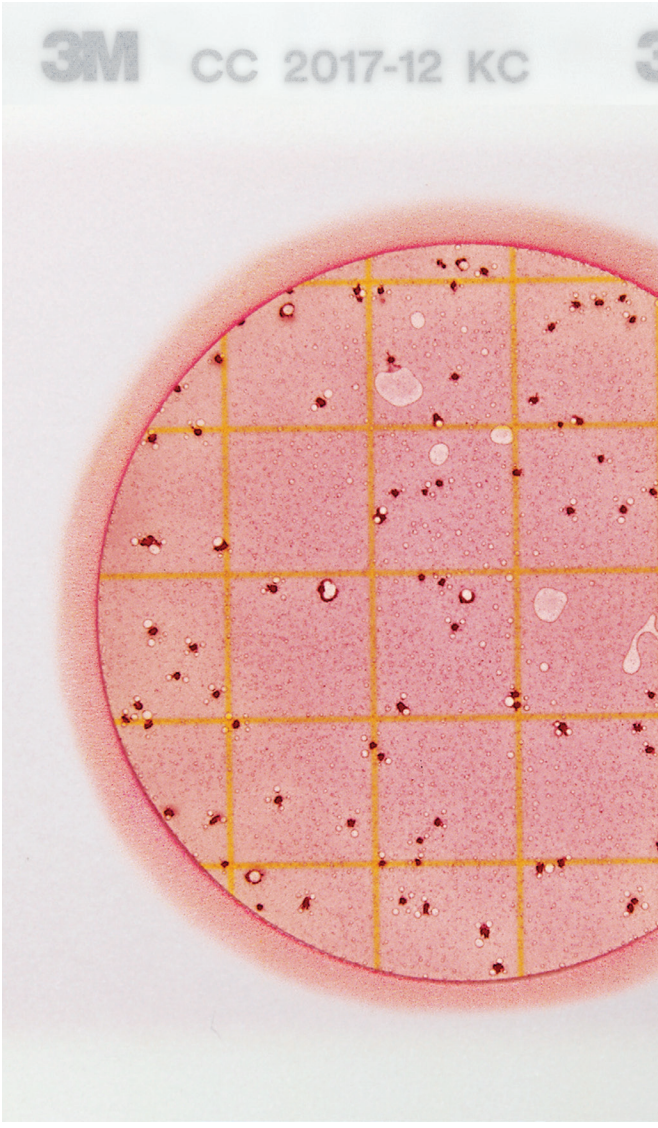
3M Petrifilm™

Interpretation guide

The 3M™ 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.



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Coliform Count Plate

Coliform definitions by method

The United States Food and Drug Administration (FDA) Bacteriological Analytical Manual (BAM) define coliforms as Gram negative rods, which produce acid and gas from lactose fermentation. Coliform colonies growing on the 3M™ Petrifilm™ Coliform Count Plate produce acid, which causes the pH indicator to deepen the gel color, and gas trapped around red colonies. In this interpretation guide, the number of coliforms per the FDA BAM definition is the number of red colonies with gas.

ISO defines coliforms by their ability to grow in method-specific, selective media. ISO method 4832:2006 enumerates typical coliform colonies on Violet Red Bile Lactose (VRBL) agar, with confirmation of atypical colonies. On the Petrifilm Coliform count plate, these coliforms are indicated by red colonies with or without gas production. ISO method 4831, enumerating coliforms by the most probable number (MPN) method, defines coliforms by their ability to grow and produce gas in the conditions described in the standard. On the Petrifilm Coliform count plate, these coliforms are indicated by red colonies with gas.

It is also possible to enumerate thermotolerant coliforms on the Petrifilm Coliform count plate. Typically thermotolerant coliforms can be selected with an elevated incubation temperature. One example of a method for enumeration of thermotolerant coliforms is described in NF V80 060. Reading the total of red colonies on a 3M Petrifilm Coliform Count Plate incubated at 44°C ± 1°C for 24h ± 2h yields results equivalent to enumeration with NF V08 060.

Please refer to the product instructions for additional information.

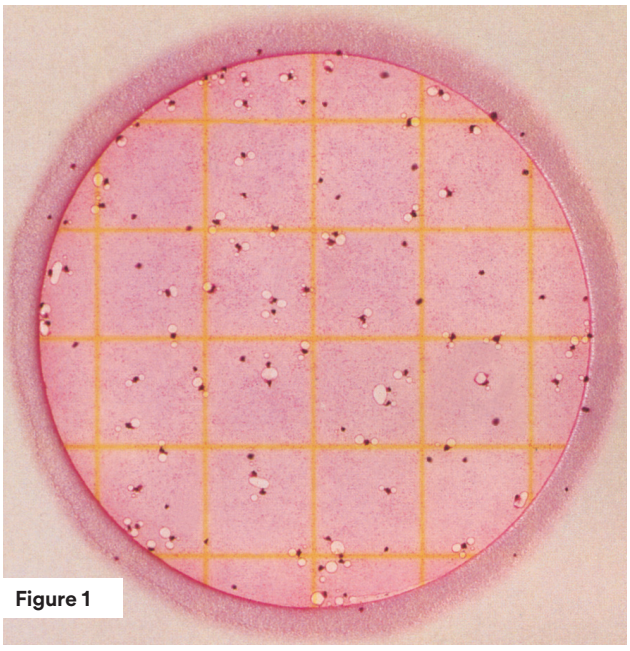


Figure 1

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.

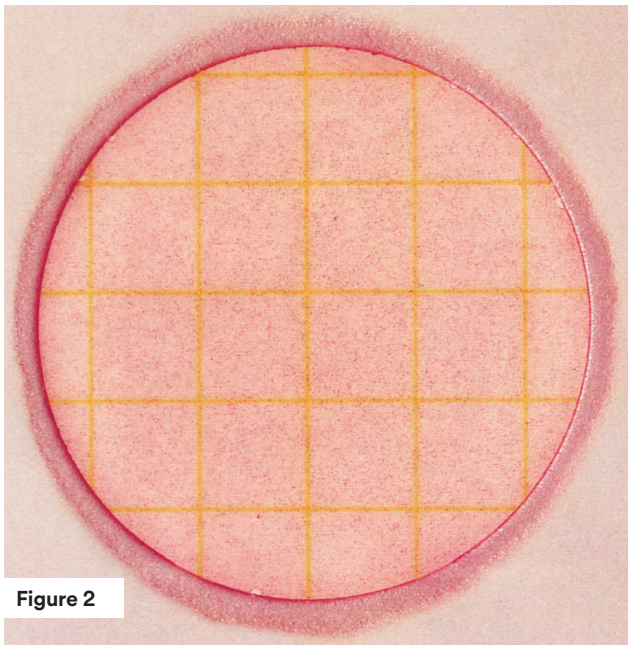


Figure 2

No growth = 0

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

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

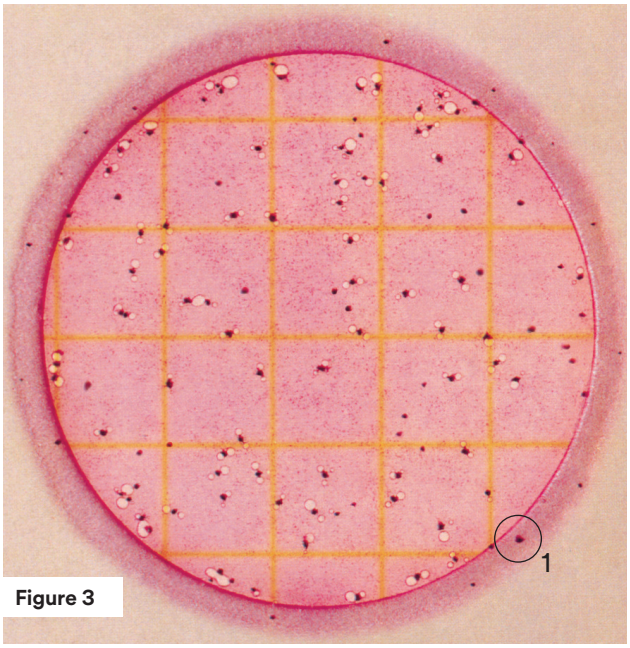


Figure 3

Total colonies with gas = 79
Total colonies = 109

The recommended counting limit on 3M™ 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).

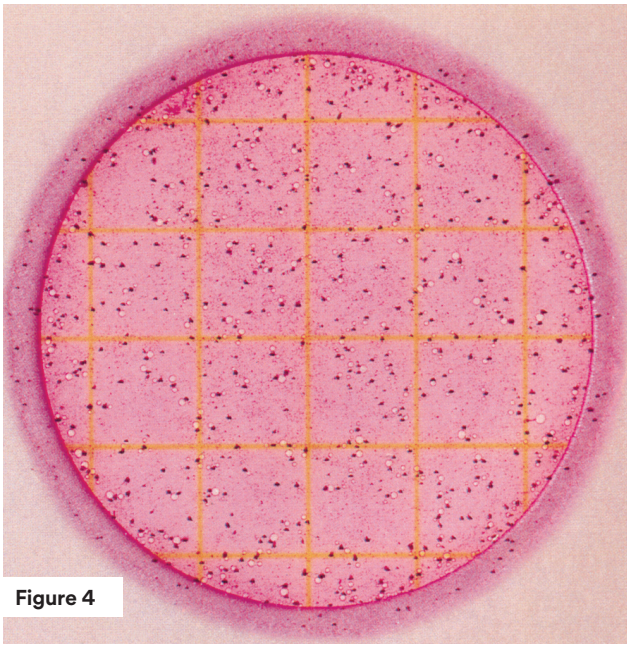


Figure 4

Estimated total coliform count = 220

The circular growth area is approximately 20cm^2. 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.

Further dilution of the sample is recommended for an accurate count.

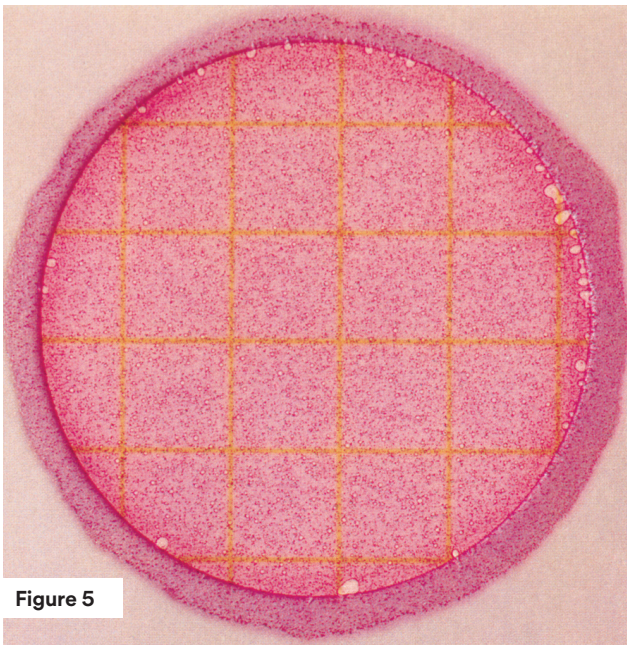


Figure 5

Total coliform count = TNTC

Petrifilm Coliform count plates with colonies that are TNTC have one or more of the following characteristics: many small colonies, many gas bubbles, and a deepening of the gel color.

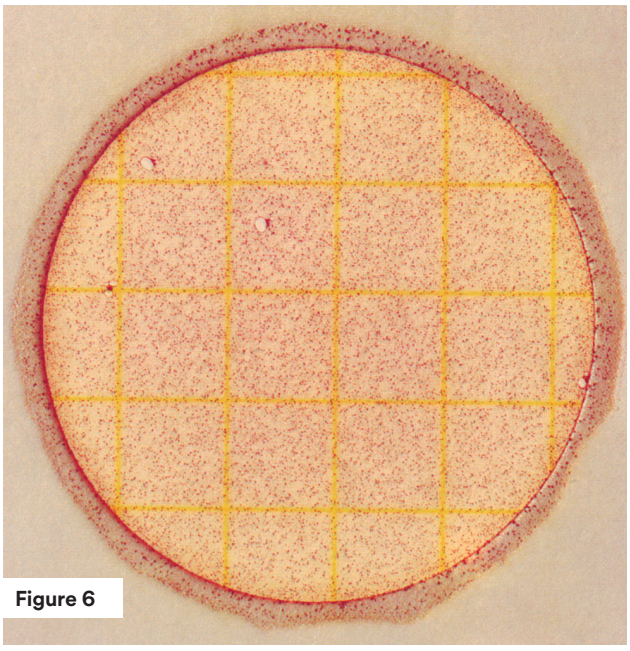


Figure 6

Actual count = 4

When high numbers of non-coliform organisms such as *Pseudomonas* are present on Petrifilm Coliform count plates, the gel may turn yellow. Further dilution of the sample is recommended.

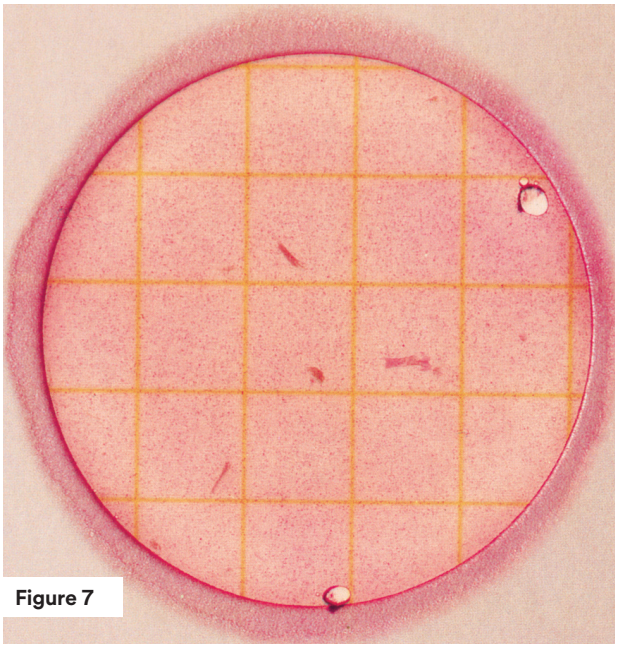


Figure 7

Total colonies with gas = 2
Total colonies = 2

Food particles are irregularly shaped and are not associated with gas bubbles.

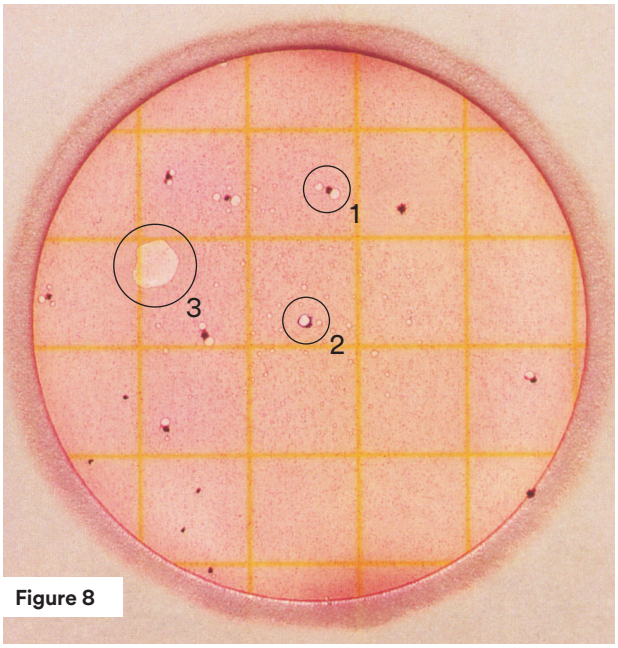


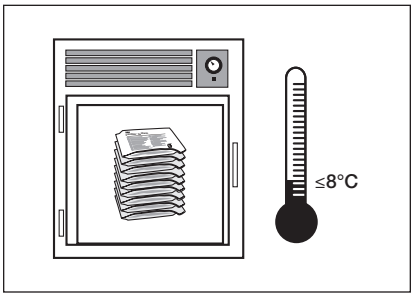
Figure 8

Total colonies with gas = 8
Total colonies = 15

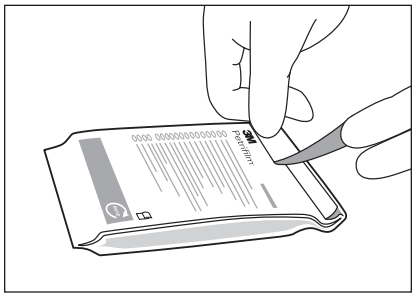
Bubble patterns may vary. Gas may disrupt the colony so that the colony "outlines" the bubble (see Circles 1 and 2). Artifact bubbles may result from improper inoculation or from trapped air within the sample. They are irregularly shaped and are not associated with a colony (see Circle 3).

Reminders for use

Storage

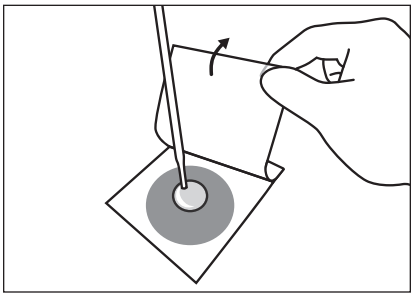


1 **Store** unopened pouches of plates at ≤8°C (≤46°F). Use before expiration date on package. In areas of high humidity where condensate may be an issue, it is best to allow pouches to reach room temperature before opening.

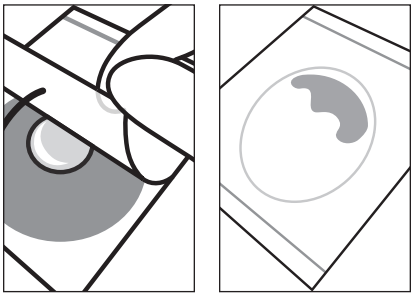


2 To seal opened pouch, fold end over and apply adhesive tape.

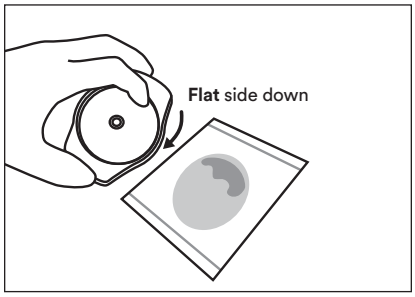
Inoculation



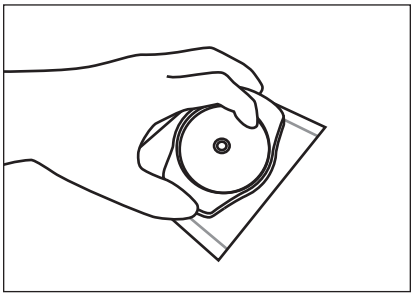
3 Place 3M™ Petrifilm™ Coliform Count Plate on **level** surface. Lift top film. With 3M™ Electronic Pipettor or equivalent held **perpendicular** to plate, place 1mL of sample or diluted sample onto center of bottom film.



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.

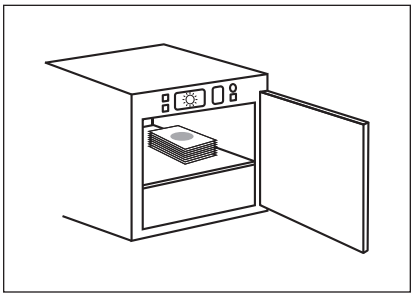


5 With **flat** side down, place 3M™ Petrifilm™ Spreader on top film over inoculum.



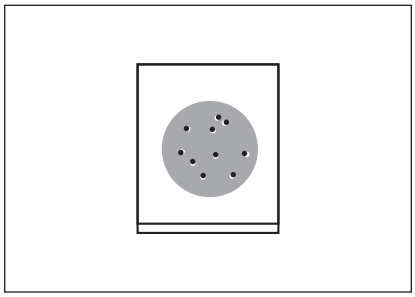
6 **Gently** apply pressure on Petrifilm spreader to distribute inoculum over circular area before gel is formed. **Do not** twist or slide the spreader. Lift Petrifilm spreader. Wait a minimum of 1 minute for gel to solidify.

Incubation



7 Incubate plates with clear side up in stacks of up to 20. It may be necessary to humidify incubator to minimize moisture loss. **See product instructions for third party validated methods.**

Interpretation



8 Petrifilm Coliform count plates can be counted using the 3M™ Petrifilm Plate Reader, on a standard colony counter or other illuminated magnifier. Colonies may be isolated for further identification. Lift top film and pick the colony from the gel.

Use appropriate sterile diluents

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

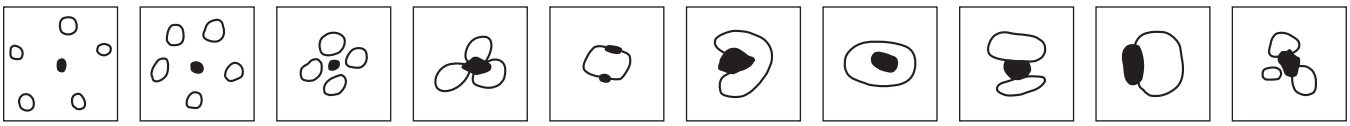
For optimal growth and recovery of the microorganisms, adjust the pH of the sample suspension to 6.6-7.2.

Do not use diluents containing citrate, bisulfite or thiosulfate with the Petrifilm Coliform 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.

Bubbles

The illustrations below show examples of various bubble patterns associated with gas producing colonies. All should be enumerated.



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**

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 colour quality.

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