






















Petrifilm™

6407/6417/6445

Product Instructions

-  **(EN)** Yeast and Mold Count Plate
-  **(FR)** Test pour la numération des Levures et Moisissures
-  **(DE)** Hefen und Schimmelpilze Zählplatte
-  **(IT)** Piastra per il conteggio di lieviti e muffe
-  **(ES)** Placa para recuento de mohos y levaduras
-  **(NL)** Gist & Schimmel Telplaat
-  **(SV)** Odlingsplatta för jäst och mögel
-  **(DA)** Gær og Skimmel Tælleplade
-  **(NO)** for gjær og mugg
-  **(FI)** Hiivojen ja homeiden kasvatusalusta
-  **(PT)** Placa para Contagem de Bolores e Leveduras
-  **(EL)** Πλακίδιο Καταμέτρησης Ζυμών και Μυκήτων
-  **(PL)** Płytko do oznaczania liczby drożdży i pleśni
-  **(RU)** Тест-пластина для подсчета дрожжей и плесневых грибов
-  **(TR)** Maya ve Küf Sayım Plakası
-  **(JA)** カビ・酵母測定用プレート
-  **(ZH)** 霉菌酵母测试片
-  **(TH)** แผ่นอาหารเลี้ยงเชื้อสำหรับนับจำนวนยีสต์และรา
-  **(KO)** 효모 및 곰팡이 측정용 플레이트

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YM

Yeast and Mold

Product Instructions

Yeast and Mold

Product Description and Intended Use

The 3M™ Petrifilm™ Yeast and Mold Count (YM) Plate is a sample-ready culture medium system which contains nutrients supplemented with antibiotics, a cold-water-soluble gelling agent, and an indicator that facilitates yeast and mold enumeration. 3M Petrifilm YM Plates are used for the enumeration of yeast and mold in the food and beverage industries. 3M Petrifilm YM Plate components are decontaminated though not sterilized. 3M™ Petrifilm™ Plates are manufactured at an ISO (International Standards Organization) 9001 certified site.

Safety

The user should read, understand, and follow all safety information in the Product Instructions for the 3M Petrifilm YM Plate. Retain the safety instructions for future reference.

⚠ **WARNING** Indicates a hazardous situation, which, if not avoided, could result in death or serious injury and/or property damage.

⚠ **CAUTION** Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury and/or property damage.

⚠ WARNING

To reduce the risks associated with the release of contaminated product:

- Use 3M Petrifilm YM Plates for food and beverage sample testing that you have validated.
- Follow all product storage instructions contained in these Product Instructions.
- Do not use beyond the expiration date.

To reduce the risks associated with clinical misdiagnosis:

- Do not use 3M Petrifilm YM Plates in the diagnosis of conditions in humans or animals.

⚠ CAUTION

To reduce the risks associated with exposure to biohazards and environmental contamination:

- Follow current industry standards and local regulations for disposal of biohazardous waste.

To reduce the risks associated with misinterpretation of results:

- 3M Petrifilm YM Plates do not differentiate any one yeast or mold strain from another.
- 3M has not documented 3M Petrifilm YM Plates for use in industries other than food and beverage. For example, 3M has not documented 3M Petrifilm YM Plates for testing water, pharmaceuticals or cosmetics.
- 3M Petrifilm YM Plates have not been tested with all possible food products, food processes, testing protocols or with all possible strains of yeast and mold.
- Do not use 3M Petrifilm YM Plates in the diagnosis of conditions in humans or animals.
- The user must train its personnel in proper testing techniques. For example, Good Laboratory Practices¹, ISO 7218², or ISO 17025³.

Consult the Safety Data Sheet for additional information.

For information on documentation of product performance, visit our website at www.3M.com/foodsafety or contact your local 3M representative or distributor.

User Responsibility

Users are responsible for familiarizing themselves with product instructions and information. Visit our website at www.3M.com/foodsafety, or contact your local 3M representative or distributor for more information.

When selecting a test method, it is important to recognize that external factors such as sampling methods, testing protocols, sample preparation, handling, and laboratory technique may influence results.

It is the user's responsibility in selecting any test method or product to evaluate a sufficient number of samples with the appropriate matrices and microbial challenges to satisfy the user that the chosen test method meets the user's criteria.

It is also the user's responsibility to determine that any test methods and results meet its customers' and suppliers' requirements.

As with any test method, results obtained from use of any 3M Food Safety product do not constitute a guarantee of the quality of the matrices or processes tested.

Limitation of Warranties / Limited Remedy

EXCEPT AS EXPRESSLY STATED IN A LIMITED WARRANTY SECTION OF INDIVIDUAL PRODUCT PACKAGING, 3M DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. If any 3M Food Safety Product is defective, 3M or its authorized distributor will, at its option, replace or refund the purchase price of the product. These are your exclusive remedies. You must promptly notify 3M within sixty days of discovery of any suspected defects in a product and return it to 3M. Please call Customer Service (1-800-328-1671 in the U.S.) or your official 3M Food Safety representative for a Returned Goods Authorization.

Limitation of 3M Liability

3M WILL NOT BE LIABLE FOR ANY LOSS OR DAMAGES, WHETHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS. In no event shall 3M's liability under any legal theory exceed the purchase price of the product alleged to be defective.

Storage

Store unopened 3M Petrifilm YM Plate pouches refrigerated or frozen at temperatures $\leq 8^{\circ}\text{C}$ (46°F). Just prior to use, allow unopened pouches to come to room temperature before opening. Return unused 3M Petrifilm YM Plates to pouch. Seal by folding the end of the pouch over and taping 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. It is recommended that resealed pouches of 3M Petrifilm YM Plates be stored in a freezer (see below) if the laboratory temperature exceeds 25°C (77°F) and/or the laboratory is located in a region where the relative humidity exceeds 50% (with the exception of air-conditioned premises).

To store opened pouches in a freezer, place 3M Petrifilm YM Plates in a sealable container. To remove frozen 3M Petrifilm YM Plates for use, open the container, remove the plates that are needed and immediately return remaining plates to the freezer in the sealed container. 3M Petrifilm YM Plates should not be used past their expiration date. The freezer that is used for open pouch storage must not have an automatic defrost cycle as this would repeatedly expose the plates to moisture which can damage the plates.

Do not use plates that show discoloration. Expiration date and lot number are noted on each package of 3M Petrifilm Plates. The lot number is also noted on individual plates.

⚠ Disposal

After use, 3M Petrifilm YM Plates may contain microorganisms that may be a potential biohazard. Follow current industry standards for disposal.

For information on potential biohazards, reference Biosafety in Microbiological and Biomedical Laboratories, 5th edition, Section VIII-B: Fungal Agents or equivalent.

Instructions for Use

Follow all Product Instructions carefully. Failure to do so may lead to inaccurate results.

Wear appropriate protective apparel and follow standard good laboratory safety practices (GLP).¹

Sample Preparation

1. Prepare appropriate dilution(s) of the sample as needed.

Use appropriate sterile diluents:

Butterfield's phosphate buffer², 0.1% peptone water, peptone salt diluent,³ saline solution (0.85-0.90%), bisulphite-free letheen broth or distilled water. **Do not use diluents containing citrate, bisulphite or thiosulfate with 3M Petrifilm Plates;** they can inhibit growth. If citrate buffer is indicated in the standard procedure, substitute with one of the buffers listed above, warmed to $40\text{--}45^{\circ}\text{C}$.

2. Blend or homogenize sample.

Plating

1. Place the 3M Petrifilm YM Plate on a flat, level surface.
2. Lift the top film and dispense 1 mL of sample suspension onto the center of bottom film.



3. Drop the top film down onto the sample.
4. Place the plastic 3M™ Petrifilm™ YM Spreader on the center of the plate. Press gently on the center of the spreader to distribute the sample evenly. Spread the inoculum over the entire 3M Petrifilm YM Plate growth area before the gel is formed. Do not slide the spreader across the film.
5. Remove the spreader and leave the plate undisturbed for at least one minute to permit the gel to form.

Incubation

Incubate 3M Petrifilm YM Plates in a horizontal position with the clear side up in stacks of no more than 20 plates. Incubate 3M Petrifilm YM Plates following current local reference methods.

For example, AOAC® Official Method of AnalysisSM 997.02 Yeast and Mold Counts in Foods, Dry Rehydratable Film Method (Petrifilm Method): Incubate 3M Petrifilm YM Plates for 5 days at 20-25°C.

Interpretation

1. 3M Petrifilm YM Plates can be counted using a standard colony counter or other illuminated magnifier. Gridlines are visible with the use of a backlight to assist with estimated enumeration.
2. To differentiate yeast and mold colonies on the 3M Petrifilm YM Plate, look for one or more of the following characteristics:

Yeast	Mold
Small colonies	Large colonies
Colonies have defined edges	Colonies have diffuse edges
Pink-tan to blue-green in color	Variable color
Colonies appear raised (3 dimensional)	Colonies appear flat
Colonies have a uniform color	Colonies have a dark center

3. Read final yeast and mold results on day 5. Large or fast growing molds may obscure results on 3M Petrifilm YM Plate by day 5. Check plates on day 3 and record results of plates with high counts (this count can be recorded directly on the plate). If the plate is overgrown by day 5, record the 3-day count as an estimated count.
4. Mold colonies may spread and cause the entire growth area to turn blue, black, yellow, etc. Record the three day count as an estimated mold count.
5. High numbers of yeast colonies may cause the entire growth area to turn blue or appear as blue growth around the edge of the inoculated area. If 3M Petrifilm YM Plates appear to have no growth, lift the top film and examine the gel that adheres to the top film. If numerous yeast are present, you may see white colonies in the gel. This is recorded as a yeast count of too numerous to count (TNTC).
6. The circular growth area is approximately 30 cm². 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 30 to determine the estimated count per plate.
7. If a more accurate count is required, re-test the sample plating at higher dilutions.
8. The 3M Petrifilm YM Plates use a phosphatase enzyme indicator to help detect yeast and mold. All living cells contain phosphatase; therefore natural phosphatase in samples can cause the indicator to react in one of two ways:
 - a) A uniform blue background color (often seen from the organisms used in cultured products).
 - b) Intense, pinpoint blue spots (often seen with spices or granulated products).
9. One or more of the following techniques can help distinguish a color reaction caused by natural phosphatase in a product from yeast and mold colonies:
 - a) Dilute the sample further
 - b) Allow food particles to settle in the sample, then plate the supernate
 - c) Check the plate after 24-48 hours of incubation and note any color that is present; if color intensity does not change by day 5 of incubation, the color may be from the phosphatase reaction.
10. Where necessary, colonies may be isolated for further identification. Lift the top film and pick the colony from the gel. Test using standard procedures.
11. If the plates cannot be counted at the end of the 5 day incubation period, store for later enumeration by freezing in a



sealable container at temperatures \leq minus 15°C for no longer than one week.

For further information refer to the “3M™ Petrifilm™ Yeast and Mold Count Plate Interpretation Guide.” If you have questions about specific applications or procedures, please visit our website at www.3M.com/foodsafety or contact your local 3M Food Safety representative or distributor.

References

1. U.S. Food and Drug Administration. Code of Federal Regulations, Title 21, Part 58. Good Laboratory Practice for Nonclinical Laboratory Studies.
2. ISO 7218. Microbiology of food and animal feeding stuffs - General requirements and guidance for microbiological examinations.
3. ISO/IEC 17025. General requirements for the competence of testing and calibration laboratories.

Refer to the current versions of the standard methods listed above.

Explanation of symbols

www.3M.com/foodsafety/symbols

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