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Product Instructions

-  (EN) Environmental *Listeria* Plate
-  (FR) Test *Listeria* Environnement
-  (DE) Umgebungs-*Listerien* Zählplatte
-  (IT) Piastra per il controllo ambientale di *Listeria*
-  (ES) Placa para monitoreo de *Listeria* en ambientes
-  (NL) Environmental *Listeria* Plaat
-  (SV) Environmental *Listeria* Plate
-  (DA) Environmental *Listeria* Tælleplade
-  (NO) *Listeria* for miljøkontroll
-  (FI) Ympäristön *Listeria* Kasvatusalusta
-  (PT) Placa para *Listeria* Ambiental
-  (EL) Πλακίδιο *Λιστέριας* Περιβάλλοντος
-  (PL) Płytko do oznaczania obecności *Listeria* w badaniach środowiskowych
-  (RU) Тест-пластина для подсчета *листерий* в окружающей среде
-  (TR) Çevresel *Listeria* Plakası
-  (JA) リステリア環境微生物測定用プレート
-  (ZH) 环境李斯特测试片
-  (TH) Environmental *Listeria* Plate
-  (KO) 환경 리스테리아 측정용 플레이트

EL

Environmental *Listeria*

Product Instructions

Environmental *Listeria* Plate

Product Description and Intended Use

The 3M™ Petrifilm™ Environmental *Listeria* (EL) Plate is a sample-ready-culture-medium system which contains selective agents, nutrients, a cold-water-soluble gelling agent, and a chromogenic indicator that facilitates colony enumeration and/or detection. The 3M Petrifilm EL Plates were designed to analyze environmental *Listeria*, consisting of *Listeria monocytogenes* (*L. monocytogenes*), *Listeria innocua* (*L. innocua*) and *Listeria welshimeri*.^{*} The presence of indicator *Listeria* such as *L. innocua* provides evidence that environmental conditions are suitable for the occurrence of *L. monocytogenes*.

^{*}For further information on the prevalence of *Listeria* species, please contact the 3M Food Safety representative nearest you. *Listeria ivanovii*, *Listeria grayi/murrayi* and *Listeria seeligeri* grow but do not form typical colonies. Many organisms in the environment can be stressed by environmental conditions or sanitizers. Buffered peptone water is used as a repair broth in conjunction with the 3M Petrifilm EL Plate to resuscitate stressed *Listeria* without increasing their numbers.

The 3M Petrifilm EL Plate components are decontaminated though not sterilized. 3M Food Safety is certified to ISO (International Organization for Standardization) 9001 for design and manufacturing.

Safety

The user should read, understand, and follow all safety information in the instructions for the 3M Petrifilm EL 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.

⚠ WARNING

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 inaccurate results:

- Follow all product storage instruction contained in the instructions for use.
- Do not use beyond the use by date.
- Use the 3M Petrifilm EL Plates for environmental testing only.
- Use the 3M Petrifilm EL Plates only with surfaces, sanitizers, protocols and bacterial strains that you have validated.

To reduce the risks associated with bacterial infection and workplace contamination:

- Perform the 3M Petrifilm EL Plate testing in a properly equipped laboratory under the control of a skilled microbiologist.
- The user must train its personnel in current proper testing techniques: for example, Good Laboratory Practices¹, ISO 7218², or ISO 17025³.
- It is strongly recommended that female laboratory staff be informed of the risk to a developing fetus resulting from infection of the mother through exposure to *Listeria monocytogenes*.

To reduce the risks associated with misinterpretation of results:

- 3M has not documented the 3M Petrifilm EL Plates for use in industries other than food and beverage. For example, 3M has not documented the 3M Petrifilm EL Plates for testing water, pharmaceuticals, or cosmetics.
- Do not use the 3M Petrifilm EL Plates in the diagnosis of conditions in humans or animals.
- The 3M Petrifilm EL Plates do not differentiate any one *Listeria* strain from another.

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 the unopened 3M Petrifilm EL Plate pouches refrigerated or frozen at temperatures lower than or equal to 8°C (46°F). Just prior to use, allow the unopened 3M Petrifilm EL Plate pouches to come to room temperature before opening (20-25°C (68-77°F) / <60% RH). Return the unused 3M Petrifilm EL Plates to pouch. Seal by folding the end of the pouch over and applying adhesive tape. **To prevent exposure to moisture, do not refrigerate opened pouches.** Store resealed 3M Petrifilm EL Plate pouches in a cool dry place for no longer than four weeks. It is recommended that resealed pouches of 3M Petrifilm EL Plates be stored in a freezer 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 the 3M Petrifilm EL Plates in a sealable container. To remove the frozen 3M Petrifilm EL Plates for use, open the container, remove the plates that are needed and immediately return remaining plates to the freezer in the sealed container. The freezer that is used for open pouch storage must not have an automatic defrost cycle as this would repeatedly expose the 3M Petrifilm EL Plates to moisture which can damage the plates.

Do not use 3M Petrifilm EL Plates that show discoloration. Use by date and batch code are noted on each package of the 3M Petrifilm EL Plates. The lot number is also noted on individual 3M Petrifilm EL Plates. The 3M Petrifilm EL Plates should not be used past their use by date.

△ Disposal

After use, the 3M Petrifilm EL Plates may contain microorganisms that may be a potential biohazard. Follow current industry standards and local regulations for disposal of biohazardous waste.

Instructions for Use

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

Sample Preparation

1. Collect environmental samples using a swab, pre-moistened sponge or other collection device. The moistening agent can be sterile diluent or a buffer such as letheen broth or neutralizing buffer.
2. Aseptically add 5 mL sterile (20-30°C) buffered peptone water^{4,5} (used as repair broth) to the collected sample.
3. Mix, homogenize, or vortex the collected sample (step #1) with repair broth for approximately one minute.
4. Allow collected sample to remain at room temperature, 20-30°C for 1 hour up to a maximum of 1.5 hours.
5. For optimal bacterial growth or recovery, the sample should have a pH between 4 and 9.



Plating

1. Place the 3M Petrifilm EL Plate on a flat, level surface.
2. Prior to plating, mix or vortex the collected sample again.
3. Draw 3 mL of liquid from the collected sample. For some sampling devices, such as sponges, squeeze the device to release the liquid for plating.
4. Lift the top film and with the pipette perpendicular dispense 3 mL of sample suspension onto the center of bottom film.
5. Roll the top film down onto the sample to prevent trapping air bubbles.
6. Gently place the 3M™ Petrifilm™ Large Square Spreader on the center of the 3M Petrifilm EL Plate to distribute the sample evenly over the entire 3M Petrifilm EL Plate growth area.
7. Remove the spreader and leave the 3M Petrifilm EL Plate undisturbed for at least ten minutes to permit the gel to form.

Incubation

Incubate the 3M Petrifilm EL Plates in a horizontal position with the clear side up in stacks of no more than 10 plates. Incubate 3M Petrifilm EL Plates for 28 hours \pm 2 hours at 35°C \pm 1°C or 37°C \pm 1°C. Several incubation times and temperatures can be used depending on current local reference methods, some of which are listed in the “**Specific Instructions for Validated Methods**” section. **Incubation beyond the recommended time may yield ambiguous results.**

Interpretation

1. The 3M Petrifilm EL Plates can be counted or interpreted using a standard colony counter or other illuminated magnifier.
2. The circular growth area is approximately 42 cm².
3. The 3M Petrifilm EL Plate can be used as a quantitative, semi-quantitative, or qualitative test.
 - a. For a quantitative test, count and record all red-violet colonies. Do not count colonies on the foam dam since they are removed from the selective influence of the medium.
 - b. For a semi-quantitative test, record the results as high, medium or low based on the relative number of red-violet colonies present. This designation of high, medium or low is dependent upon the sample location and individual plant standards.
 - c. For a qualitative test, record the results of sample plated as positive (detected) or negative (not detected) based on the presence or absence of red-violet colonies.
4. If 3M Petrifilm EL Plates have been incubated for the minimum time and they have pink and/or gray colonies, re-incubate those plates for up to the maximum incubation time to ensure optimal color development. Count and interpret as in step 3.
5. When colonies are present in large numbers, 3M Petrifilm EL Plates may have small, indistinct colonies and/or a pink-brown color throughout.
 - a. For a quantitative test, record the results as too numerous to count (TNTC).
 - b. For a semi-quantitative test, record the results as high.
 - c. For a qualitative test, record the results as positive (detected).
6. Where necessary, colonies may be isolated for further identification. Lift the top film and pick the colony from the gel. Test using standard procedures.
7. If the 3M Petrifilm EL Plates cannot be counted within 1 hour of removal from the incubator, they may be stored for later enumeration by freezing in a sealable container at temperatures lower than or equal to negative 15°C (5°F) for no longer than one week. Organisms may not be viable for further identification after plates have been frozen.

For further information refer to the “3M™ Petrifilm™ Environmental *Listeria* 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 representative or distributor.

Specific Instructions for Validated Methods

AOAC-RI Performance Tested Methods (PTM)

In an AOAC® RI PTM study, the 3M Petrifilm EL Plate method was found to be equivalent to or better than the average log counts of the reference method.

**Scope of Validation:**

For the following matrices or categories stainless steel, ceramic tile, sealed concrete.

Incubation:

Incubate the 3M Petrifilm EL Plates 28 hours \pm 2 hours at 35°C \pm 1°C or 37°C \pm 1°C.

**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.
4. Atlas, Ronald M. 1993. Handbook of Microbiological Media, CRC Press.
5. International Standards Organization, ISO 11290-2:1998. Microbiology of food and animal feeding stuffs – Horizontal method for the detection and enumeration of *Listeria monocytogenes* – Part 2: Enumeration method.

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

Explanation of Symbols

www.3m.com/foodsafety/symbols

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