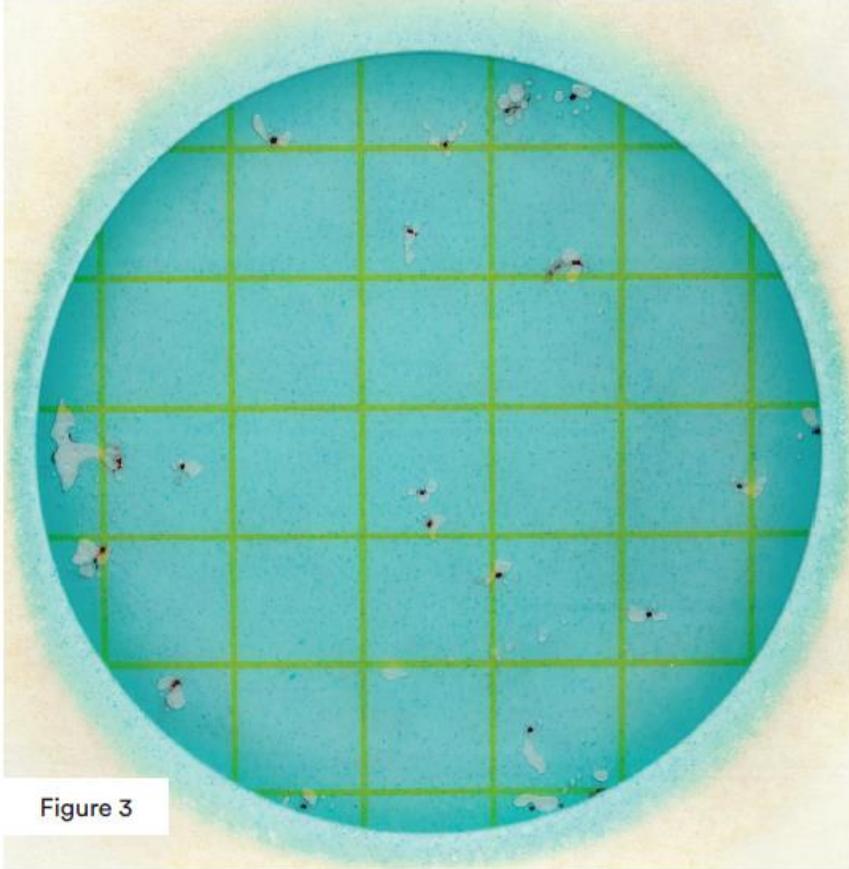


Figure 3

Total lactic acid bacteria count = 24

The recommended counting range becomes less than 150 colonies when colonies with gas are present. Gas bubble size will vary by size and shape. Gas may disrupt the colony so that the colony “outlines” the bubble.

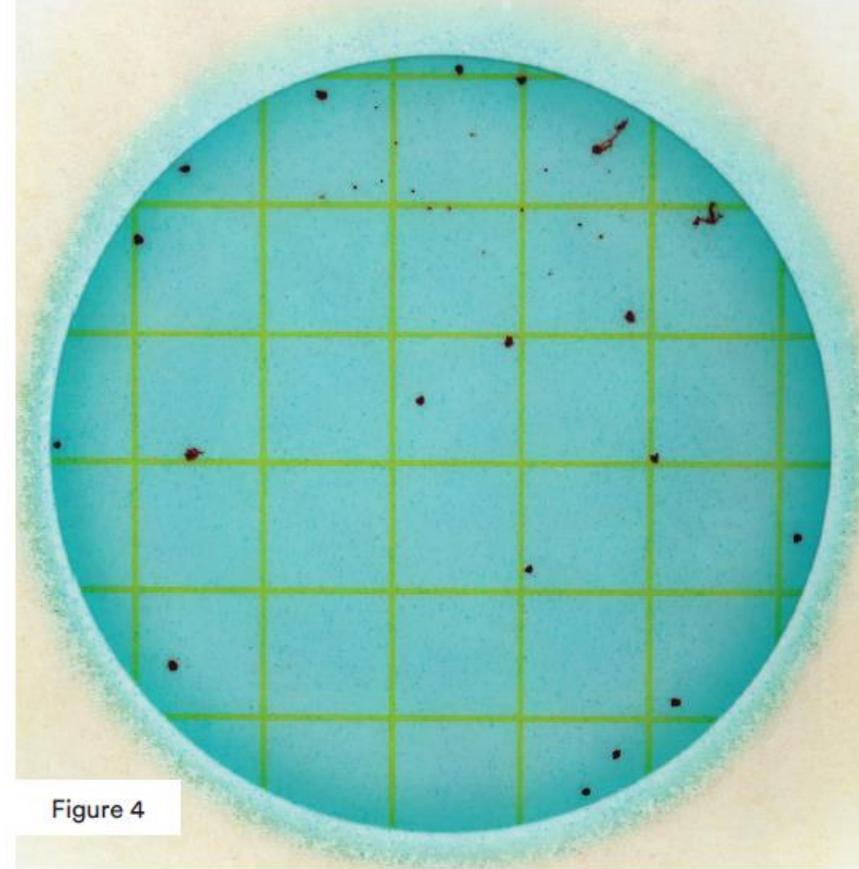
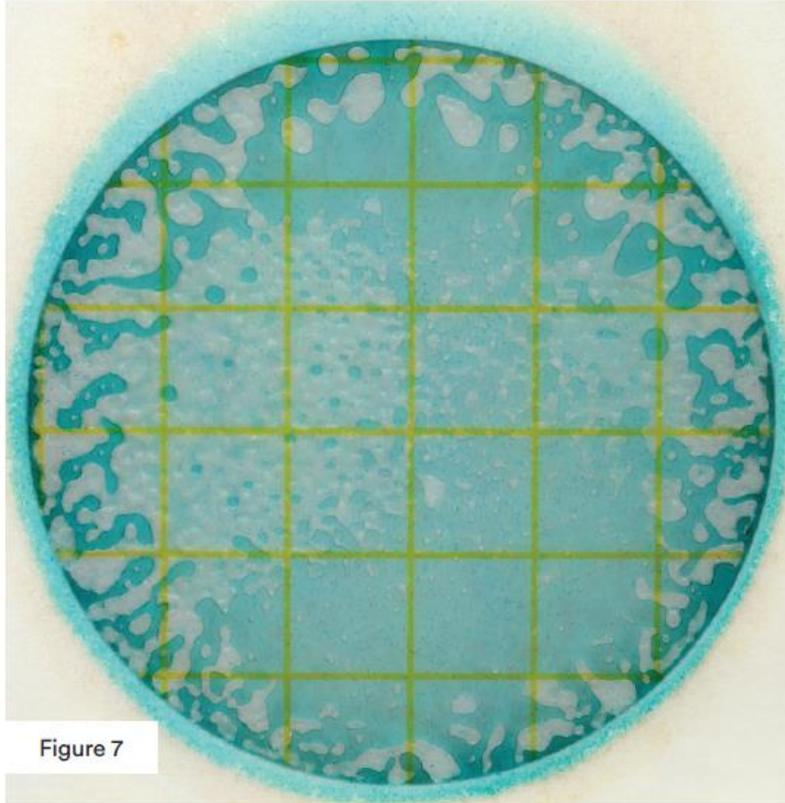


Figure 4

Total lactic acid bacteria count = 38

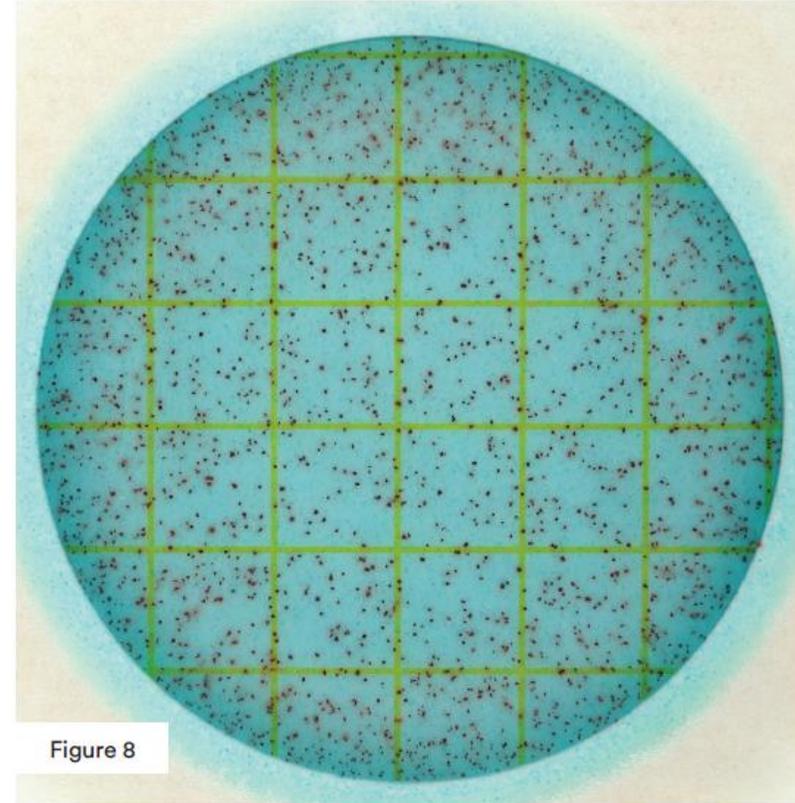
Count all colonies regardless of size and intensity.

Interpretation – Lactic Acid Bacteria



Total lactic acid bacteria count = TNTC

High concentrations of gas producing (heterofermentative) colonies on the Petrifilm Lactic Acid Bacteria Count Plates will result in an irregular distribution of many gas bubbles. Further dilution of the sample may be necessary.

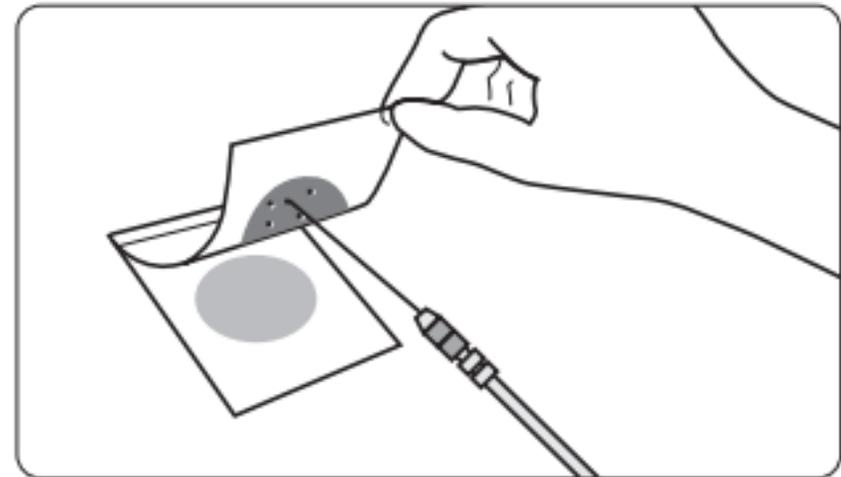


Estimated total lactic acid bacteria count = 1500

When the number of colonies without gas number more than 300, estimate the count. Determine the average number of colonies in two or more representative squares and multiply by 30 to obtain the estimated total count per plate. The inoculated area on a Petrifilm Lactic Acid Bacteria Count Plate is approximately 30cm².

Further Identification

- Petrifilm Plates can be shipped between card to an external lab for further work
- Colonies can be picked off by the lab



Thank you for listening