



# RapidChek® *Listeria* species Environmental System



**Part #: 7000171, 7000174, 7000176, 7000179, 7000180, 7000182**

## **AOAC Approved Protocols:**

*This test kit's performance was reviewed by AOAC Research Institute and was found to perform to the manufacturer's specifications.*



## **Intended Use**

The RapidChek *Listeria* Lateral Flow Test Kit is designed to detect *Listeria* species in a variety of ready to eat foods, dairy products, fish products and environmental surfaces. The test kit permits the presumptive detection and identification of the target pathogen by a one step process in a minimum of 40 hours when the target pathogen is present at levels of one *Listeria* organism per 25 grams of sample.

## **Principle of the Assay**

This immunoassay test uses a double antibody sandwich format. An antibody specific to *Listeria* is sprayed and immobilized in a line on the surface of a membrane comprising a "test line". A second antibody reagent, also recognizing *Listeria* and labeled with colloidal gold, is contained within a reagent pad upstream from the test line on the membrane. As the sample moves by capillary action from the filter pad into the antibody-gold pad, the antibody-gold reagent specifically binds *Listeria* and moves with the liquid sample into the test membrane. The sample passes through the test line where the immobilized *Listeria* antibody captures the *Listeria*-antibody-gold complex, causing the formation of an antibody-*Listeria* "sandwich" and development of red color at the test line. Antibody-*Listeria* sandwiches are not formed in the absence of *Listeria*, resulting in no red color development at the test line.

Reagents immobilized at the control line capture excess gold reagent passing through the test line. The presence of red color at the control line indicates that the test strip flowed correctly. Therefore, the presence of only one line (control line) on the membrane indicates a negative sample and the presence of two lines indicates a positive sample.

## **Content of Kits**

### **7000171**

<u>Description</u>	<u>Quantity</u>
RapidChek <i>Listeria</i> Test Strips	45
Transfer pipettes (400 µL)	45
Plastic tubes (12 x 75mm)	45
Package Insert/s	

### **7000174**

<u>Description</u>	<u>Quantity</u>
RapidChek <i>Listeria</i> Test Strips	90
Transfer pipettes (400 µL)	90
Plastic tubes (12 x 75mm)	90
RapidChek <i>Listeria</i> Media	500g
RapidChek <i>Listeria</i> Supplement	10g
Package Insert/s	

### **7000176**

<u>Description</u>	<u>Quantity</u>
RapidChek <i>Listeria</i> Media	500g
RapidChek <i>Listeria</i> Supplement	10g

### **7000179**

<u>Description</u>	<u>Quantity</u>
RapidChek <i>Listeria</i> Media	5.3kg
RapidChek <i>Listeria</i> Supplement	100g

### **7000180**

<u>Description</u>	<u>Quantity</u>
RapidChek <i>Listeria</i> Test Strips	990
RapidChek <i>Listeria</i> Media	5.3kg
RapidChek <i>Listeria</i> Supplement	100g
Package Insert/s	



## 7000182

### Description

RapidChek *Listeria* Test Strips  
Package Insert/s

### Quantity

450

### Storage of Reagents

The RapidChek *Listeria* Media Supplement must be stored refrigerated (2-8°C). The RapidChek *Listeria* Test Kit (media and strips) should be stored at room temperature (15-30°C). The RapidChek *Listeria* test strips used in this kit must be kept in the canister with the humidity indicating card. The humidity indicating card should be blue in color. After opening the canister, care should be taken to re-seal the closure to protect the strips from moisture.

### Materials Required but Not Supplied

Stomacher-type bags or equivalent  
Stomacher machine (optional)  
Plastic test tube rack (Fisher Scientific, dimensions 20 cm x 10 cm, holds 75 x 12mm tubes)  
Hotplate or heating block (capable of reaching 100°C)  
Incubator capable of maintaining 30 ± 2°C  
Balance with an accuracy of ± 0.05 grams

### Media Preparation and Sample Enrichment

#### A. Media Preparation, Not Autoclaved

1. Sterilize one liter of water either by autoclaving for 15 minutes at 121°C or filtration into a sterile container and equilibrate to 20-30°C.
2. Weigh 53.0 ± 0.2g of RapidChek *Listeria* Media and 1.0 ± 0.05g of RapidChek *Listeria* Media Supplement and add to the sterilized water. Shake vigorously until the media is completely mixed.
3. Rehydrated media should be used within 3 hours of preparation if stored at room temperature or within 24 hours if stored at 4°C. For best results, use the media as soon as it is prepared.

#### B. Alternative Option: Media Preparation, Autoclaved

1. Add 53.0 ± 0.2g of RapidChek *Listeria* Media to 1 liter of room temperature distilled water. Shake until completely dissolved.
2. Autoclave at 121°C for 15 minutes.
3. Allow the RapidChek *Listeria* Media to cool to room temperature. Just prior to use, add 1.0 ± 0.05g of RapidChek *Listeria* Supplement to the media base that has been equilibrated to 30°C.

**Note: The media base (with or without supplement) can be stored at 4°C or room temperature for up to four weeks. After refrigeration, media should be equilibrated to 20-30°C before adding supplement and/or before use.**

#### C. Sample Enrichment, Sponge Samples

1. Pre-moisten a 7.5 x 4 cm cellulose, non-bactericidal sampling sponge with 10 mL of DE broth or another neutralizing buffer.
2. Sample a 4 inch square surface by wiping the sponge on the surface in a backward and forward motion for 30 seconds. Place the sponge into a sterile bag for either transportation to the lab or sample enrichment.
3. Add 60-100 mL of prepared RapidChek *Listeria* Media with Supplement. Make sure to completely cover the sponge with media.
4. Place the sample bag into a Stomacher device and stomach for 30 seconds or hand massage the bottom of the bag.
5. Close the bag loosely and incubate for 40 up to 48 hours at 30 ± 2°C.
6. Proceed to the RapidChek *Listeria* detection procedure.

#### D. Sample Enrichment, Swab Samples

1. Pre-moisten a sterile, cotton tipped swab (Fisher Scientific) with DE broth or another neutralizing buffer.
2. Sample a one inch square of the surface by rubbing the swab in a backward and forward motion for 30 seconds.
3. Place the swab into a sterile bag or container for either transportation to the lab or sample enrichment.
4. Add 10-20 mL of RapidChek *Listeria* Media with Supplement. Make sure that the media completely covers the tip of the swab.
5. Place the sample bag into a Stomacher device and stomach for 30 seconds or hand massage the bottom of the bag.



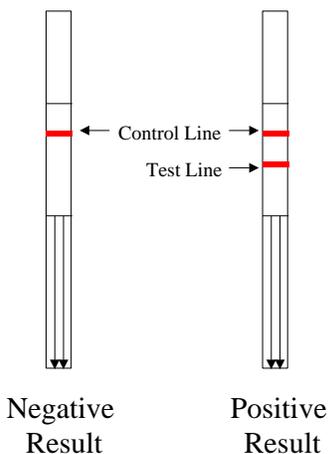
6. Close the bag loosely and incubate for 40 up to 48 hours at  $30 \pm 2^{\circ}\text{C}$ .
7. Proceed to the RapidChek *Listeria* detection procedure.

### **RapidChek *Listeria* Detection Procedure**

1. Take one transfer pipette from the bag (or utilize a calibrated pipette capable of dispensing 400  $\mu\text{L}$ ). Squeeze and hold the bubble on top of the pipette and place into the sample enrichment.
2. Release the bulb completely filling the barrel of the pipette.

**Note:** The bubble will not completely fill with solution.

3. After placing the correct number of supplied plastic tubes into a test tube rack, transfer an aliquot of enriched broth to each tube.
4. Place the rack of tubes into a boiling water bath ( $100^{\circ}\text{C}$ ) or heat block for 5 to 15 minutes.
5. Remove tubes after boiling and allow them to cool to room temperature prior to testing.
6. Remove the required number of test strips from the canister.
7. Insert the strip with **arrows facing down** into the tube.
8. Let the strip develop for 10 minutes.
9. The appearance of **one red line** (control) on the strip indicates a negative result.
10. The appearance of **two red lines** on the strip indicates a positive result.



### **Illustration of Positive and Negative Results**

At least one line, the Control Line, should always develop. A red line in this position indicates that the strip is functioning properly. If the test strip displays 2 red lines, the test is complete and the sample is a presumptive positive for *Listeria* species.

If at 10 minutes the test strip only shows a clearly visible Control Line, then the sample is negative for *Listeria* species. If no control line develops within 10 minutes, the test is invalid and needs to be repeated.

**Note:** Test strip results should be interpreted after 10 minutes. Test strips interpreted after 20 minutes are invalid.

### **Confirmation**

Presumptive positive results must be confirmed by the BAM or the USDA/FSIS Method for the detection of *Listeria*. It is recommended that roast beef, deli turkey, hot dogs, pepperoni and all environmental samples be confirmed using the USDA/FSIS Method. It is recommended that ricotta cheese, smoked fish, cooked shrimp, whole milk, ice cream and potato salad be confirmed using the FDA/BAM protocol.

Enriched media samples used in the RapidChek *Listeria* test procedure **prior to boiling** can be used for this confirmation. For the confirmation procedures see the following:

- (1) FDA/BAM – Detection and Enumeration of *Listeria monocytogenes* (chapter 10) in US Food, Drug and Administration, Center for Food Safety and Applied Nutrition, Bacteriological Analytical Manual <http://www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalyticalManualBAM/ucm071400.htm>
- (2) USDA/FSIS – *Isolation and Identification of Listeria monocytogenes from red meat, poultry, egg and environmental samples*. (Chapter 8, revision 8) in USDA-FSIS Microbiology Laboratory Guidebook <http://www.fsis.usda.gov/PDF/MLG-8.pdf>

For all procedures positive and negative controls for enrichment, detection and confirmation are recommended as part of Good Laboratory Practice.



## **Disposal**

Decontaminate RapidChek test strips, pipettes and media by autoclave, bleach, etc., in accordance with local, state and federal regulations.

## **Positive Controls**

Romer Labs recommends two controls for use with the RapidChek *Listeria* kit:

- (1) For RapidChek complete enrichment/detection system – *L. monocytogenes* ATCC 19115, available from American Type Culture Collection at [www.atcc.org](http://www.atcc.org)
- (2) For RapidChek Lateral Flow Strip – *Listeria*, genus specific positive control available from Kirkegaard Perry Laboratories at [www.KPL.com](http://www.KPL.com)

## **Product Shelf life**

The expiration date for the product is displayed along with the part and lot number on the Product Label located on the re-sealable canister. The test strips have a 1 year shelf life from the date of manufacture under desiccated room temperature (15-30°C) conditions. Contact customer service with any questions about product shelf life.

## **Precautions**

1. *Listeria monocytogenes* is a significant human pathogen. Immucocompromised individuals, such as pregnant women, should not be in the vicinity of samples being enriched or tested for *Listeria* as they represent particularly susceptible populations. Extreme care should be used in handling samples which could potentially contain this pathogen. Ensure all biohazardous waste is disposed of appropriately.
2. If polypropylene bottles are used for sample enrichment instead of Stomacher bags, the bottles should be lined with a disposable plastic bag to eliminate potential protein carryover, which will produce erroneous results.

3. Storage conditions higher than room temperature may adversely affect performance of the test strip.
4. Follow standard Good Microbiological Practices where appropriate.

## **Warranties and Liabilities**

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