The Petrifilm™ Yeast and Mold (YM) Count Plate is a ready-made culture medium that contains a cold-water soluble gelling agent, nutrients and an indicator dye to provide contrast and facilitate counting.

Total Count = 20  
Yeast Count = 16  
Mold Count = 4

This Petrifilm YM Plate contains both yeast colonies and mold colonies.
Yeast and Mold Count = 0

Figure 2 shows a Petrifilm YM Plate without yeast or molds.

Estimated Mold Count ~ 64

The mold colonies in figure 5 are beginning to crowd and overlap each other on the plate. Count each colony margin or focus. The plate can be divided into sections to assist in counting. In this example, approximately 1/4 of the plate was counted, then the number of colonies counted was multiplied by 4 to get the estimated count on the plate. The section shown has 16 molds.

Estimated Yeast Count ~ TNTC (actual count >10⁴)

The Petrifilm YM Plate in figure 4 contains yeast colonies too numerous to count (TNTC). The small, blue colonies at the edge of the plate (highlighted in the box) are present throughout the entire plate although less visible.

Estimated Total Count ~ 500
Estimated Yeast Count ~ 480
Mold Count = 21

When colonies number more than 150, estimate the count. Determine the average number of colonies in one square (1 cm²) and multiply it by 30 to obtain the total count per plate. The inoculated area is approximately 30 cm². Yeast colonies may range in color from tan (as in this example) to pink to blue-green.
Plates in figures 6a and 6b are the same sample. Figure 6a is a 1:10 dilution and has colonies that are small, faint and numerous, making it difficult to count. Figure 6b is a 1:100 dilution and shows how diluting product to obtain a colony count of less than 150 colonies makes counting easier. As with most growth media, in a highly competitive environment (such as figure 6a), typical colony growth will be inhibited. For heavily contaminated samples such as these, higher dilutions are recommended for a more accurate count and more typical colony growth (as in figure 6b).

Petrifilm YM Plates utilize a phosphatase indicator dye. Therefore, some food products that contain phosphatase may cause a blue color reaction to occur on the Petrifilm YM Plate. Two types of color reactions are sometimes seen: a uniform blue background color or intense, blue spots. Figure 7 shows uniform blue background color and figure 8 shows intense blue spots which are often seen with spices or granulated products. Figure 8 also shows food particles that yielded phosphatase.

To reduce a phosphatase reaction, follow one or more of these techniques:

1. **Dilute Sample**: Further sample dilution will minimize blue background color or reduce the number of intense blue spots.

2. **Sample Preparation**: Mix sample and let settle for 3–5 minutes before plating. Draw sample from center portion of sample container or use filtered homogenizer bag to avoid plating large particles.

3. **Check and Note**: Observe plates within 24-36 hours of incubation and make note of any color change to aid in final interpretation.
Prepare dilution of food product.
Weigh or pipette food product into a sterile container such as a homogenizer bag or dilution bottle.

Blend or homogenize sample per current procedure.

Store unopened Petrifilm plate pouches at ≤8°C (≤46°F). Use before expiration date on pouch. Just prior to use, allow frozen plates to reach room temperature before opening. For further information, refer to package insert.

To seal opened pouch, fold end over and tape shut.

To prevent exposure to moisture, do not refrigerate opened pouches. Store resealed pouches in a cool, dry place for no longer than one month. Avoid exposing plates to temperature >25°C (>77°F) and/or relative humidity >50%.

Place Petrifilm plate on a level surface. Lift top film.

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

Drop the top film down onto the sample.
Incubation

13 Incubate plates with clear side up in stacks of up to 20 at 20-25˚ C for 3 and 5 days. (Because some molds may grow large quickly, it can be useful to read and count plates at 3 days as smaller colonies may be obscured by larger, overgrown molds at 5 days. If this happens, the 3 day count may be used; however, it should be reported as an estimated count.)

Interpretation

14 Petrifilm plates can be counted using a standard colony counter or other illuminated magnifier.

Methods List:
• United States
  * Yeast and Mold Counts in Foods: AOAC Official Method 997.02

• Canada
  * Environmental Sampling: Yeast and Mold Count Plates Method MFLP-41A
  * Food Products and Ingredients: Yeast and Mold Count Plates Method MFHPB-32

Additional Comments

• Questions? U.S., call 1-800-328-6553.
• To order Petrifilm plates in the U.S., call 1-800-328-1671.
• 3M Microbiology offers a full line of products to accomplish a variety of your microbial testing needs. For more product information, visit us at www.3M.com/microbiology.
• For all other regions, please see back page.
Macroscopic Differentiation

If it is necessary to differentiate yeast and mold colonies on Petrifilm Yeast and Mold Plates, look for one or more of the following typical characteristics mentioned below.

Yeast Count = 43
Figure 9 shows typical yeast colonies. Characteristics typical of yeast include:
• Colony is small
• Colony has defined edges
• Colony color can range from tan to blue-green
• Colony may appear raised
• Colony typically is uniform in color, no center focus (dark center)

Mold Count = 29
Figure 10 shows typical mold colonies. Characteristics typical of mold include:
• Colony grows large
• Colony has diffuse edges
• Colony color may vary as molds produce a variety of pigments (i.e., brown, beige, orange, blue-green)
• Colony appears flat
• Colony usually has a center focus (i.e., usually darker in color, may also be different color)

Microscopic Differentiation

Yeasts and molds are closely related and cannot always be distinguished from each other without microscopic examination.

Figure 11
To isolate colonies for further identification, lift the top film and pick from the colony within the gel using a loop or similar device.

Figure 12
Transfer the colony to a drop of sterile water on a microscope slide, cover with a coverslip, and view under a microscope.

Figure 13
Yeast typically appear oval and may show budding.

Figure 14
Mold typically appear as branching or thread-like filaments (mycelium).

Figure 15
Molds shown above are in various stages of germination.