

Petrifilm™

Yeast and Mold Count Plate

This guide familiarizes you with results on 3M™ Petrifilm™ Yeast and Mold Count Plates. For more information, contact the 3M Microbiology representative nearest you.

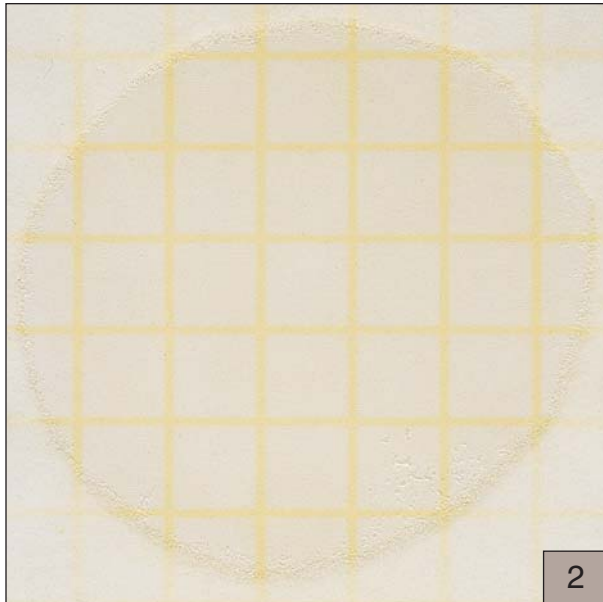
The Petrifilm™ Yeast and Mold (YM) Count Plate is a ready-made culture medium that contains a cold-water soluble gelling agent, nutrients and an indicator dye to provide contrast and facilitate counting.



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

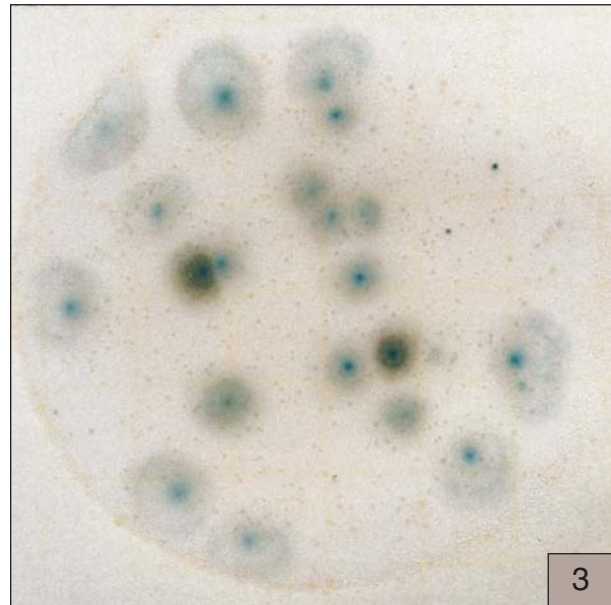
This Petrifilm YM Plate contains both yeast colonies and mold colonies.

3M™ Petrifilm™ Yeast and Mold Count Plate



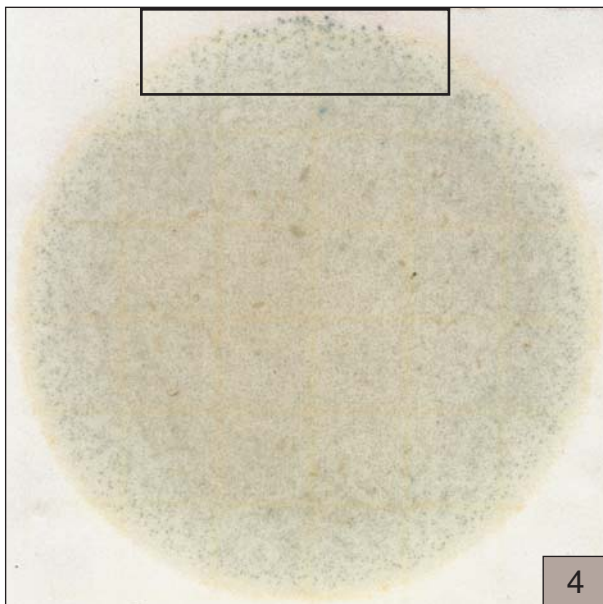
Yeast and Mold Count = 0

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



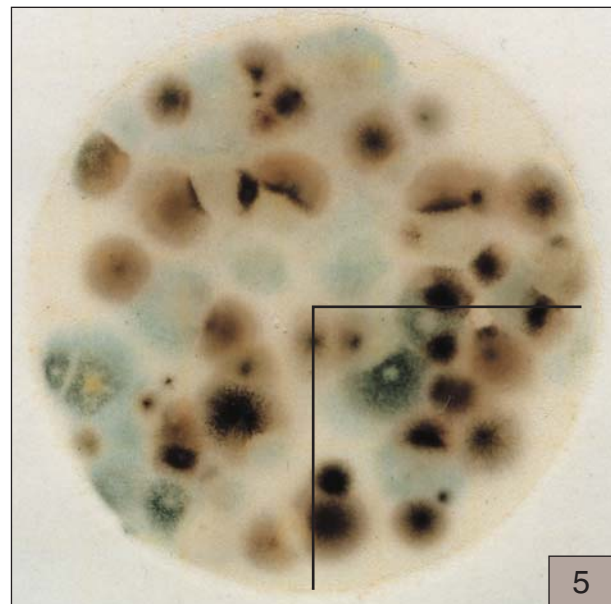
Estimated Total Count ~ 500 Estimated Yeast Count ~ 480 Mold Count = 21

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.



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.

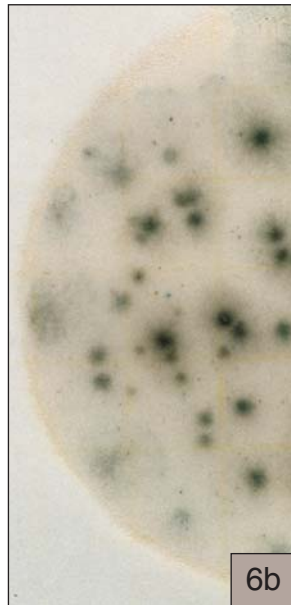


Estimated Mold Count ~ 64

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.



Mold Count ~ TNTC



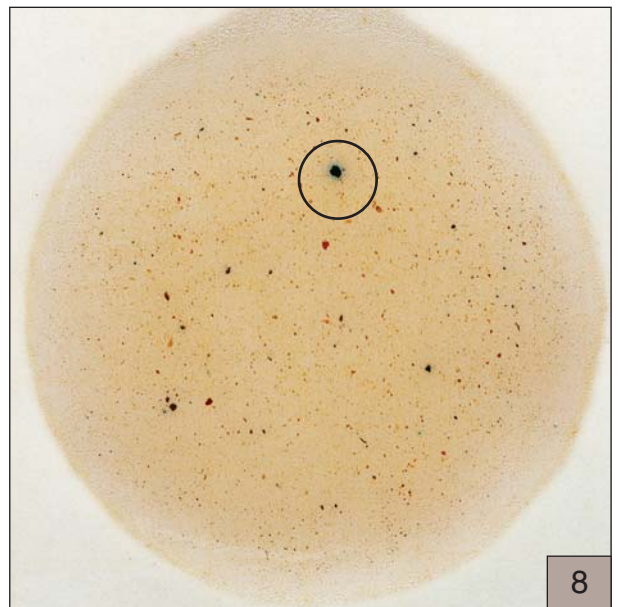
Mold Count = 64

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).

PHOSPHATASE REACTION



Yeast and Mold Count = 0



Yeast and Mold Count = 0

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:

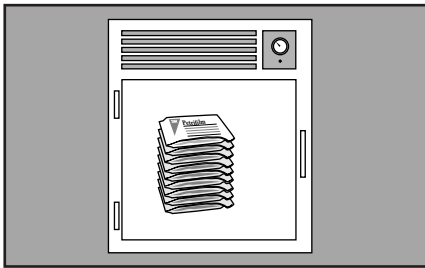
1. **Dilute Sample:** Further sample dilution will minimize blue background color or reduce the number of intense blue spots.
2. **Sample Preparation:** Mix sample and let settle for 3–5 minutes before plating. Draw sample from center portion of sample container or use filtered homogenizer bag to avoid 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.

3M Petrifilm™ Yeast & Mold Count Plates

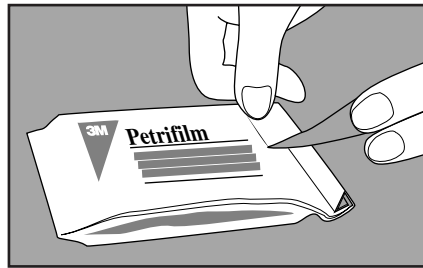
Reminders for Use

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

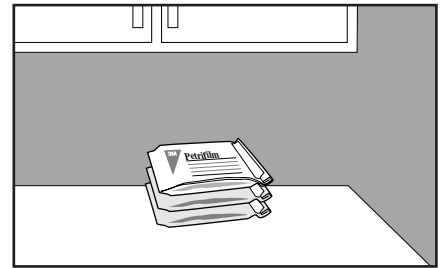
Storage



- 1 **Store** unopened Petrifilm plate pouches at $\leq 8^{\circ}\text{C}$ ($\leq 46^{\circ}\text{F}$). 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.

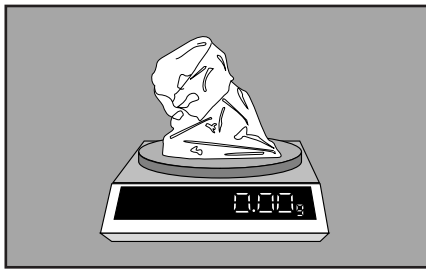


- 2 To seal opened pouch, fold end over and tape shut.

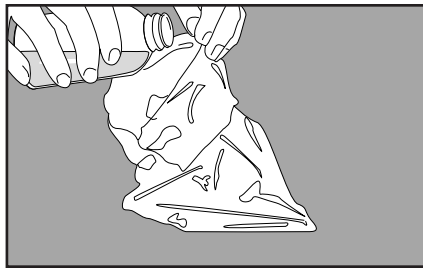


- 3 **To prevent exposure to moisture, do not refrigerate opened pouches.** Store resealed pouches in a cool, dry place for no longer than one month. Avoid exposing plates to temperature $> 25^{\circ}\text{C}$ ($> 77^{\circ}\text{F}$) and/or relative humidity $> 50\%$.

Sample Preparation

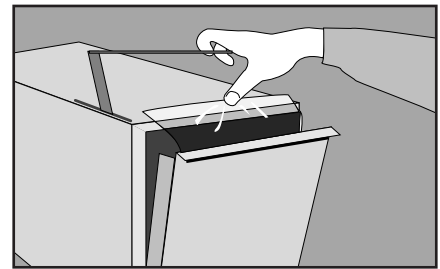


- 4 Prepare dilution of food product. Weigh or pipette food product into a sterile container such as a homogenizer bag or dilution bottle.



- 5 Add appropriate quantity of one of the following **sterile** diluents: Butterfield's phosphate buffer (IDF phosphate buffer, KH_2PO_4 @ 0.0425 g/L , adjust to pH 7.2), 0.1% peptone water, peptone salt diluent (ISO method 6887-1), saline solution (0.85–0.90%), bisulfite-free letheen broth or distilled water.

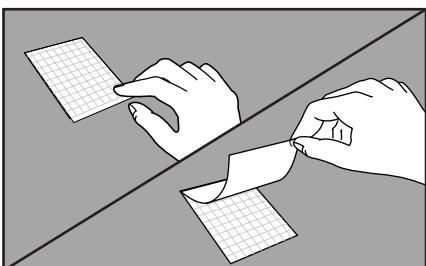
Do not use buffers containing citrate, bisulfite, or thiosulfate; they can inhibit growth. If citrate buffer is indicated in the standard procedure, substitute with one of the buffers listed above, warmed to $40\text{--}45^{\circ}\text{C}$.



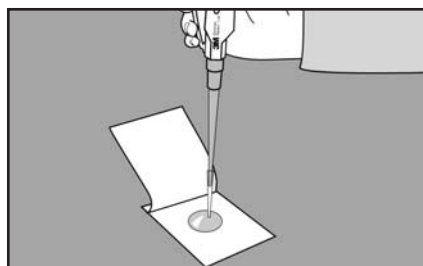
- 6 Blend or homogenize sample per current procedure.

Samples do not require pH adjustment, however a pH adjusted sample may be used.

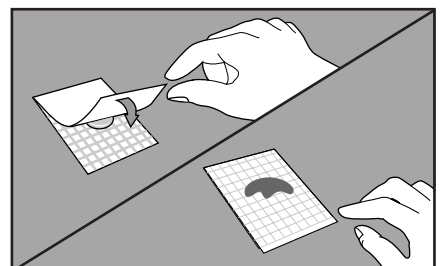
Inoculation



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

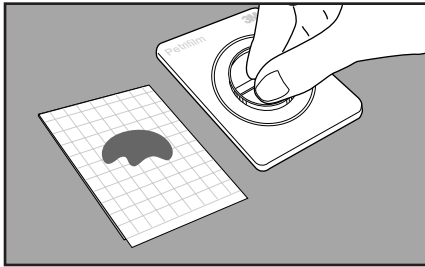


- 8 With 3M™ Electronic Pipettor or equivalent **perpendicular** to Petrifilm plate, place **1 mL** of sample or diluted sample onto center of bottom film.

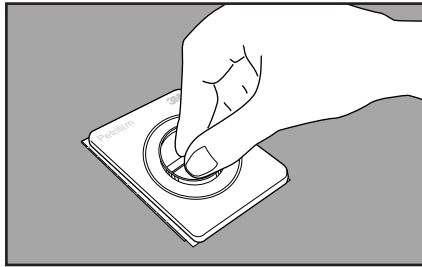


- 9 **Drop** the top film down onto the sample.

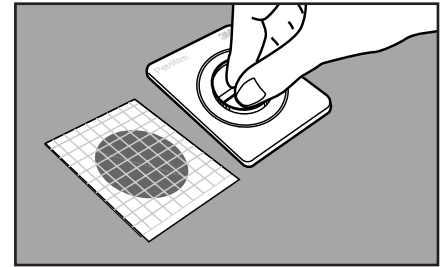
Continued - over



10 Place the Petrifilm **Yeast and Mold** spreader on the center of the plate.

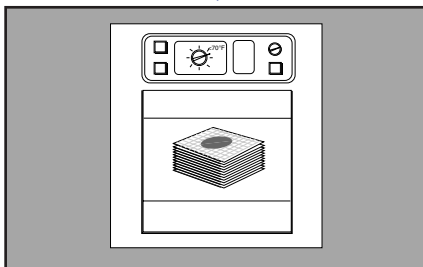


11 Distribute the sample with a **gentle** downward pressure on the center of the spreader. Do not twist or slide the spreader.



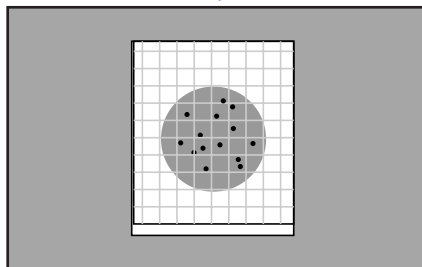
12 Lift spreader. Wait at least one minute to permit the gel to solidify.

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

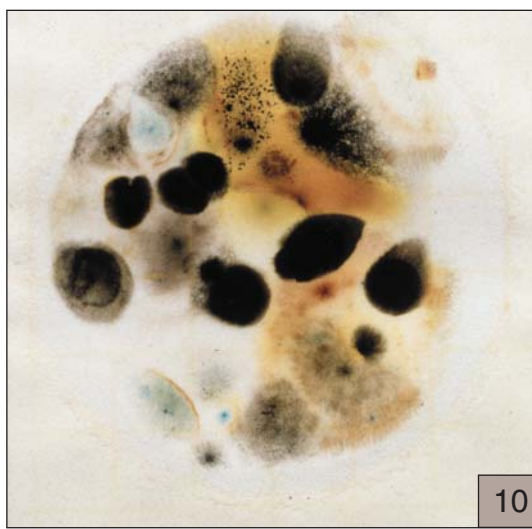
If it is necessary to differentiate yeast and mold colonies on Petrifilm Yeast and Mold Plates, look for one or more of the following typical characteristics mentioned below.



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.

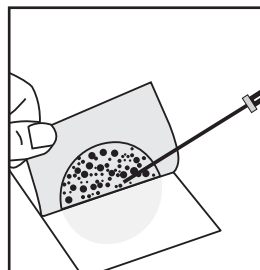


Figure 11
To isolate colonies for further identification, lift the top film and pick from the colony within the gel using a loop or similar device.

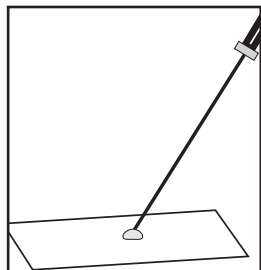


Figure 12
Transfer the colony to a drop of sterile water on a microscope slide, cover with a coverslip, and view under a microscope.

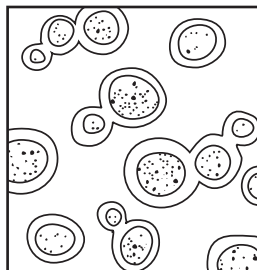


Figure 13
Yeast typically appear oval and may show budding.

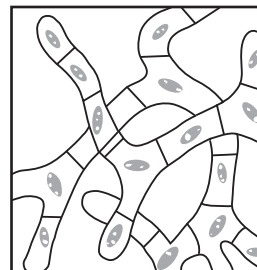


Figure 14
Mold typically appear as branching or thread-like filaments (mycelium).



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

3M

3M Microbiology
3M Center, Bldg. 275-5W-05
St. Paul, MN 55144-1000
USA
1-800-228-3957
microbiology@mmm.com
www.3M.com/microbiology

3M Canada
Post Office Box 5757
London, Ontario N6A4T1
Canada
1-800-563-2921

3M Europe
Laboratoires 3M Santé
Boulevard de l'Oise
95029 Cergy Pontoise Cedex
France
33 1 30 30 85 71

3M Latin America
Avenida Santa Fe 55, Santa Fe
C.P. 01210 Mexico City
Mexico
5255-5270-0400

3M AsiaPacific
9 Tagore Lane,
Singapore 787472
65-64548611

3M Japan
31-1, Tamagaradai, 2-Chome
Setagaya-Ku, Tokyo
158-8583, Japan
81-3-3709-8289

3M Australia/New Zealand
9 - 15 Chilvers Road
Thornleigh, NSW 2120
Australia
1300 363 878



Recycled Paper
40% pre-consumer
10% post-consumer
Printed in U.S.A.
© 3M 2004
70-2008-4258-4 (14.35)ii