



Petrifilm™

# Interpretation Guide

The 3M™ Petrifilm™ Rapid Aerobic Count Plate is a sample-ready-culture medium system which contains nutrients, a cold-water-soluble gelling agent and a dual-sensing indicator technology that facilitates aerobic bacteria enumeration as soon as 24 hours for most food matrices.



**RAC**  
Rapid Aerobic Count Plate



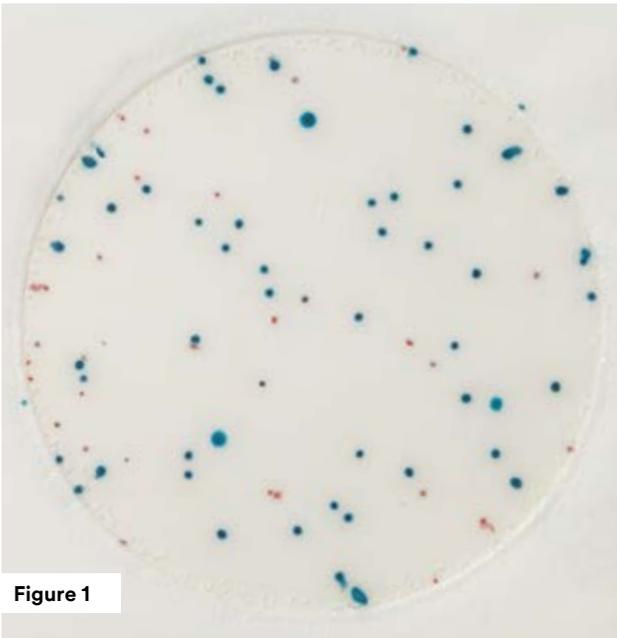


Figure 1

**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.

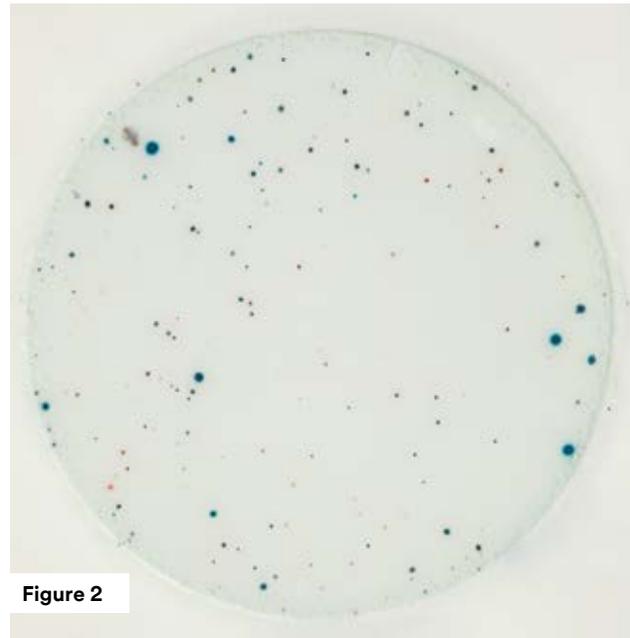


Figure 2

**Aerobic bacteria count = 204**



Figure 3

**Aerobic bacteria count = 0**

Figure 3 shows a 3M™ Petrifilm™ Rapid Aerobic Count Plate without colonies.

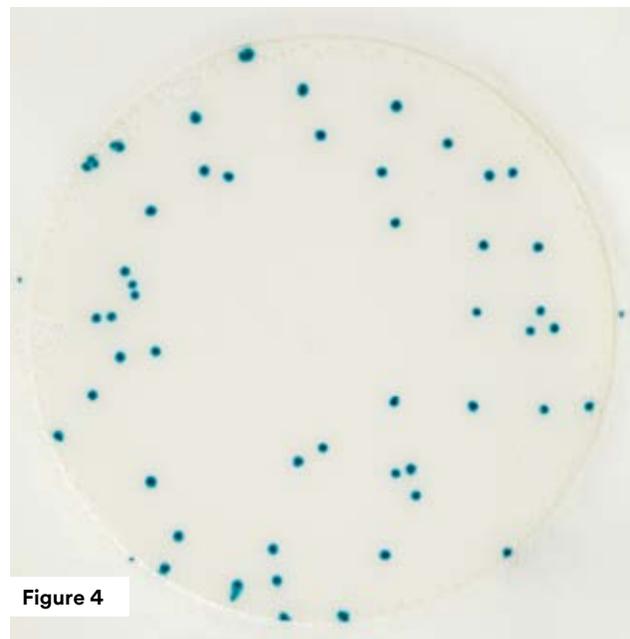


Figure 4

**Aerobic bacteria count = 49**

Figure 4 shows a 3M Petrifilm Rapid Aerobic Count Plate with a few bacterial colonies.

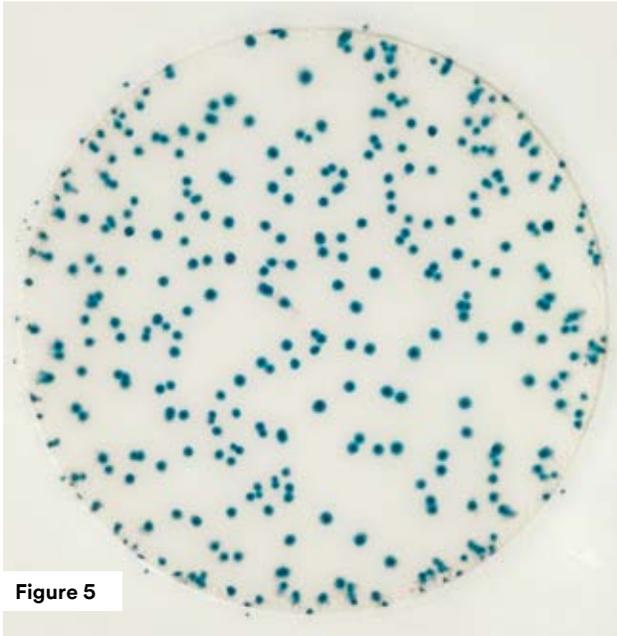


Figure 5

### Normal lighting

The counting range on a 3M Petrifilm Rapid Aerobic Count Plate is less than or equal to 300 colonies.

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

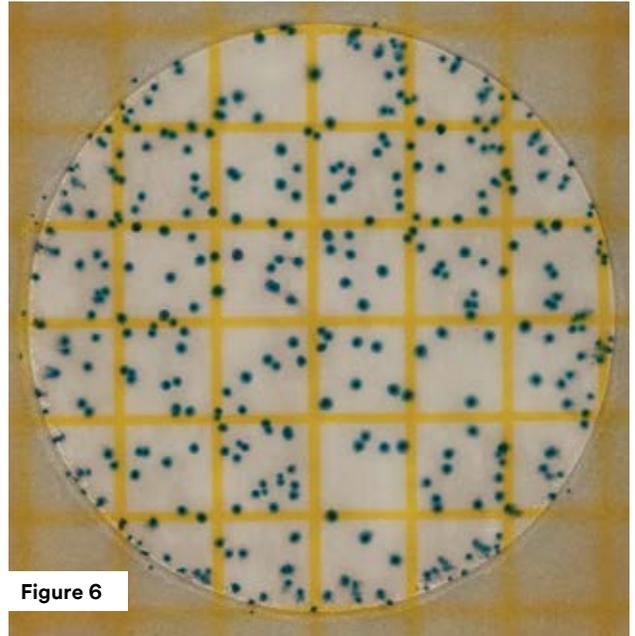


Figure 6

### Backlighting

The circular growth area is approximately 30cm<sup>2</sup>. Gridlines are visible with the use of a backlight to assist with estimated enumeration. Estimates can be made on 3M Petrifilm Rapid Aerobic Count Plates by counting the number of colonies in two or more representative squares and determining the average number per square. Multiply the average number by 30 to determine the estimated count per plate.

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

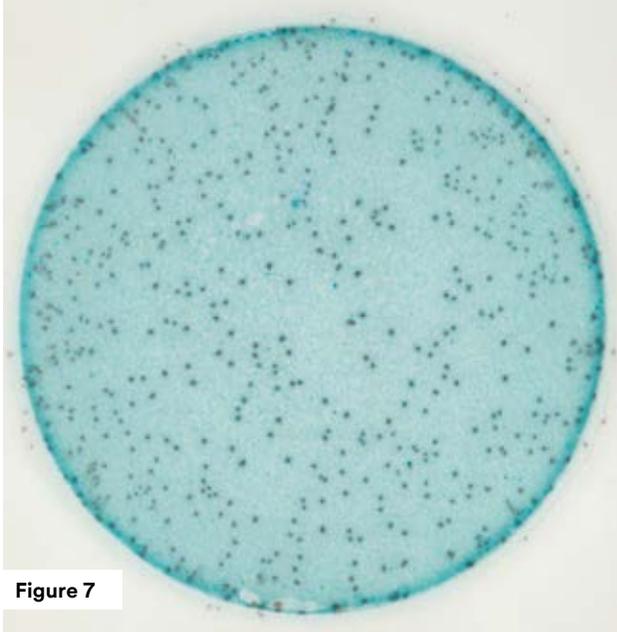


Figure 7

### Aerobic bacteria count = TNTC

High concentrations of colonies on the 3M Petrifilm Rapid Aerobic Count Plates will cause the entire growth area to become blue or red. Occasionally, on overcrowded 3M 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.*

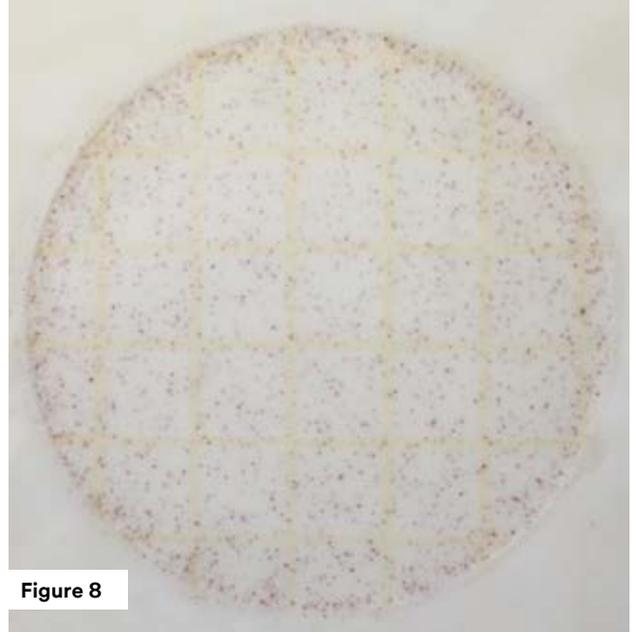


Figure 8

### Aerobic bacteria count = TNTC

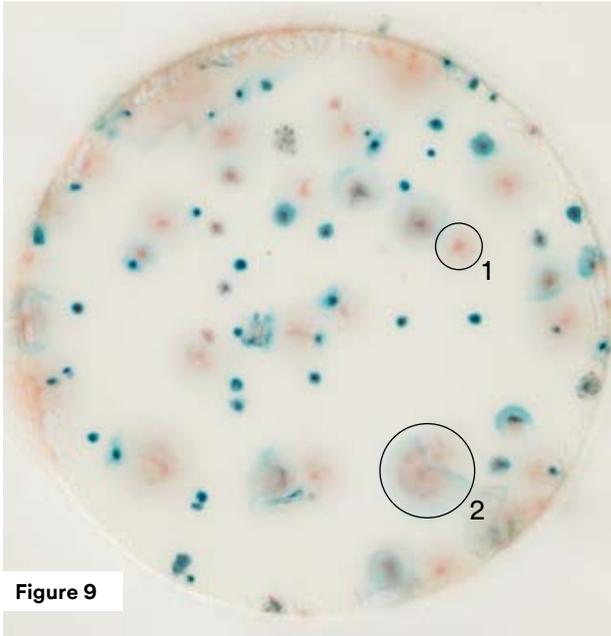


Figure 9

**Aerobic bacteria count = 80**

Colonies may spread, creating a halo. These colonies should be counted by counting each foci or point in a spread zone. A single colony can be seen in Circle 1, two colonies are present in Circle 2.

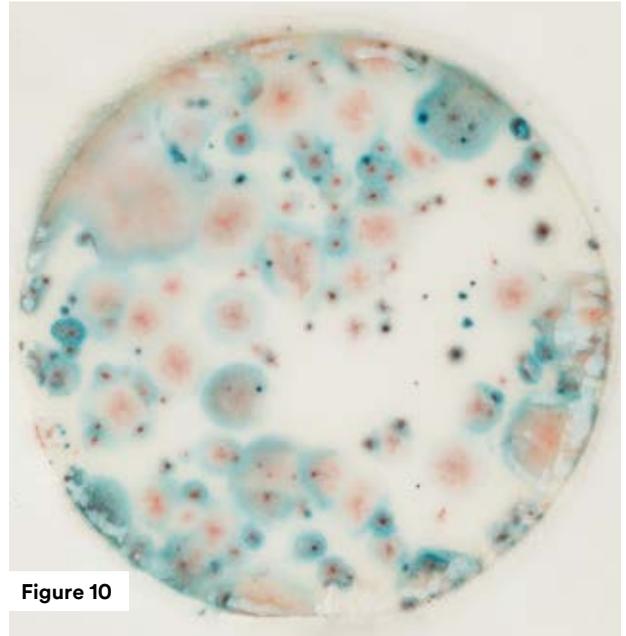


Figure 10

**Excessive spreader growth**

If the growth of spreading colonies exceeds greater than 25% of the area of the plate an estimate can be made or read the next dilution.

## Enzymatic Reaction

Food samples may occasionally show interference on the 3M™ Petrifilm™ Rapid Aerobic Count Plates, for example: (a) A uniform light blue background color (often seen from the organisms used in cultured products) should not be counted as TNTC; (b) Intense, pinpoint blue specs (often seen with spices or granulated products) should not be counted as colonies.

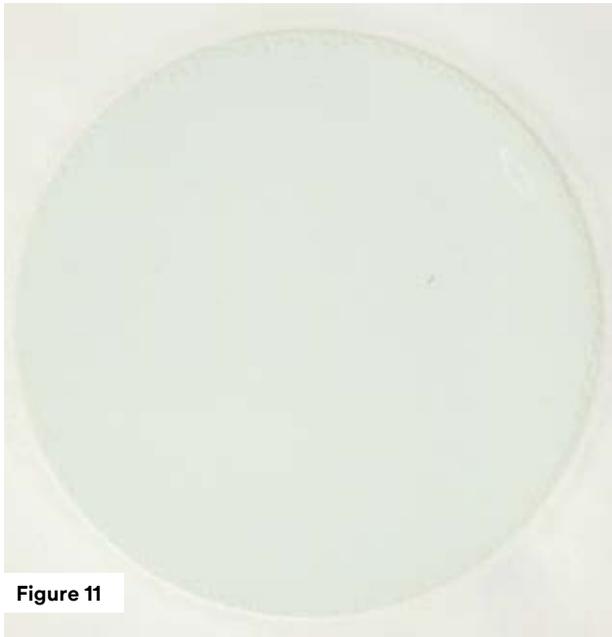


Figure 11

**Aerobic bacteria count = 0**

No enzymatic reaction present.

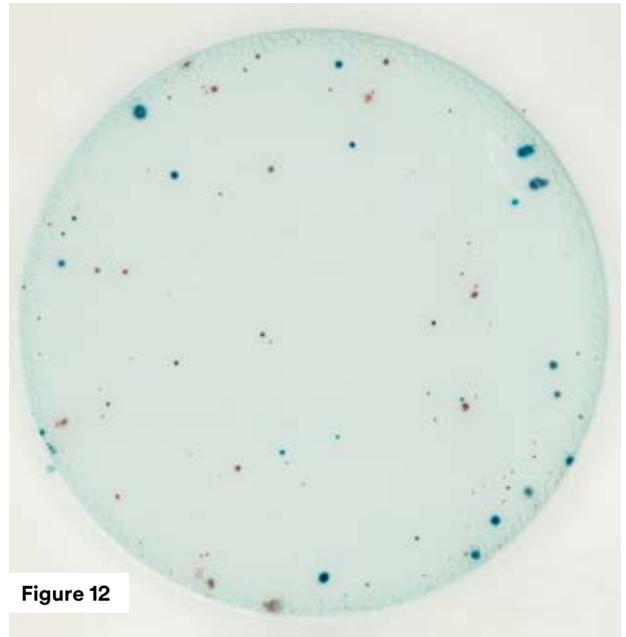


Figure 12

**Aerobic bacteria count = 110**

A uniform blue background with countable colonies.

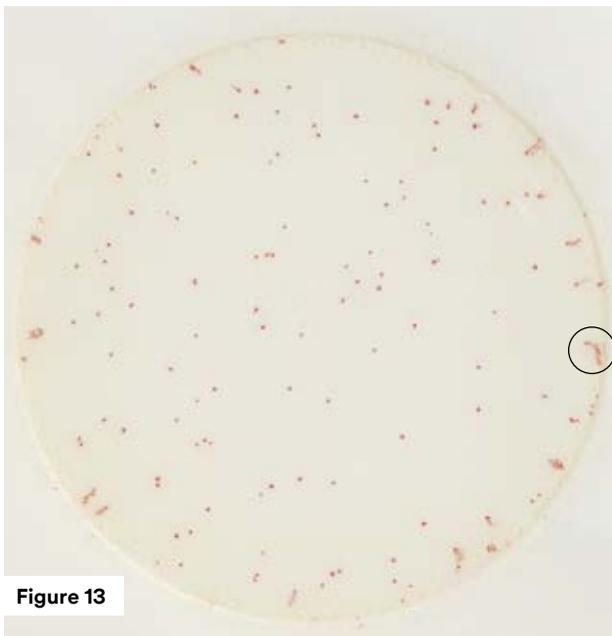


Figure 13

**Aerobic bacteria count = 136**

Colonies along the edges of the plate may appear in lines or streaks. These should be counted as a single colony.

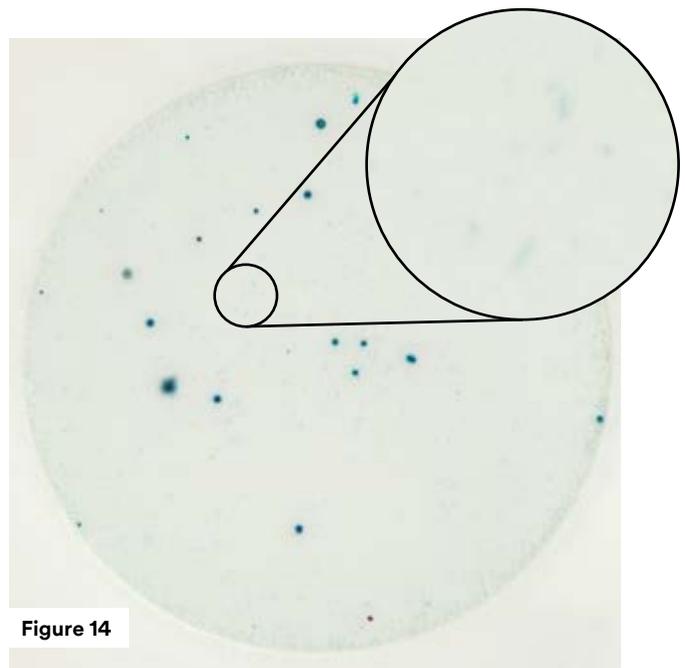
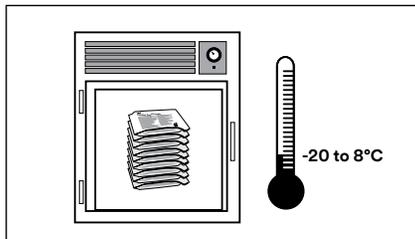


Figure 14

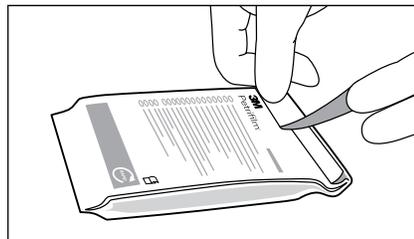
Food particles may produce blue specs (circled) and should not be counted as colonies.

# Reminders For Use

## Storage

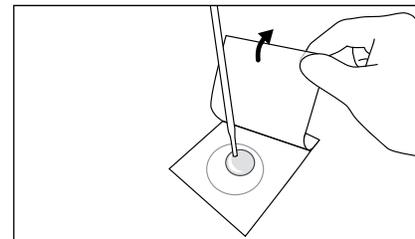


**1** Store the unopened 3M Petrifilm Rapid Aerobic Count Plate pouches at frozen or refrigerated temperature equal to -20 to 8°C (-4 to 46°F). Use before expiration date on package. It is best to allow pouches to reach room temperature before opening.

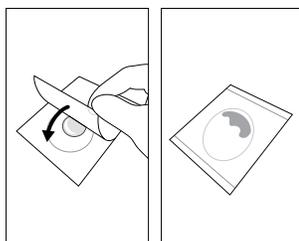


**2** Seal by folding the end of the pouch over and applying adhesive tape. To prevent exposure to moisture, do not refrigerate opened pouches. Store resealed pouches in a cool dry place (20–25°C / <60% RH) for no longer than four weeks.

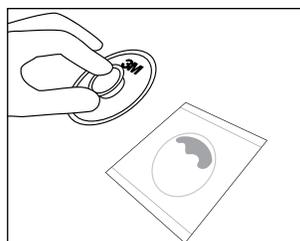
## Inoculation



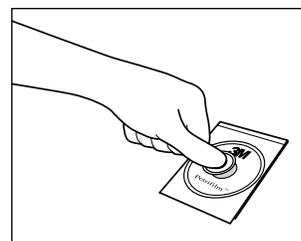
**3** Place the 3M Petrifilm Rapid Aerobic Count Plate on level surface. Lift the top film. With 3M™ Electronic Pipettor or equivalent held **perpendicular** to plate, place 1mL of sample or diluted sample onto center of bottom film.



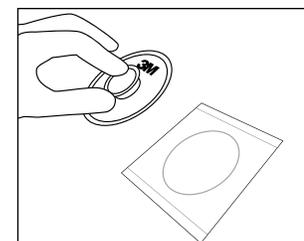
**4** Roll top film down onto sample **gently** to prevent pushing sample off film and to avoid entrapping air bubbles. **Do not** let top film drop.



**5** Place the 3M™ Petrifilm™ Flat Spreader (6425) or other flat spreader on the center of the 3M Petrifilm Rapid Aerobic Count Plate.

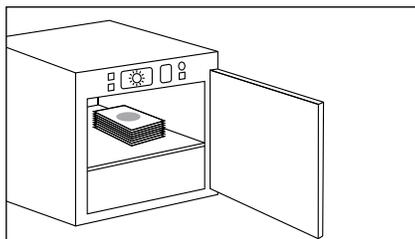


**6** Gently apply pressure on spreader to distribute inoculum over circular area. Do not twist or slide the spreader.



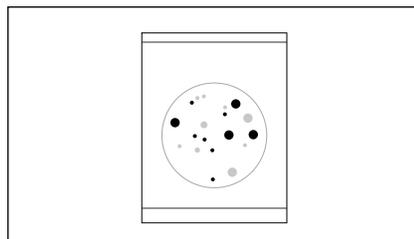
**7** Lift spreader. Wait a minimum of one minute for gel to solidify.

## Incubation



**8** Incubate plates with clear sides up in stacks up to 40. When following Standard Methods for the Examination of Dairy Products, plates should be incubated in stacks up to 20. It may be necessary to humidify incubator to minimize moisture loss. **Please refer to the product instructions for third party validated methods.**

## Interpretation



**9** 3M Petrifilm Rapid Aerobic Count Plate can be counted with the 3M™ Petrifilm™ Plate Reader, on a standard colony counter or other magnified source.

## Use Appropriate Sterile Diluents

Butterfield's phosphate buffer, buffered peptone water, 0.1% peptone water, peptone salt diluent, saline solution (0.85–0.90%), bisulphite-free letheen broth or distilled water.

**Do not use diluents containing citrate, bisulphite or thiosulfate with 3M Petrifilm Rapid Aerobic Count Plates; they can inhibit growth.**

If citrate buffer is indicated in the standard procedure, substitute with one of the buffers listed above, warmed to 40–45°C.

If needed, adjust the pH of the sample suspension to a pH greater than pH 5.

3M Food Safety offers a full line of products to accomplish a variety of your microbial testing needs. For more product information, visit us at [3M.com/foodsafety/Petrifilm](http://3M.com/foodsafety/Petrifilm) or call 1-800-328-6553.



3M Food Safety  
3M Center, Building 275-5W-05  
St. Paul, MN 55144-1000 USA

1-800-328-6553  
[3M.com/foodsafety](http://3M.com/foodsafety)

3M Canada  
Post Office Box 5757  
London, Ontario N6A 4T1  
Canada

1-800-364-3577

**User's Responsibilities:** 3M Petrifilm Plate performance has not been evaluated with all combinations of microbial flora, incubation conditions and food matrices. It is the user's responsibility to determine that any test methods and results meet the user's requirements. Should re-printing of this Interpretation Guide be necessary, user's print settings may impact picture and color quality.

For detailed CAUTIONS, DISCLAIMER OF WARRANTIES/LIMITED REMEDY and LIMITATION OF 3M LIABILITY, STORAGE AND DISPOSAL information and INSTRUCTIONS FOR USE, see Product's package insert.

3M and Petrifilm are trademarks of 3M. Used under license in Canada. Please recycle. Printed in USA. © 3M 2017. All rights reserved. 70-2011-5068-0 (Rev-1017)