This guide familiarizes you with results on 3M™ Petrifilm™ Coliform Count Plates. For more information, contact the official 3M Food Safety Products representative nearest you.
3M™ Petrifilm™ Coliform Count (CC) Plates contain Violet Red Bile (VRB) nutrients, a cold-water-soluble gelling agent, and a tetrazolium indicator that facilitates colony enumeration. The top film traps gas produced by the lactose fermenting coliforms.

U.S. Food and Drug Administration Bacteriological Analytical Manual (FDA-BAM) define coliforms as Gram-negative rods which produce acid and gas from lactose during metabolic fermentation. Coliform colonies growing on the 3M Petrifilm CC Plate produce acid which causes the pH indicator to deepen the gel color. Gas trapped around red coliform colonies indicates confirmed coliforms.

**Interpretation Guide:**

- **3M™ Petrifilm™ Coliform Count Plate**

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

**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.
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.

Figure 2

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

Figure 3

Total coliform count = 79
The recommended counting limit on 3M Petrifilm Coliform Count Plates is 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

TNTC
3M 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 5

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Actual count = 4
When high numbers of non-coliform organisms such as *Pseudomonas* are present on 3M Petrifilm Coliform Count Plates, the gel may turn yellow.

Total coliform count = 2
Food particles are irregularly shaped and are not associated with gas bubbles.

Total coliform count = 8
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).

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Reminders for Use: 3M™ Petrifilm™ Coliform Count Plate

**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 tape shut.

3. To prevent exposure to moisture, do not refrigerate opened pouches. Store resealed pouches in a cool, dry place. Use plates within one month after opening. Avoid exposure of plates to temperatures >25°C (>77°F) and/or relative humidity >50%.

**Sample Preparation**

4. Prepare a dilution of food product.* 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, KH₂PO₄ 0.0425 g/L, adjust to pH 7.2), 0.1% peptone water, peptone salt diluent (ISO method 6887-1), buffered peptone water (ISO 6887-1), saline solution (0.85–0.90%), bisulfite-free letheen broth or distilled water. *See Petrifilm Use with Dairy and Juice Products sheet for recommended dilutions.

6. Blend or homogenize sample per current procedure. For optimal growth and recovery of microorganisms, adjust the pH of the sample suspension to 6.6–7.2:
   - For acidic products, adjust the pH with 1N NaOH
   - For alkaline products, adjust the pH with 1N HCl

**Inoculation**

7. Place 3M Petrifilm Coliform Count Plate on level surface. Lift top film.

8. With 3M™ Electronic Pipettor or equivalent held perpendicular to plate, place 1mL of sample or diluted sample onto center of bottom film.

9. 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.

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

11. Gently apply pressure on 3M Petrifilm Spreader to distribute inoculum over circular area before gel is formed. Do not twist or slide the spreader.

12. Lift 3M Petrifilm Spreader. Wait a minimum of 1 minute for gel to solidify.
## Incubation Time and Temperature Vary by Method

### Most common approved methods:

**Total coliforms**
- AOAC® Official Method 986.33 and 989.10 (milk, raw milk, other dairy products): Incubate 24±2 hours at 32°C±1°C
- AOAC® Official Method 991.14 (foods): Incubate 24±2 hours at 35°C±1°C
- AFNOR validated methods 3M 01/2-09/89A and B (all food types except shellfish): Incubate 24±2 hours at 30°C±1°C

**Thermotolerant (fecal) coliforms**
- AFNOR validated method 3M 01/2-09/89C (all food types): Incubate 24±2 hours at 44°C±1°C

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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.