

Food testing

Thermo Scientific Listeria Precis Methods

More accurate *Listeria* testing



Reinventing the standard for culture-based *Listeria* testing

Reliable detection of *Listeria* in foods, ingredients and in samples taken from the production environment using culture media-based methods can be challenging and time-consuming. Traditional and reference culture-based methods take a dual-enrichment and dual-plating approach to try to ensure recovery of all strains, including those that are more sensitive to certain selective agents or that don't give typical biochemical reactions, as well as those competing to grow in high levels of background flora.

The introduction of chromogenic agars in recent years has made it possible to simplify the workflow to a single enrichment followed by a single plating step, but this has generally been at the expense of the test sensitivity and specificity. Laboratories running these methods may be conducting more confirmatory tests than is necessary and potentially putting their brand and consumers at risk.





***Listeria* testing challenges**

The performance of chromogenic agar media can be greatly impacted by multiple factors including the quality of components such as the chromogens, target substrates and selective agents, but the biggest factor is the health and concentration of the target bacteria in comparison to other organisms present in the enrichment used to inoculate the chromogenic agar plates.

Many proprietary culture-based *Listeria* methods take established enrichment media and try to overcome the issue of reduced sensitivity and specificity through mitigating steps such as:

- Increasing the volume of plate inoculant from 10 μL to 100 μL . This creates an increased risk for cross-contamination between samples as it necessitates the use of a pipettor to take the aliquot from the enrichment bag onto the plate.
- Increasing the incubation temperature for the enrichment step to increase specificity requiring labs to remember non-standard steps and maintain multiple incubators.

Introducing Thermo Scientific Listeria Precis Methods

Each component of the Thermo Scientific™ Listeria Precis™ Methods has been expertly designed to overcome sensitivity and specificity issues without the need to carry out non-standard handling steps.

Listeria Precis Detection Method

Single workflow for simultaneous detection of:

- *Listeria* species
- *Listeria monocytogenes*

20
hours



Enrich sample for
20-26 hours in Thermo
Scientific™ Oxoid™ 24 Listeria
Enrichment Broth (24 LEB)

22
hours



Inoculate Thermo Scientific™
Oxoid™ Brilliance™ Listeria Agar
(ISO) plate with 10 µL loop and
incubate for 22-26

15
mins



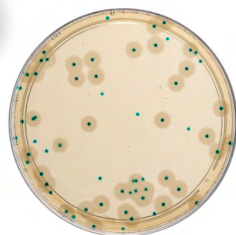
Confirm typical colonies:
Blue = *Listeria* spp.
Blue + halo = *L. mono*
with Thermo Scientific™
PrecisCheck™ Kit strips

Listeria Precis Enumeration Method

Single workflow for simultaneous enumeration of:

- *Listeria* species
- *Listeria monocytogenes*

24-45
hours



Dilute in Oxoid 24 LEB or
BPW (ISO). Surface or pour
inoculation of Oxoid Brilliance
Listeria Agar (ISO)

15
mins



Count and confirm typical colonies:
Blue = *Listeria* spp. Blue + halo =
L. mono
with PrecisCheck Kit strips

Can Listeria Precis Methods really be quicker, better value and just as accurate?

Listeria Precis Methods are the next generation in culture media-based testing with a simplified workflow compared to other culture media methods. Superior performing culture media mean a simpler workflow, easier to read plates and fewer presumptive-positive colonies to confirm.

One plate delivering right first-time results

Blind studies demonstrated growth of all *Listeria* strains tested on Oxoid *Brilliance* Listeria Agar (ISO) after just 20 hours enrichment in Oxoid 24 LEB. Users preferred the selectivity of the Oxoid *Brilliance* Listeria Agar (ISO) plate.

One enrichment broth for all Thermo Scientific Listeria methods

Oxoid 24 LEB is the starting point for all Thermo Scientific alternative methods, e.g. Thermo Scientific™ SureTect™ Listeria species and *Listeria monocytogenes* PCR methods.

One loop for all sample types

Single 10 µL microbiological loop inoculation of plates for Listeria Precis Detection and Enumeration Methods.

One third reduced plate inoculation time

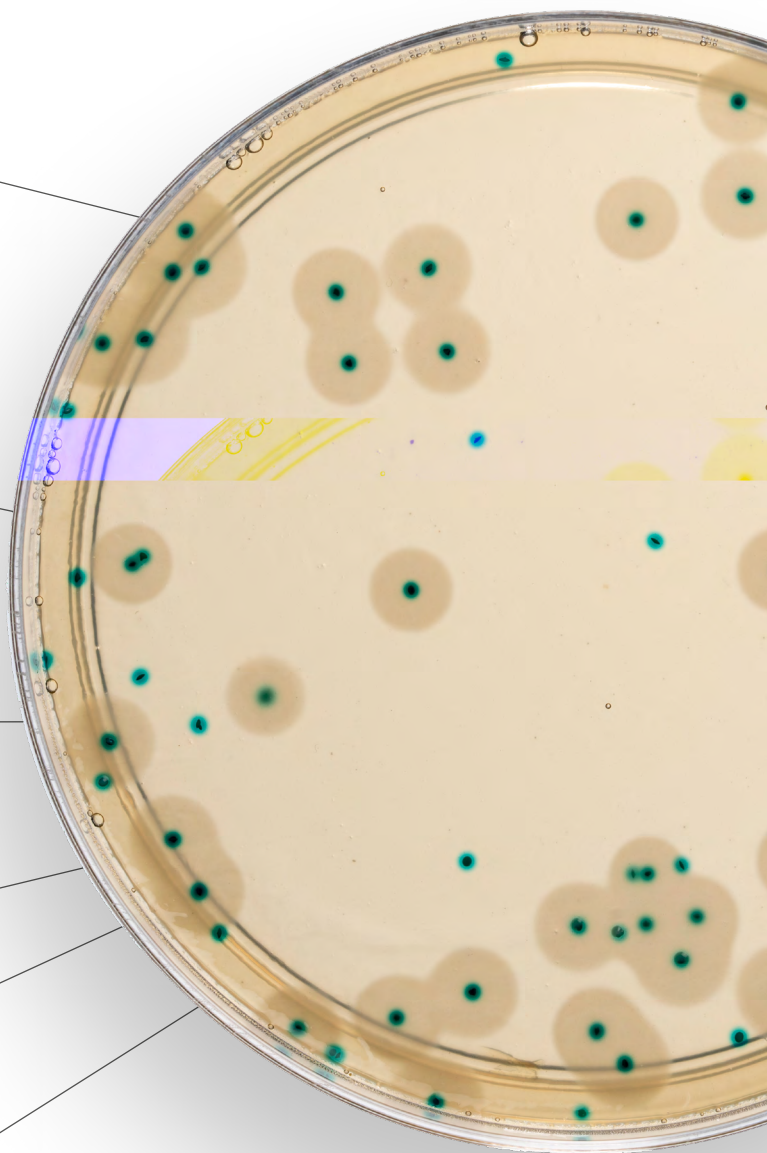
Compared to other 'rapid' culture-based methods.

One incubation temperature

A single incubator temperature for enrichment and plate for streamlined laboratory operations.

One 15 minute confirmation method

NEW method for confirming *Listeria* species or *Listeria monocytogenes* direct from the plate.



The Listeria Precis Methods have been certified by NF Validation following the ISO 16140-2:2016 study requirements (Certificate numbers: UNI 03/04-04/05, UNI 03/14-/06/22, UNI 03/05-09/06). The methods enable both *Listeria* spp. and *Listeria monocytogenes* detection and enumeration. The validation scope covers a broad range of foods as well as environmental surfaces.

Listeria PreciS Methods

The Listeria PreciS Detection Method enables simultaneous and rapid detection of *Listeria* spp. and *Listeria monocytogenes* in food and food production environments, with a simple 15-minute confirmation step. The workflow uses Oxoid 24 LEB to selectively enrich and favor the recovery of *Listeria* strains. This is followed by inoculation of a single Oxoid *Brilliance* Listeria Agar (ISO) plate and finally, rapid confirmation of presumptive-positive colonies with the PreciSCheck Kit strips.

The performance of the Oxoid 24 LEB enables target organisms to recover and multiply to a level that can then be detected by inoculating and incubating Oxoid *Brilliance* Listeria Agar (ISO) plates with just 10 µL of enrichment. Other rapid culture methods try to overcome inferior performance at this stage by requiring that a 100 µL volume of enrichment is used. For the Listeria PreciS Methods a standard disposable 10 µL microbiological loop of enrichment was demonstrated to be sufficient to achieve the same Limit of Detection (LOD) as the ISO reference method.

It is commonly known that pipetting at this stage increases the risk of cross-contamination events, with the spread of microdroplets resulting in false-positive results. The use of a disposable 10 µL microbiological loop limits cross-contamination and also saves handling time when compared to using a pipettor with disposable tips. An independent study showed that when 70 samples were analyzed, the handling time for plate inoculation was reduced by 33%, a saving of 20 minutes for each hour spent on workflow handling.

“Marked contrast of the halo; very little additional flora; size of the halo is more pronounced than the other media from 22 hours”—GM

“Impressive confirmation method—truly exciting”—CG

Key benefits



Faster time to results

Results in under 43 hours, including confirmation testing



One loop for all sample types

Reducing the possibility of cross-contamination



10 µL of enrichment*

More efficient, with reduced handling



Delivering accurate first-time results

Oxoid 24 LEB enhances *Listeria* recovery and growth and restricts the growth of background microflora

*The performance of the Oxoid 24 LEB enables the target organism to recover and multiply to a level that can then be detected on Oxoid *Brilliance* Listeria Agar (ISO) inoculated with just 10 µL of enrichment, where other rapid culture methods require 100 µL volume of enrichment.

Can your lab afford not to use Listeria Precis Methods?

The Listeria Precis Methods offer multiple benefits in handling, performance and time to result when compared to other rapid chromogenic culture-based methods, and significant time and handling savings when compared to ISO reference methods helping laboratories to streamline workflow and provide more accurate rapid results.

Listeria Precis Detection Method workflow

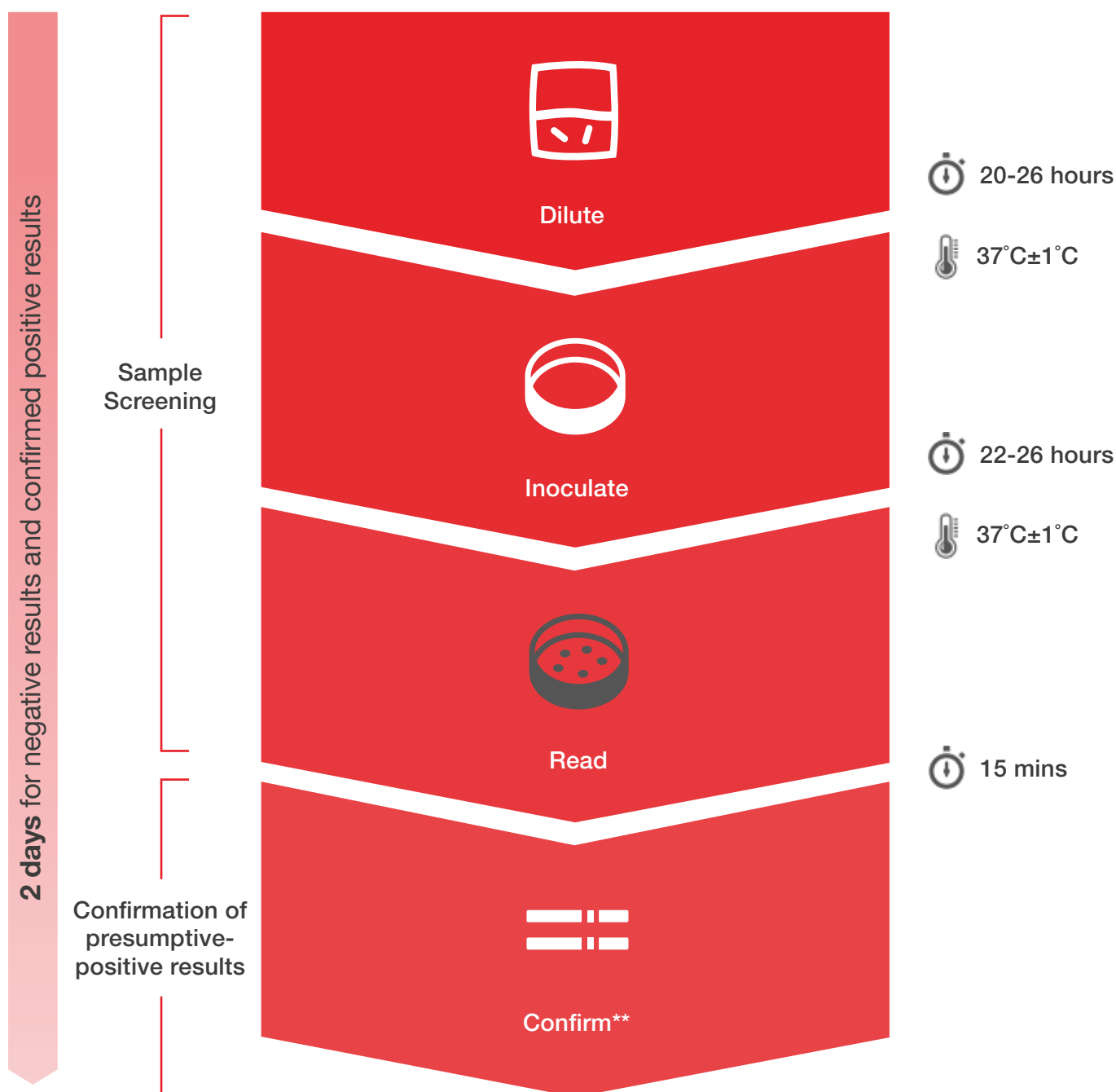


Figure 1

**Alternative confirmation tests may be used in place of the PrecisCheck Listeria species and PrecisCheck L. monocytogenes Kits, e.g. Microbact Listeria 12L Kit, O.B.I.S. Mono. Please refer to the Listeria Precis Methods instructions for use (available on request).

Listeria Precis Method Products

Ordering information

		Description	Format	Order Code
ENRICHMENT	Thermo Scientific Oxoid 24 Listeria Enrichment Broth (24 LEB)	24 LEB Base (dehydrated culture medium)	500 g (makes 7 L) 5 Kg (makes 70 L)	CM1107B CM1107T
		24 LEB Base (prepared medium)	10 x 225 mL bottles	BO1205S
		Plus		
		24 LEB Selective Supplement (Listeria Precis Detection Method only)	10 vials (each for 500 mL)	SR0243E
		Or		
		FitBag 24 LEB (ready to rehydrate medium with selective supplement)	30 x 2.7 L 20 x 4.5 L 10 x 9 L	DF1107A DF1107B DF1107C
		QuickBag 24 LEB (ready to rehydrate medium with selective supplement)	3 x 2.7 L 2 x 2.5 L	DQ1107A DQ1107B
		Dry-Bags 24 LEB (ready to rehydrate medium with selective supplement)	5 x 20 L	DB1107V
		24 LEB Buffer Supplement (added to all formats of 24 LEB for Listeria Precis Detection Method only)	24 bottles of 10 mL (each for 225 mL)	BO1339E
	Thermo Scientific Oxoid ONE Broth Listeria	ONE Broth Listeria Base (dehydrated culture medium)	500 g (makes 11.3 L) 5 Kg (makes 113 L)	CM1066B CM1066R
		ONE Broth Listeria Base (prepared medium)	10 x 225 mL bottles	BO1066S*
		Plus		
		ONE Broth Listeria Selective Supplement	10 vials (each for 500 mL) 10 vials (each for 2.25 L)	SR0234E SR0243B
		ReadyBags ONE Broth Listeria (ready to use medium)	3 x 3 L bags	FR60031*
DETECTION	Thermo Scientific Oxoid Brilliance Listeria Agar (ISO)	Brilliance Listeria Agar (ISO) Base (dehydrated culture medium)	500 g (makes 7 L) 5 Kg (makes 70 L)	CM1212B CM1212T
		Brilliance Listeria Agar (ISO) Base (prepared medium for pour plates)	10 x 200 mL bottles	BO1370Z*
		Plus		
		Brilliance Listeria Agar (ISO) Selective Supplement	10 vials (each for 500 mL) 10 vials (each for 200 mL)	SR0257E SR0257B
		Plus		
		Brilliance Listeria Agar (ISO) Differential Supplement	10 vials (each for 500 mL) 10 vials (each for 200 mL)	SR0258E SR0258B
		Or		
		Brilliance Listeria Agar (ISO) Plates	Pack of 10 x 90 mm plates	PO1298A* PO5332A*
CONFIRMATION		Thermo Scientific PrecisCheck Listeria species Kit	45 test strips	LF0100A*
		Thermo Scientific PrecisCheck Listeria monocytogenes Kit	50 test strips	LF0200A*
		Or		
		Thermo Scientific Microbact Listeria 12L Kit	20 tests	MB1128A
		Or		
		Thermo Scientific Biochemical Identification System (O.B.I.S.) Mono (Differentiates <i>L. mono</i> from other <i>Listeria</i> species)	60 tests	ID0600M

*Not available in all countries, please check with your local supplier for availability and alternative order code.

 Learn more about Listeria Precis™ Methods at thermofisher.com/listeria-precis