



# Petrifilm™

## Aerobic Count Plate

This guide familiarizes you with results on 3M™ Petrifilm™ Aerobic Count Plates. For more information, contact the official 3M Microbiology Products representative nearest you.

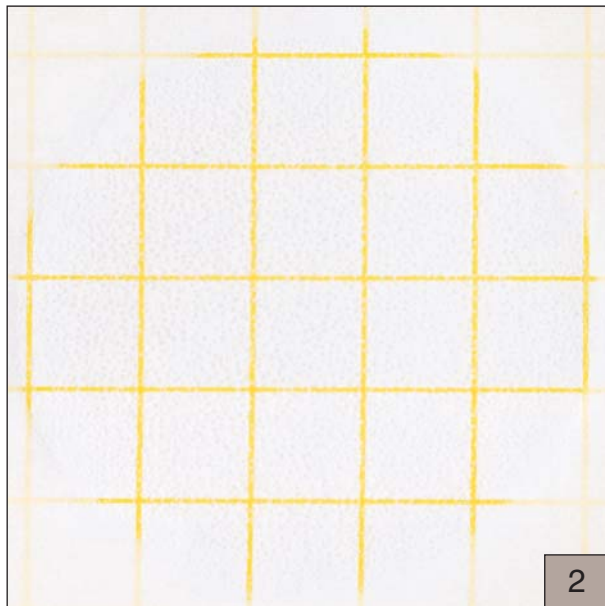
The Petrifilm Aerobic Count (AC) plate is a ready-made culture medium system that contains Standard Methods nutrients, a cold-water-soluble gelling agent, and an indicator that facilitates colony enumeration. Petrifilm AC plates are used for the enumeration of aerobic bacteria.



### **Aerobic Bacteria Count = 152**

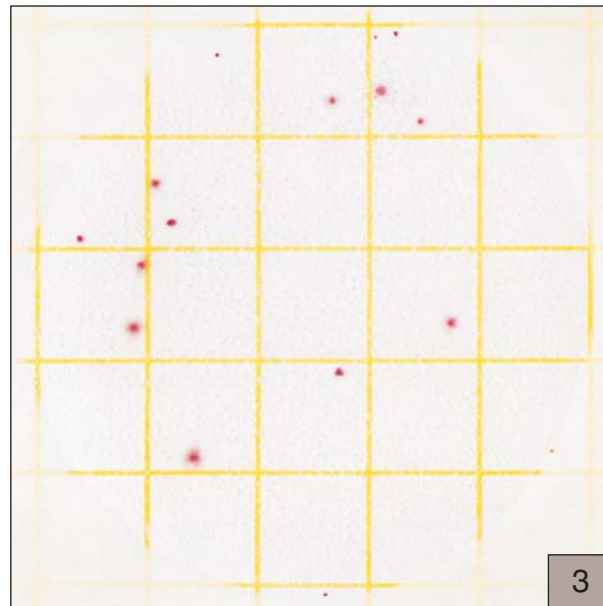
A red indicator dye in the plate colors the colonies. Count all red colonies regardless of their size or color intensity.

# 3M™ Petrifilm™ Aerobic Count Plate



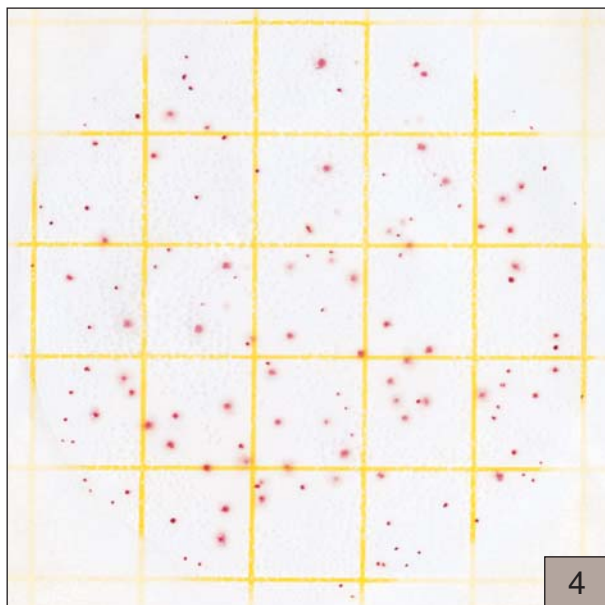
**Count = 0**

It is easy to interpret the Petrifilm AC plate. Figure 2 shows a Petrifilm AC plate without colonies.



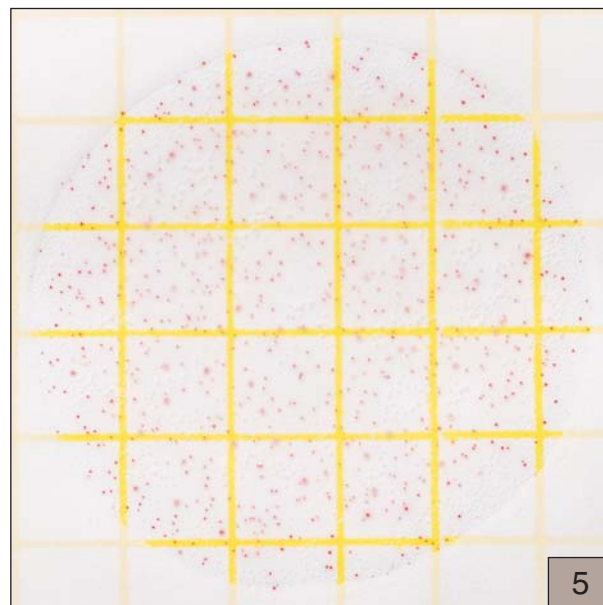
**Count = 16**

Figure 3 shows a Petrifilm AC plate with a few bacterial colonies.



**Count = 143**

The preferable counting range on a Petrifilm AC plate is 25–250 colonies. See figure 4.

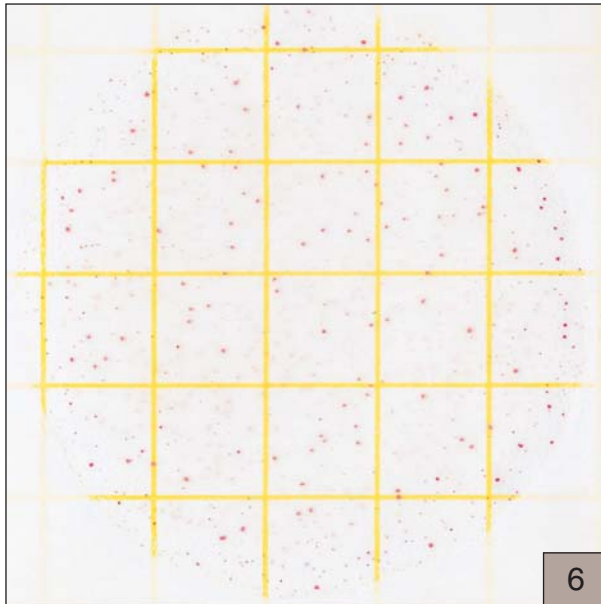


**Estimated Count = 560**

When colonies number more than 250, as in figure 5, estimate the count. Determine the average number of colonies in one square (1 cm<sup>2</sup>) and multiply it by 20 to obtain the total count per plate. The inoculated area on a Petrifilm AC plate is approximately 20 cm<sup>2</sup>.

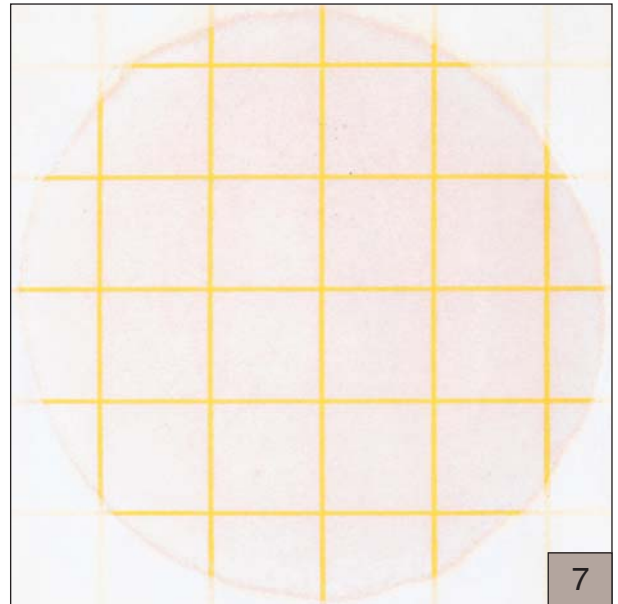
# TNTC (Too Numerous to Count)

To obtain a more accurate count, dilute the sample further



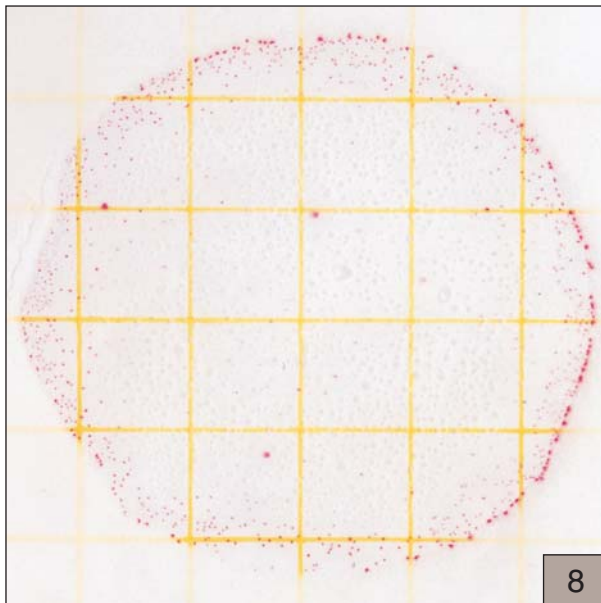
**Count = TNTC** (Estimated count =  $10^3$ )

Figure 6 shows a Petrifilm AC plate with colonies that are too numerous to count (TNTC).



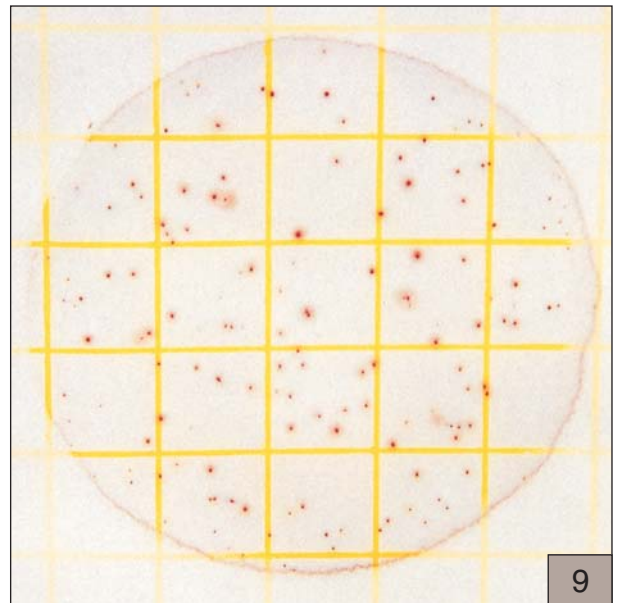
**Count = TNTC** (Estimated count =  $10^5$ )

With very high counts, the entire growth area may turn pink, as shown in figure 7. You might observe individual colonies only at the edge of the growth area. Record this as a TNTC result.



**Count = TNTC** (Estimated count =  $10^3$ )

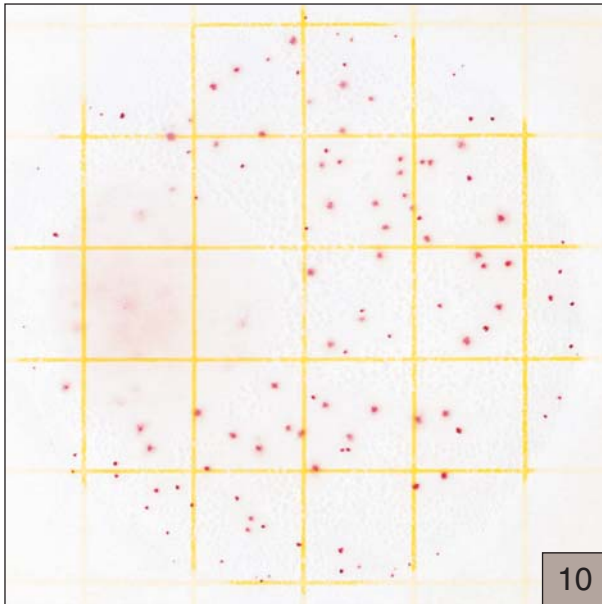
Occasionally, distribution of colonies appears uneven, as shown in figure 8. This is also an indication of a TNTC result.



**Count = TNTC** (Estimated count =  $10^7$ )

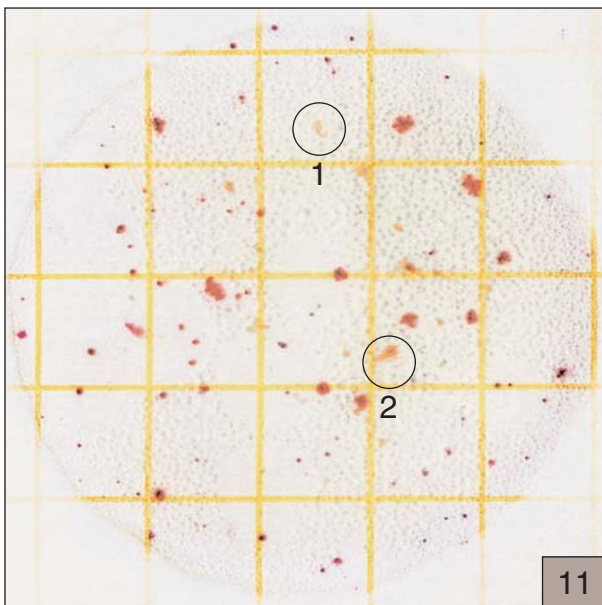
The colonies on the Petrifilm AC plate in figure 9 appear countable at first glance. However, when you look closely at the edge of the growth area, you can see a high concentration of colonies. Record this as a TNTC result.

# Gel Liquefaction and Food Particles



**Estimated Count = 160**

A few species of bacteria liquify the gel in the Petrifilm AC plate, as shown in figure 10. When this occurs, determine the average count in a few unaffected squares and then multiply it by 20 to obtain the estimated count. Do not count red spots within the liquified area.



**Count = 83**

Because colonies on Petrifilm AC plates are red, you can distinguish them from opaque, irregularly shaped food particles (see circles 1 and 2).

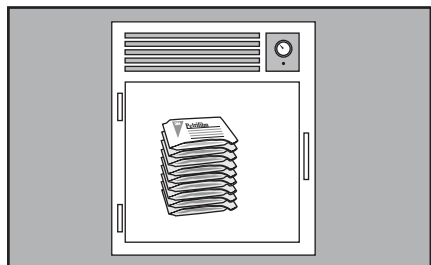


# 3M Petrifilm™ Aerobic Count Plates

## Reminders for Use

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

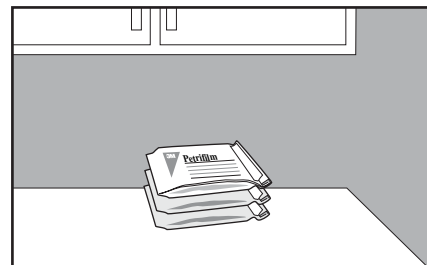
### Storage



- 1** **Store** unopened packages at  $\leq 8^{\circ}\text{C}$  ( $\leq 46^{\circ}\text{F}$ ). Use before expiration date on package. In areas of high humidity where condensate may be an issue, it is best to allow packages to reach room temperature before opening.

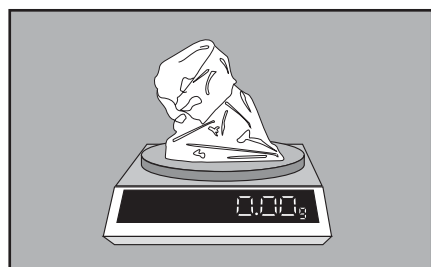


- 2** To seal opened package, fold end over and tape shut.

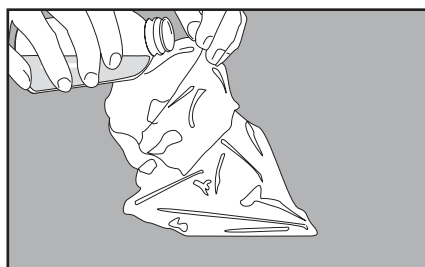


- 3** Keep resealed packages at  $\leq 25^{\circ}\text{C}$  ( $\leq 77^{\circ}\text{F}$ ) and  $\leq 50\%\text{RH}$ . **Do not refrigerate opened packages.** Use Petrifilm plates within one month after opening.

### Sample Preparation

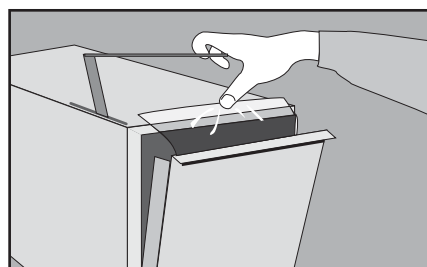


- 4** Prepare a 1:10 or greater dilution of food sample. Weigh or pipette food product into an appropriate container such as a stomacher bag, dilution bottle, Whirl-Pak® bag, or other sterile container.



- 5** Add appropriate quantity of one of the following sterile diluents: Butterfield's phosphate buffer (IDF phosphate buffer, 0.0425 g/L of  $\text{KH}_2\text{PO}_4$  adjusted to pH 7.2), 0.1% peptone water, peptone salt diluent (ISO method 6887), buffered peptone water (ISO method 6579), saline solution (0.85 - 0.90%), bisulfate-free letheen broth, or distilled water.

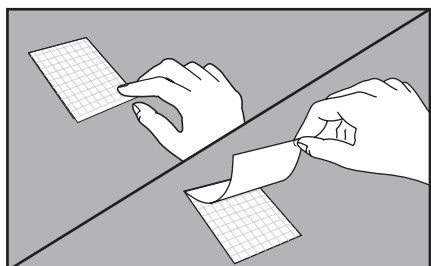
Do not use buffers containing citrate, bisulfite, or thiosulfate; they can inhibit growth.



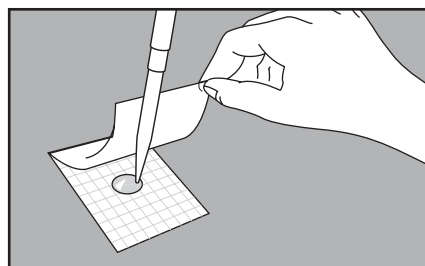
- 6** Blend or homogenize sample per current procedure.

Adjust pH of the diluted sample between 6.6 and 7.2 :  
• for acid products, use 1N NaOH,  
• for alkaline products, use 1N HCl.

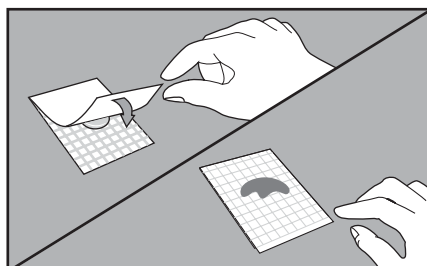
### Inoculation



- 7** Place Petrifilm plate on **level** surface. Lift top film.

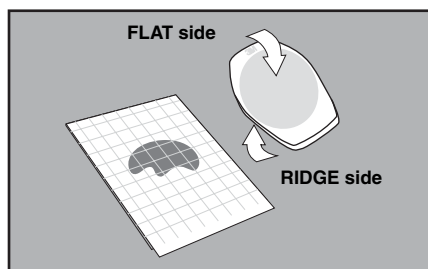


- 8** With pipette **perpendicular** to Petrifilm plate, place 1 mL of sample onto center of bottom film.

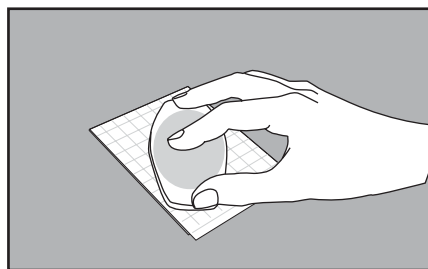


- 9** Release top film; allow it to **drop**. Do **not** roll top film down.

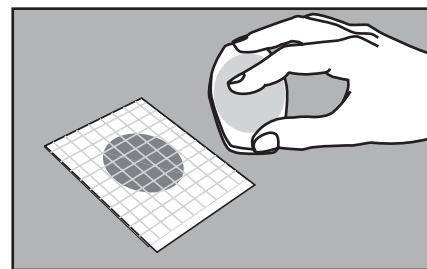
Continued - over



**10** With **ridge** side down, place spreader on top film over inoculum.

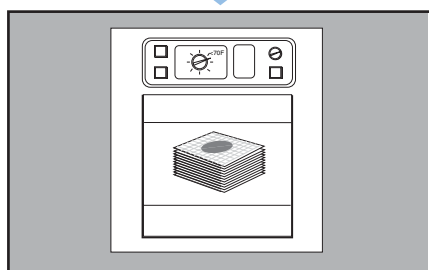


**11** **Gently** apply pressure on spreader to distribute inoculum over circular area. Do not twist or slide the spreader.



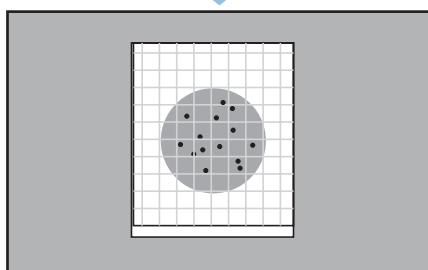
**12** Lift spreader. Wait at least one minute for gel to form.

## Incubation

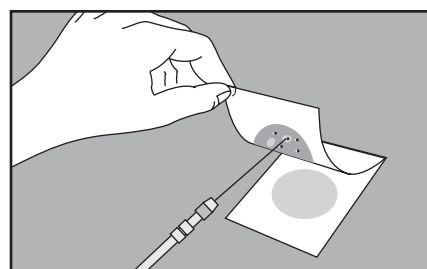


**13** Incubate plates with clear side up in stacks of no more than 20. It may be necessary to humidify incubator to minimize moisture loss.

## Interpretation



**14** Petrifilm plates can be counted on a standard colony counter or other magnified light source. Refer to the *Interpretation Guide* section when reading results.



**15** Colonies may be isolated for further identification. Lift top film and pick the colony from the gel.

Incubation time and temperature varies by method. Most common approved methods:

- **AOAC® Official Method 986.33 & 989.10**  
(milk and dairy products)  
Incubate 48h ± 3h at 32°C ± 1°C
- **AOAC® Official Method 990.12**  
Incubate 48h ± 3h at 35°C ± 1°C
- **AFNOR Validated Method**  
**3M 01/1-09/89**  
Incubate 72h ± 3h at 30°C ± 1°C

## Additional Comments

- Questions? U.S., call **1-800-328-6553**, Canada, call **1-800-563-2921** for technical service.
- To order Petrifilm plates in the U.S., call **1-800-328-1671**.
- Latin America / Africa regions, call **5255-5270-0454**
- Asia Pacific region, call **65-64548611**



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