PRODUCT BULLETIN
Applied Biosystems® Pathogen Detection System

MicroSEQ® *Listeria* spp. Detection Kit

Critical to environmental control

- Detects all species of *Listeria*
- Fast time-to-results
- High sensitivity
- Effective with a wide range of samples
- Lyophilized format for consistency and ease of use

Fast, reliable monitoring

The presence of *Listeria* bacteria can be an early indicator of *Listeria monocytogenes* contamination. The MicroSEQ® *Listeria* spp. Detection Kit offers a fast and effective procedure for detecting *Listeria* bacteria in foods and food-processing facilities.

Proactive prevention

An effective way to prevent *Listeria monocytogenes* contamination is to monitor *Listeria* at all stages of food production. The MicroSEQ® *Listeria* spp. Detection Kit offers a fast and effective procedure to enable facilities to meet that need.

A persistent problem

Controlling *Listeria* contamination is difficult, because food-processing environments are ideal for the growth of *Listeria*.

Listeria contamination has been associated with foods such as raw milk, pasteurized fluid milk, cheeses, ice cream, raw vegetables, fermented raw-meat sausages, raw and cooked poultry, raw meats, deli meats, and raw and smoked fish.

The problem is compounded by the fact that *Listeria* resists heat, salt, nitrite, acidity, and temperatures as low as 34°F (1°C). Freezing temperatures (32°F; 0°C) can slow *Listeria* growth but may not stop it.

They're everywhere

Listeria bacteria thrive all along the food-processing chain. Contamination can occur in food-processing equipment, cooling units, freezer compartments, work surfaces, wet floors, damp walls, standing water, floor drains, mats, conveyor belts, and loading docks. Employee personal hygiene is also a factor, particularly in meat- and poultry-processing environments.

A threat to health and industry

Listeria is a genus of bacteria common throughout the environment. There are six species in the genus *Listeria*. Among them is *Listeria monocytogenes*, the only *Listeria* species associated with listeriosis, a serious foodborne illness.

Listeriosis causes a higher rate of hospitalization and death than any other foodborne illness. It manifests as septicemia, meningitis (or meningoencephalitis), and intrauterine or cervical infection in pregnant women. The highest fatality rate is in susceptible populations, including infants, the elderly, and immune-compromised individuals. Listeriosis is particularly dangerous for pregnant women due to increased chances of miscarriage and stillbirth.

An early indicator

Listeria monocytogenes—the most dangerous of all *Listeria* species— thrives under the same conditions as all *Listeria* bacteria. For that reason, monitoring the presence of *Listeria* is an early indicator of possible *Listeria monocytogenes* contamination in food and food-processing environments.

No time to spare

Vigilant testing is critical to the detection of *Listeria* and possible *Listeria monocytogenes* contamination. Any delay can make a difference.

The MicroSEQ® *Listeria* spp. Detection Kit detects the presence of *Listeria* with a high degree of confidence in just over one day.

By comparison, prevalent methods for testing for *Listeria* contamination are time- and labor-intensive. "Gold standard" culture-based detection procedures take up to 5–7 days. Immunoassay methods take up to 3 days.

From rapid detection to confident follow-up

The MicroSEQ® *Listeria* spp. Detection Kit detects *Listeria* typically in less than 3 hours after enrichment (27–31 hr total), providing food-processing facilities with valuable time to take corrective containment measures. Sensitivity of the kit is 1–3 CFU in 25 g of food or environmental samples.

In the event of detection of *Listeria* contamination, the MicroSEQ® *Listeria monocytogenes* Detection Kit can be used for confident species-specific follow-up detection.

Nowhere to hide

The MicroSEQ® *Listeria* spp. Detection Kit detects all species of *Listeria* in just over 24 hours, with high specificity and sensitivity in a variety of foods and food processing and storage surfaces, including:

- Deli meat products
- Seafood products
- Milk
- Infant formula
- Stainless steel
- Plastic
- Ceramic
- Rubber
- Sealed concrete

Based on fast real-time PCR

The MicroSEQ *Listeria* spp. Detection Kit is based on real-time PCR. Real-time PCR is a proven method for pathogen detection and has been applied successfully to a wide range of foodborne pathogens, including *Salmonella*, *Listeria monocytogenes*, and *E. coli* O157:H7.

Nothing else comes close

With culture-based methods, interpretation of results is highly subjective, which may lead to missed or ambiguous identification. While immunoassay methods may be less subjective, they are based on antibody-binding mechanisms that are prone to interference and lead to false positives and/or false negatives, particularly with high-background noise from other bacteria.

The right answers, when you need them most

The MicroSEQ® *Listeria* spp. Detection Kit detects genetic material common to all *Listeria* species. It provides both high specificity and sensitivity. The kit specifically detects *Listeria* serotypes; it does not detect other pathogens.

Lyophilized for efficiency and ease of use

For maximum ease of use, reliability, and consistency of results, the reagents used in the MicroSEQ® *Listeria* spp. Detection Kit are lyophilized into preformatted assay beads. The beads hold the active enzyme, the target-specific primer and probe set, internal positive control (IPC), and other reagents for PCR. The IPC is provided to help eliminate false negatives by detecting the presence of materials that may inhibit target amplification.

Closed-tube integrity

The MicroSEQ *Listeria* spp. Detection Kit uses specially designed reaction tubes that remain closed throughout the assay process. Once the samples are added, the tubes are closed and remain that way until detection is complete, greatly reducing the chances of contamination.

No electrophoresis or post-PCR processing is required. All the operator has to do is to prepare the assay beads, add the samples and controls, and run the test.

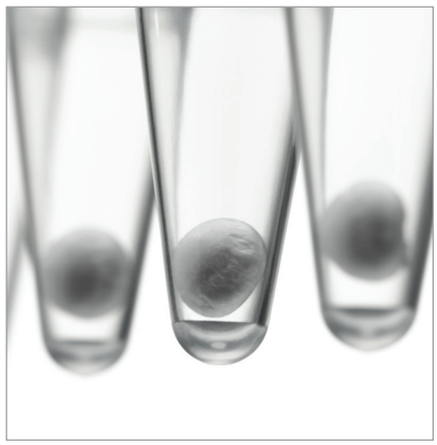

Figure 1. Reagents for the MicroSEQ® *Listeria* spp. Detection Kit provided in a ready-to-use lyophilized format for convenience and reproducibility.

Zero tolerance

Most countries have a zero-tolerance policy regarding the presence of *Listeria monocytogenes* in foods and food-processing facilities. In the US, if a food product is contaminated with *Listeria monocytogenes*, the Food and Drug Administration (FDA) and Food Safety and Inspection Service (FSIS) have the authority to take remedial action, including shutdown of operations.

For food-processing companies, these actions can lead to loss of short- and long-term revenue, consumer confidence, brand equity, and market share.

Sample handling is minimal, and every step is guided by the RapidFinder™ Express Software with on-screen instructions.

Optimized sample preparation

The MicroSEQ® *Listeria* spp. Detection Kit is optimized for use with PrepSEQ™ sample preparation kits. PrepSEQ™ kits remove PCR inhibitors, enhance assay performance, and enable the user to enrich and prepare high-quality samples from a broad range of food sample types as well as environmental surfaces.

- For automated, high-throughput applications, the PrepSEQ™ Nucleic Acid Extraction Kit prepares high-quality microbial DNA and RNA from broth cultures when used with the Applied Biosystems® MagMAX™ Express-96 Sample Preparation System.
- For lower sample numbers, the PrepSEQ™ Rapid Spin Sample Preparation Kit provides a simple, cost-effective way to prepare samples from broth cultures.

Fast, actionable answers

When the *Listeria* assay is complete, RapidFinder™ Express Software presents an easy-to-read screen that allows the user to view the results in each reaction location. Results are clearly displayed and can be labeled with flags, notifications, and prompts that enable the operator to quickly interpret the data and take appropriate action.

A Complete solution

The MicroSEQ® *Listeria* spp. Detection Kit is part of a complete food-testing solution. The kit includes everything required to run 96 reactions. All components have been designed for rapid implementation in food-testing laboratories and are performance-verified to make detection as fast, easy, and reliable as possible. Everything is provided ready to use.

- **Optimized for sensitivity and specificity:** The assay is designed to provide maximum sensitivity on the 7500 Fast Real-Time PCR System.
- **Ready to use:** The active enzyme, reagents, primers and probes, and internal positive control are lyophilized into preformatted assay beads. No mixing is required.
- **Optimized sample preparation:** A choice of sample preparation kits helps ensure high-quality assay results.
- **Software-guided:** Application-specific RapidFinder™ Express Software guides the user through each step of the procedure—from run file setup to final results.

Resources for food safety

As the world leader in real-time PCR, Life Technologies is committed to providing the food industry with improved tools for pathogen detection. The MicroSEQ® *Listeria* spp. Detection Kit is part of a growing family of fast and convenient food pathogen detection tools that utilize lyophilized reagents, application-specific software, optimized sample preparation, and fast real-time PCR instrumentation. Other solutions in our expanding portfolio include the MicroSEQ® *Listeria monocytogenes* Detection Kit, the MicroSEQ® *E.coli* O157:H7 Detection Kit, and the MicroSEQ® *Salmonella* spp. Detection Kit. We also provide responsive, knowledgeable applications consulting, support, training, and technical service. For more information about the MicroSEQ® *Listeria* spp. Detection Kit and our other solutions for food pathogen testing, please contact your local Life Technologies sales representative or visit us at www.appliedbiosystems.com/foodsafety.

Better specificity through chemistry

The MicroSEQ® *Listeria* spp. Detection Kit gains high specificity through the use of TaqMan® chemistry. For example, SYBR® Green chemistry uses only target-specific primers, with an increased likelihood of false positives. TaqMan® chemistry uses target-specific primers and probes to help prevent and eliminate false positives.

Figure 2. Closed-tube detection reduces chances of contamination.

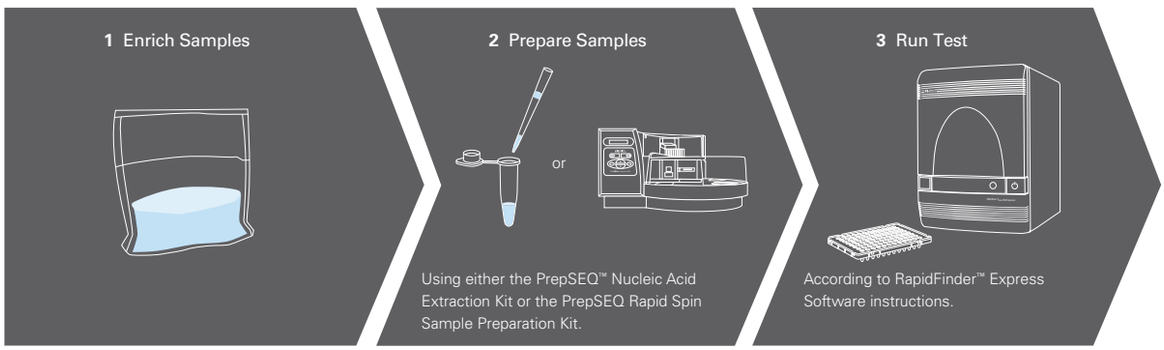

Figure 3. The MicroSEQ® *Listeria* spp. Detection Kit streamlines the assay workflow with optimized sample preparation and assay procedures. Nontechnical personnel with minimal training or prior experience can perform the assay in three simple steps.

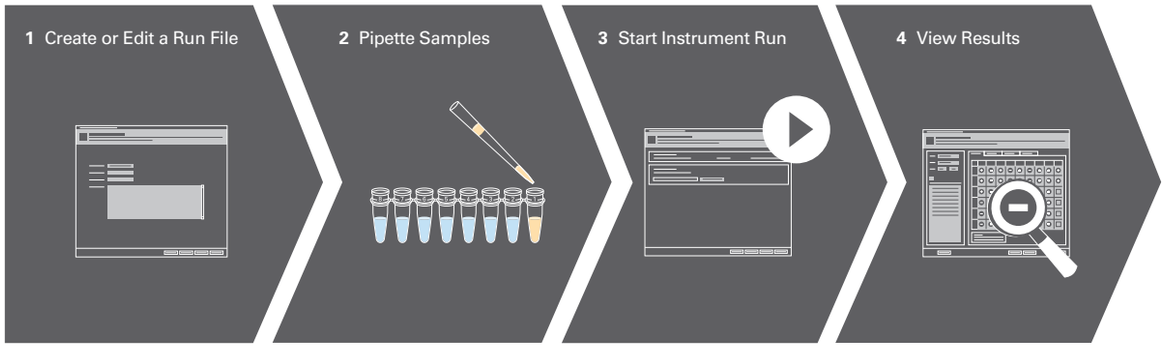

Figure 4. Software-guided procedure. After sample enrichment and preparation, RapidFinder™ Express Software guides the user through the entire workflow with on-screen instructions. Amplification, detection, data collection, and analysis are fully automated.

Ordering information

Description	Part Number
MicroSEQ® Pathogen Detection Kits	
MicroSEQ® *Listeria* spp. Detection Kit	4427410
MicroSEQ® *Listeria* spp. Detection Kit with Protocol and QRC	4445655
MicroSEQ® *Listeria* spp. Detection Kit with PrepSEQ™ Rapid Spin Sample Preparation Kit—Extra Clean with Proteinase K	4445659
MicroSEQ® *Listeria* spp. Detection Kit with PrepSEQ™ Nucleic Acid Extraction Kit	4445658
MicroSEQ® *E. coli* O157:H7 Detection Kit	4427409
MicroSEQ® *Listeria monocytogenes* Detection Kit	4403874
MicroSEQ® *Salmonella* spp. Detection Kit	4403930
Sample Preparation	
PrepSEQ™ Nucleic Acid Extraction Kit	4428176
PrepSEQ™ Rapid Spin Sample Preparation Kit	4407760
PrepSEQ™ Rapid Spin Sample Preparation Kit with Proteinase K	4426714
PrepSEQ™ Rapid Spin Sample Preparation Kit—Extra Clean	4413269
PrepSEQ™ Rapid Spin Sample Preparation Kit—Extra Clean with Proteinase K	4426715
Instrumentation and Software	
Food Pathogen Detection System Package: Applied Biosystems® 7500 Fast Real-Time PCR System with PC Tower and RapidFinder™ Express Software	4445785
Food Pathogen Detection System Package: Applied Biosystems® 7500 Fast Real-Time PCR System with Notebook Computer and RapidFinder™ Express Software	4445787
MagMAX™ Express-96 Sample Preparation System	4400079
RapidFinder™ Express Software	4440751

Headquarters
5791 Van Allen Way | Carlsbad, CA 92008 USA
Phone 760.123.4567 | Toll Free 800.123.4567
www.lifetechnologies.com

International Sales
For our office locations please call the division headquarters or refer to our Web site at
http://www.lifetechnologies.com/about-life-technologies/contact-us.html

life technologies™