

3M Food Safety

3M™ Petrifilm™ Aqua Enterobacteriaceae Count Plate

3M™ Petrifilm™ Aqua Yeast and Mold Count Plate



Technician Productivity Maximized

Interpretation Guide

Introducing 3M™ Petrifilm™ Aqua Plates for Water Testing, offering four plates to cover your unique testing needs — Heterotrophic Count, Coliform Count, Enterobacteriaceae Count and Yeast & Mold Count. 3M Petrifilm Aqua Plates are ideal for testing bottled water.



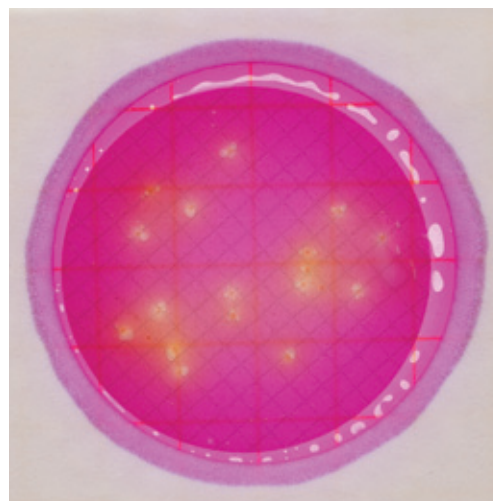
The 3M™ Petrifilm™ Aqua Plate system brings the convenience of 3M Petrifilm Plate technology to water testing¹. The 3M Petrifilm Aqua Plate's compact, easy-to-use format brings space savings and reduced waste to the laboratory. An independent, third party study² indicates 3M Petrifilm Aqua Plates do not perform statistically different from either SMEWW³ methods or commonly used bottled water testing methods⁴.

This guide familiarizes you with results on the 3M™ Petrifilm™ Aqua Enterobacteriaceae Count Plate and 3M™ Petrifilm™ Aqua Yeast & Mold Count Plate. For more information, contact the official 3M Food Safety representative nearest you.

3M™ Petrifilm™ Aqua Enterobacteriaceae Count Plate (AQEB)

The 3M Petrifilm Aqua AQEB Plate is a sample-ready culture medium system which contains Violet Red Bile (VRB) nutrients, a cold-water-soluble gelling agent, and a tetrazolium indicator that facilitates colony enumeration. 3M Petrifilm Aqua AQEB Plates are used for the enumeration of Enterobacteriaceae in the bottled water industry. On the 3M Petrifilm Aqua AQEB Plate, Enterobacteriaceae will appear as red colonies with yellow zones, red colonies with gas bubbles, or red colonies with yellow zones and gas bubbles.

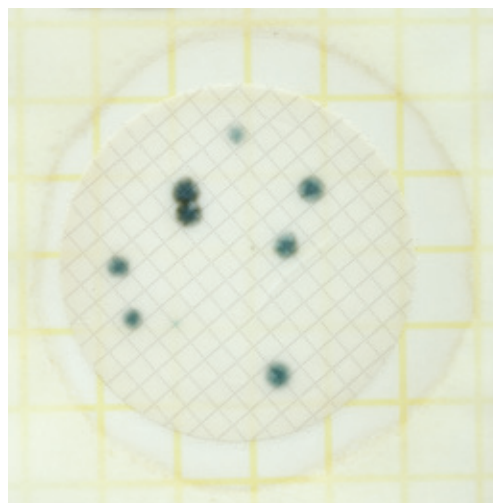
[See Page 3](#)



3M™ Petrifilm™ Aqua Yeast and Mold Count Plate (AQYM)

The 3M Petrifilm Aqua AQYM 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 Aqua AQYM Plates are used for the enumeration of yeast and mold in bottled water industry. See Product Instructions for more information on differentiating yeast and mold colonies.

[See Pages 4–5](#)



¹ 3M has not documented the performance of 3M Petrifilm Aqua Plates for water samples other than bottled water. The use and validation of 3M Petrifilm Aqua Plates to test other types of water samples, such as process or rinse water, is at the sole discretion and responsibility of the end user.

² Q Laboratories, Inc., Cincinnati, OH, USA study comparing 3M Petrifilm Aqua Plate performance vs. reference methods. Study presented at 2011 International Association for Food Protection (IAFP).

³ Standard Methods for the Examination of Waste Water (SMEWW) 9215A6a and 9222E2b

⁴ SO 6222, ISO 9308-1

3M™ Petrifilm™ Aqua Enterobacteriaceae Count Plate (AQEB)

Negative Plate and Plates with Colonies

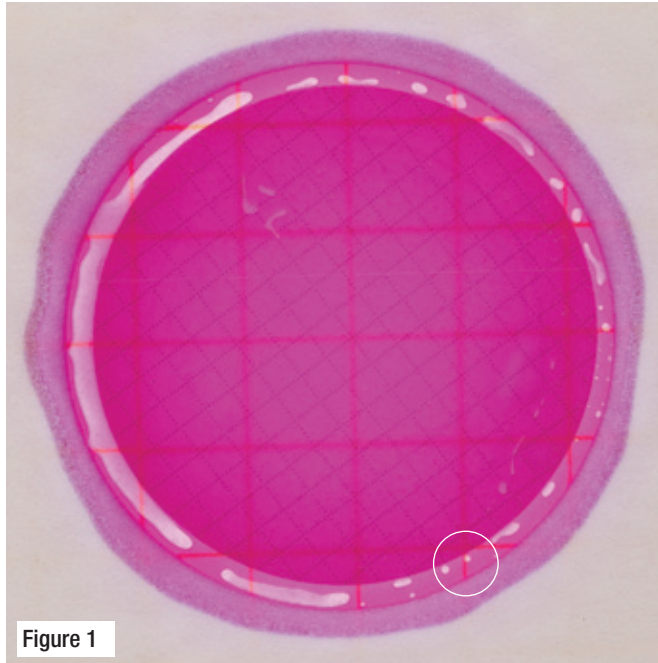


Figure 1
AQEB plate
Count: 0
Observation: Gas bubbles surrounding filter do not indicate microbial growth. See circle for example.

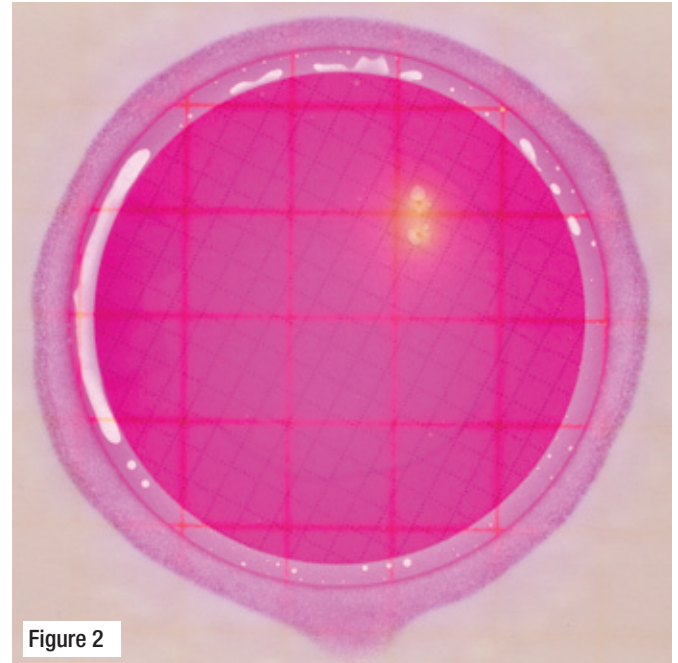


Figure 2
AQEB plate with low count
Count: 2 cfu
Observation: Enterobacteriaceae are identified by the presence of acid (yellow halo) and/or colony-associated gas bubbles.

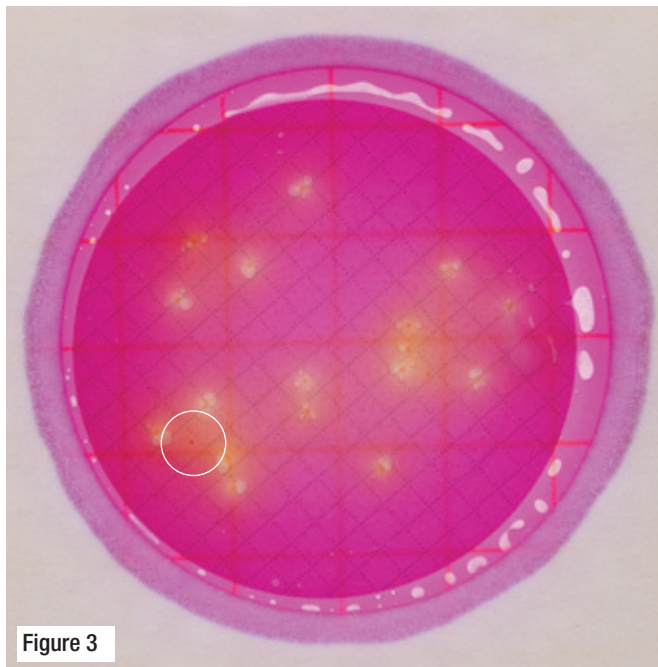


Figure 3
AQEB plate with high count
Count: 17 cfu
Observation: Red colonies without acid or gas production (circle) are not counted as Enterobacteriaceae.

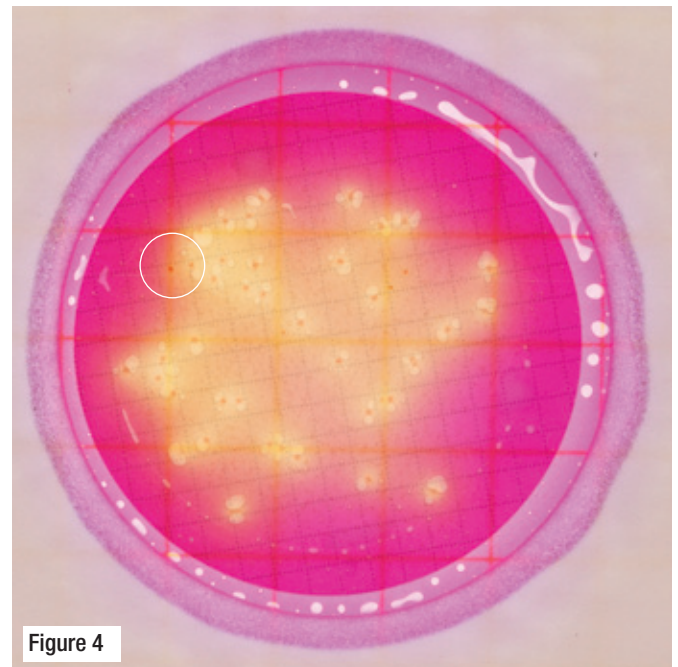


Figure 4
AQEB plate with high count
Count: 43 cfu
Observation: Colony color can vary from pink to faint tan. Yellow halo and large gas bubbles can be associated with very faint colonies. Red colony not associated with either acid production or gas are not counted as Enterobacteriaceae (see circle).

3M™ Petrifilm™ Aqua Yeast and Mold Count Plate (AQYM)

Negative Plate and Plates with Colonies

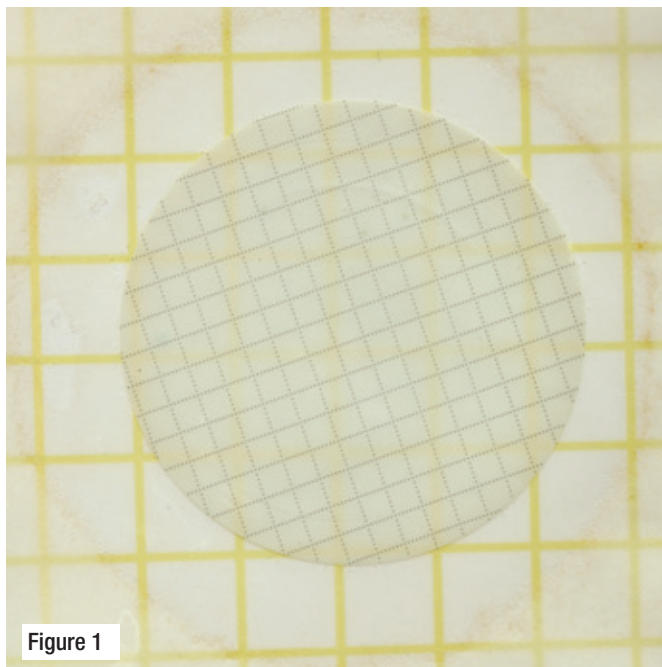


Figure 1
AQYM plate
Count: 0

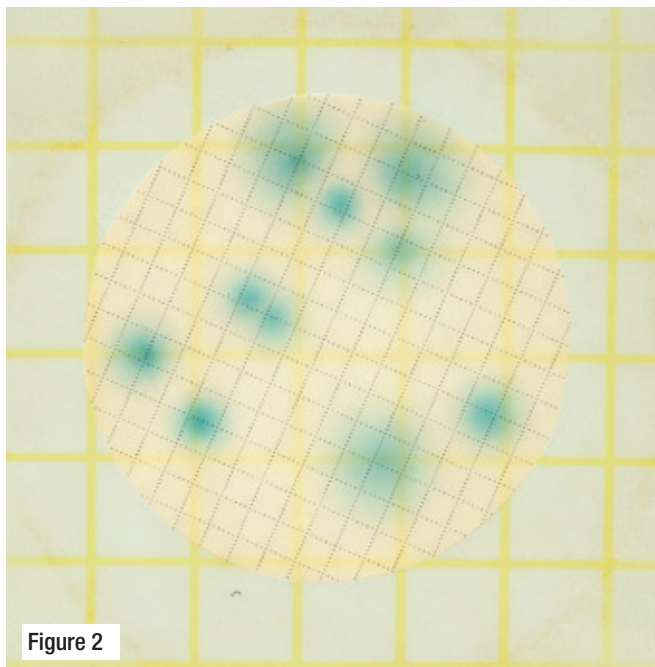


Figure 2
AQYM plate with low count
Count: 10 cfu
Observation: Mold colonies are large with a dark center and diffuse edge.

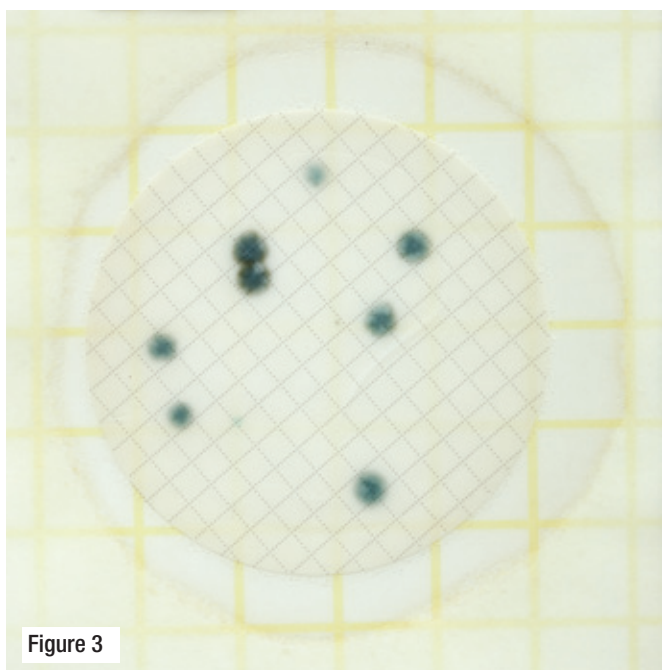
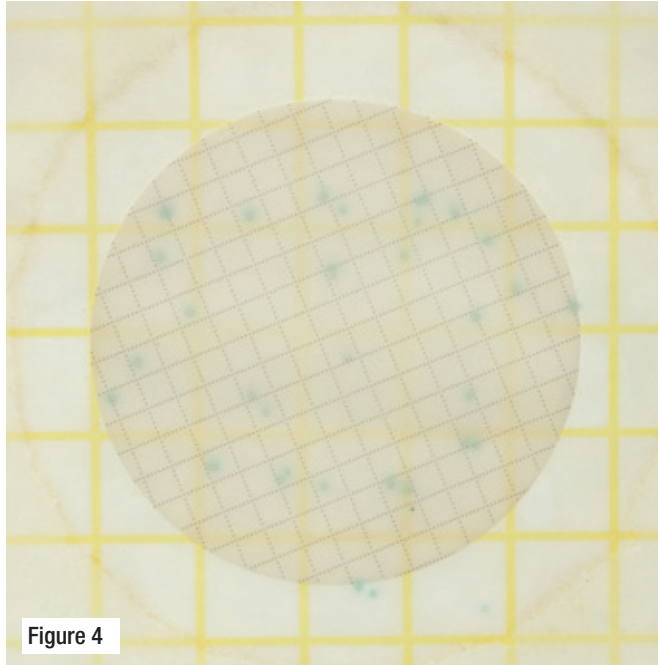
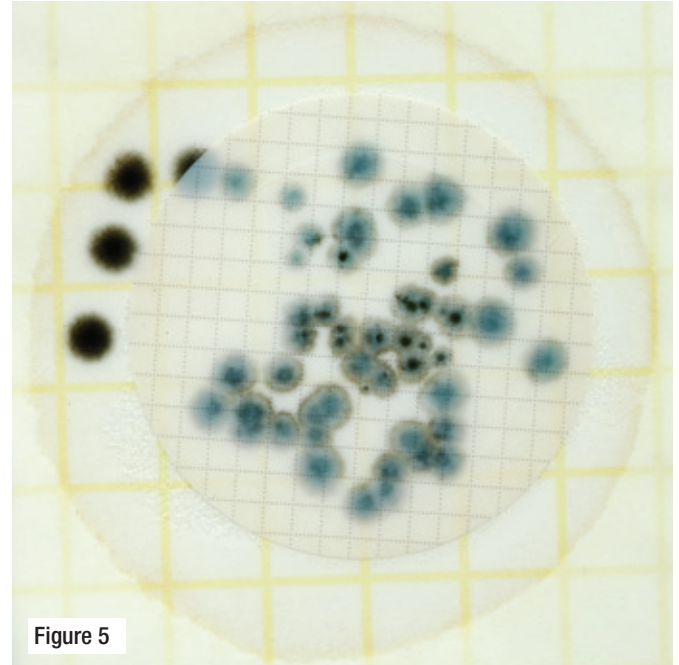


Figure 3
AQYM plate with low count
Count: 10 cfu
Observation: Note two small, faint colonies.

Plates with High Counts



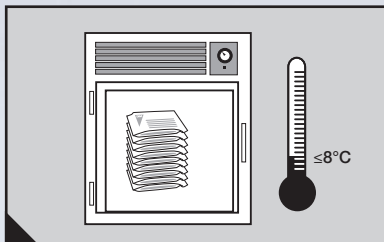
AQYM plate with high count
Count: 31 cfu
Observation: Yeast colonies.



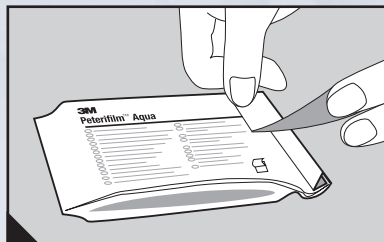
AQYM plate with high count
Count: 51 cfu
Observation: Estimate colony count when molds merge; darker centers can help enumerate colonies. Count colonies partially or totally off of the filter.

3M™ Petrifilm™ Aqua Enterobacteriaceae Count Plate (AQEB)

Storage for Plates

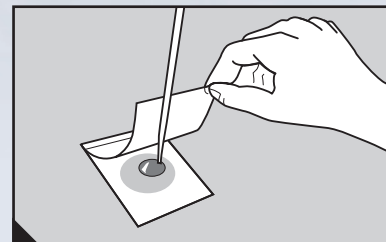


A Store unopened packages at $\leq 8^{\circ}\text{C}$ ($\leq 46^{\circ}\text{F}$). Use before expiration date on package. In areas of high humidity where condensate may be an issue, it is best to allow packages to reach room temperature before opening.

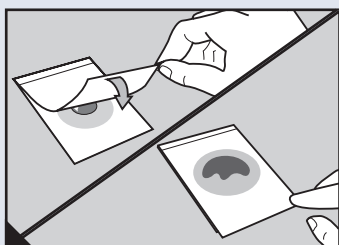


B To seal opened package, fold end over and tape shut. **Do not refrigerate opened packages.** Use 3M Petrifilm Aqua AQEB Plates within one month after opening.

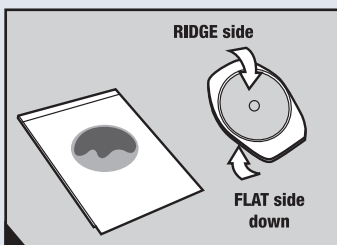
Hydration Procedure



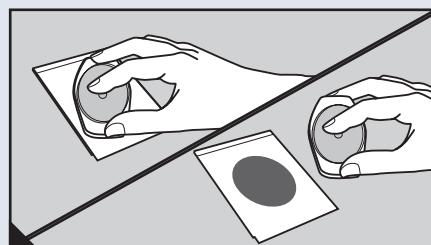
C Place 3M Petrifilm Aqua AQEB Plate on a **level surface**. With the pipette **perpendicular** to the 3M Petrifilm Aqua AQEB Plate, place hydration diluent onto the center of the bottom film.



D Carefully **roll** top film down to avoid entrapping air bubbles. **Do not let top film drop.**

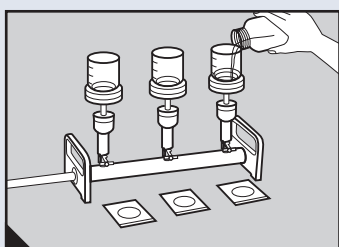


E With **flat** side down, place spreader on top film over hydration diluent.

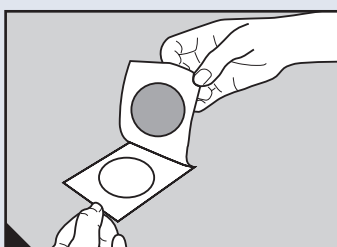


F

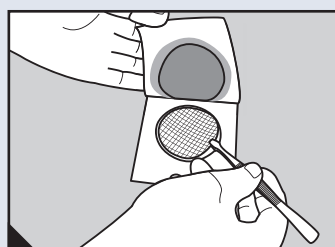
- Gently apply pressure on spreader to distribute inoculum or hydration diluent over circular area before gel is formed. Do not twist or slide spreader. Lift spreader.
- When **inoculating with hydration diluent**, allow the hydrated plates to remain closed for a minimum of one hour before use. Proceed to step 'G'.
- Any additional hydrated 3M Petrifilm Aqua AQEB Plates may be stored in a sealed pouch or plastic bag. Protect plates from light and refrigerate at $2-8^{\circ}\text{C}$ ($36-46^{\circ}\text{F}$) for up to 7 days.



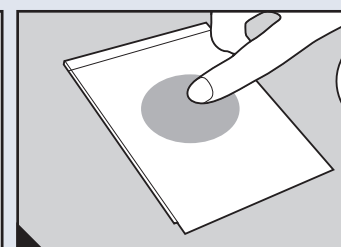
G Following standard procedures for water analysis, membrane filter water sample using a 47mm, **0.45 micron pore size** Mixed Cellulose Ester (MCE) filter.



H Lift top film.

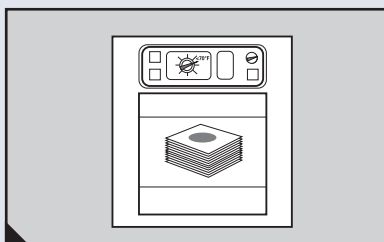


I Place filter in the center of the well. Roll top film down to **minimize air bubbles** or gaps between the filter and the 3M Petrifilm Aqua AQEB Plate.



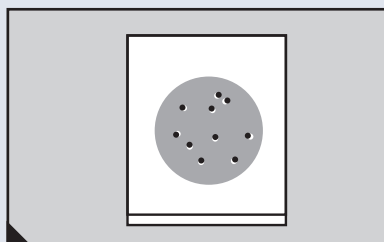
J Lightly apply pressure to ensure uniform contact of the filter with the gel and to eliminate any air bubbles.

Incubation

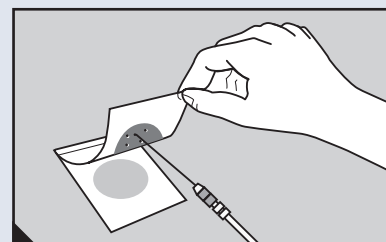


K Incubate 3M Petrifilm Aqua AQEB Plates in a horizontal position, clear side up, in stacks on no more than 20 plates at $34-37^{\circ}$ for 24 ± 2 hours.

Interpretation



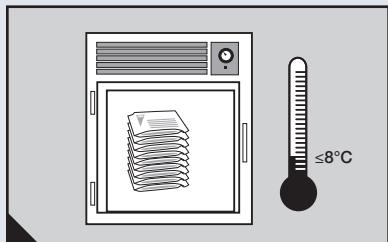
L 3M Petrifilm Aqua AQEB Plates can be counted on a standard colony counter or other illuminated magnifier. Refer to the *Interpretation Guide* section when reading results.



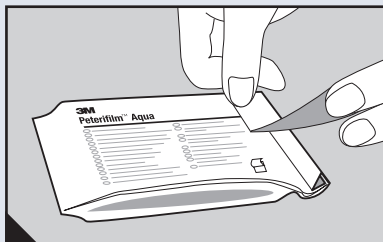
M Colonies may be isolated for further identification. Lift top film and pick the colony from the gel.

3M™ Petrifilm™ Aqua Yeast and Mold Count Plate (AQYM)

Storage for Plates

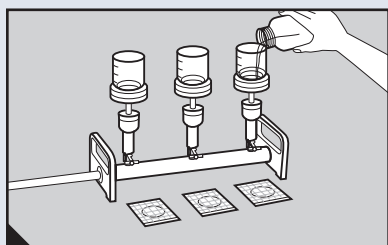


A Store unopened packages at $\leq 8^{\circ}\text{C}$ ($\leq 46^{\circ}\text{F}$). Use before expiration date on package. In areas of high humidity where condensate may be an issue, it is best to allow packages to reach room temperature before opening.

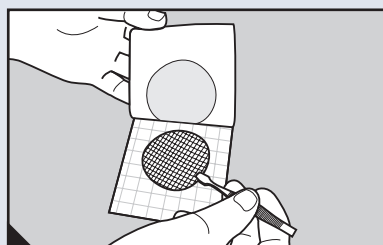


B To seal opened package, fold end over and tape shut. **Do not refrigerate opened packages.** Use 3M Petrifilm Aqua AQYM Plates within one month after opening.

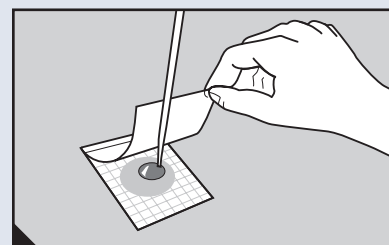
Inoculation or Hydration Procedure



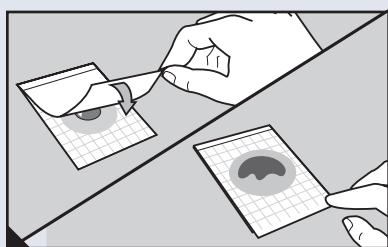
C Following standard procedures for water analysis, membrane filter water sample using a 47mm, **0.45 micron pore size** Mixed Cellulose Ester (MCE) filter.



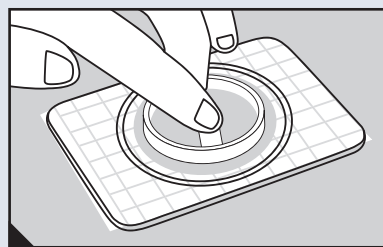
D Place filter in the center of bottom film.



E With the pipette **perpendicular** to the 3M Petrifilm Aqua AQYM Plate, place 1 mL of sample or hydration diluent onto the center of the filter.

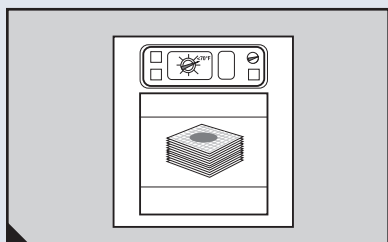


F Carefully **roll** top film so that it contacts the sample or hydration diluent and then drop the top film.



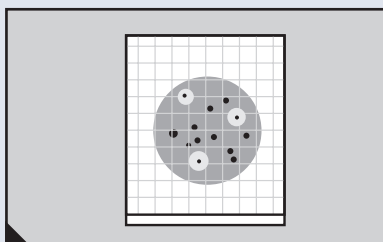
G Lightly apply pressure to the Yeast and Mold Spreader to ensure uniform contact of the filter with the gel and to eliminate any air bubbles.

Incubation

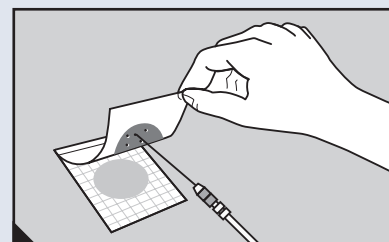


H Incubate 3M Petrifilm Aqua AQYM Plates in a horizontal position, clear side up, in stacks on no more than 20 plates at $20\text{--}25^{\circ}\text{C}$ for 3–5 days. At day 5, additional colonies may be visible.

Interpretation



I 3M Petrifilm Aqua AQYM Plates can be counted on a standard colony counter or other illuminated magnifier. Refer to the *Interpretation Guide* section when reading results.



J Colonies may be isolated for further identification. Lift top film and pick the colony from the gel.

3M Food Safety 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/foodsafety.



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