



Food testing

Get the complete picture

Microbiological analysis in the poultry chain

Introduction

In the fast-moving, high-volume, low-margin business of poultry production, microbiological testing can eat into productivity and profitability.

The need for robust procedures at every step of the journey, from primary production and processing, to the point of release to market, and ongoing environmental monitoring, is crucial.

Thankfully, the Thermo Scientific™ solutions for the microbiological testing of poultry provide everything laboratories need to shorten time-to-result and streamline workflow at each step, helping to boost productivity and profitability, without ever compromising on safety.

- Complete workflows that cover the enrichment, detection, enumeration, and confirmation of key microbiological targets.
- Products that meet the formulations stated in the relevant ISO, FDA-BAM and USDA-FSIS reference methods.
- Alternative, validated methods with shorter time-to-result, including chromogenic media methods and real-time PCR solutions.
- A wide range of culture media formats, including ready-to-use and ready-to-hydrate enrichment media and chromogenic plate media.





Pathogen risk and quality indicator management in the poultry sector

Pathogen risk management and quality control is central to the success of any poultry operation – failing to monitor flocks, processes, products, and the environment for dangerous microorganisms can result in consumer safety concerns as well as costly facility shutdowns and product recalls.

Control measures focus on eliminating or reducing risk at every stage of the production journey:

- 1. Primary production:** pathogens naturally present in the environment and poultry farm have the potential to survive into processing.
- 2. Processing and finished products:** The slaughtering, de-feathering, evisceration, chilling, portioning, and packaging of poultry introduces multiple possible routes of contamination, via handling and equipment. Microorganisms not effectively prevented from entering or eliminated during primary production can also proliferate during processing and end up in the finished poultry products, from shell eggs to fresh meat and cooked products. Producers must assure the safety and quality of production, to ensure that the pathogens present during primary production or processing are successfully eliminated or controlled during the processing.
- 3. The environment:** poultry production comprises multiple points of possible environmental contamination; environmental monitoring consists of tracking pathogens and other microbes in primary production and processing areas and equipment.

Salmonella is the most critical pathogen in the poultry sector, and needs to be monitored for throughout the process. The serotypes *Salmonella* Enteritidis and *Salmonella* Typhimurium are the most concerning worldwide due to their ability to cause infection in humans, their prevalence and their increasing resistance to antibiotics. For this reason, these serotypes are under scrutiny and are regulated in some territories. This is the case with the USDA National Poultry Improvement Plan (NPIP), the European Regulation EC 1086/2011 and the KPIs set up by USDA:FSIS in 2022.

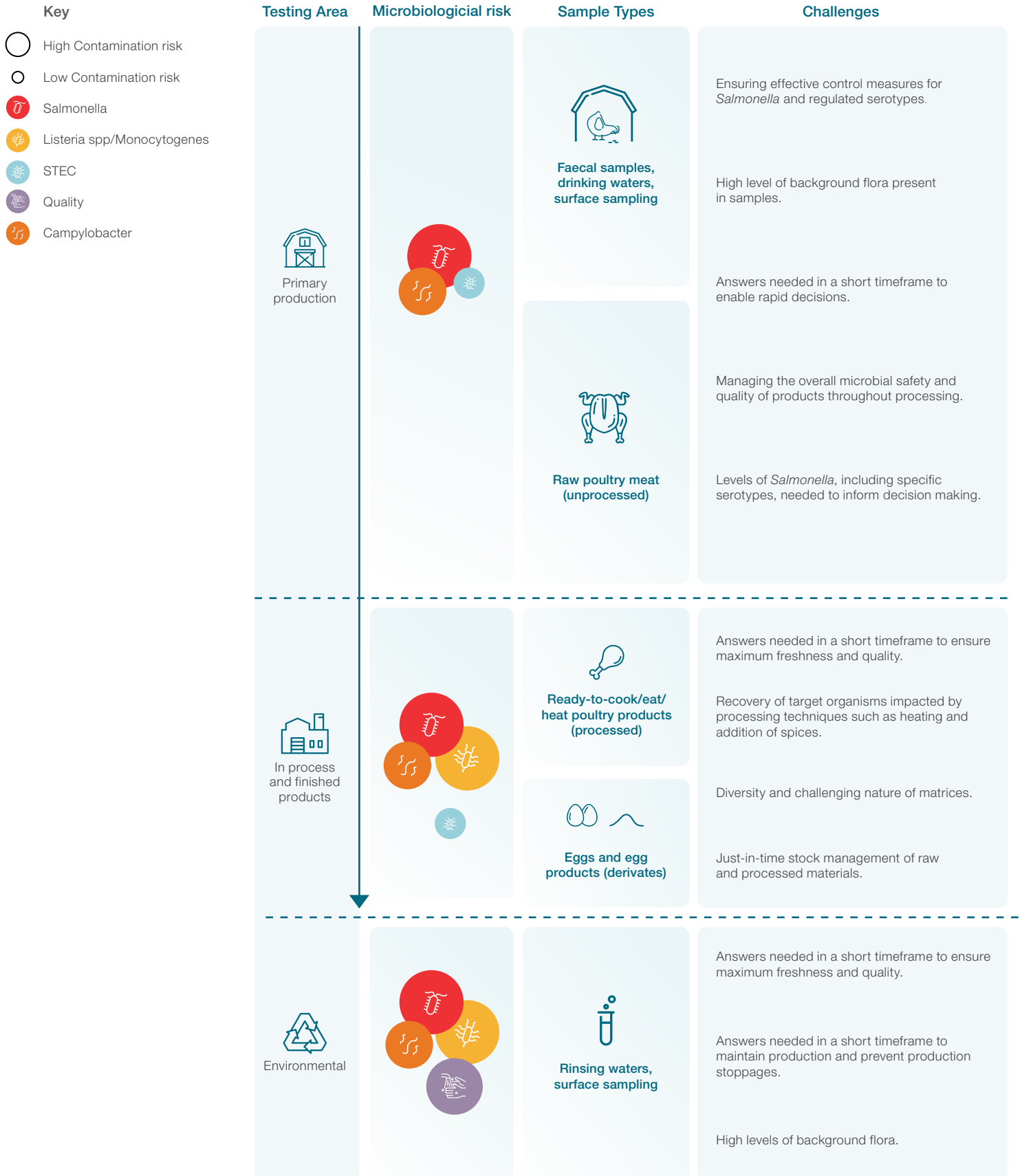
Multiple other pathogens are tracked by the poultry industry; *Campylobacter* for example is itself ubiquitous in poultry farms, being found in soil, water, surfaces, and air.

Poultry is a natural potential carrier of *Listeria* species, including *Listeria monocytogenes*, which can survive and multiply in flocks, on processing equipment, and in finished products, and can be challenging to detect in samples with high background flora.

While Shiga toxin-producing *Escherichia coli* (STEC) are not commonly associated with poultry, the risk of possible cross-contamination of meat during the processing of multi-component ready-to-eat foods should be considered.

Monitoring and enumeration of quality indicators such as *E. coli*, Enterobacteriaceae or coliforms, can help to indicate hygiene levels in the environment, unmasking potentially improper processing and poor sanitation in the processing environment, and enabling corrective action.

The range of challenges faced at every stage of production and testing





Your challenges, our solutions

Whatever your microbiological challenge, there's a Thermo Scientific™ solution to help

Thermo Fisher Scientific provides a total and comprehensive portfolio of solutions for microbiology analysis of poultry samples. From reference methods, to validated rapid culture media and PCR-based alternative methods, we offer everything to rapidly and reliably test:

- Pathogens
- Quality indicators

Smart solutions for your current and future testing needs

Flexible

Mix and match to configure the workflow that best suits your laboratory's techniques and matrices.

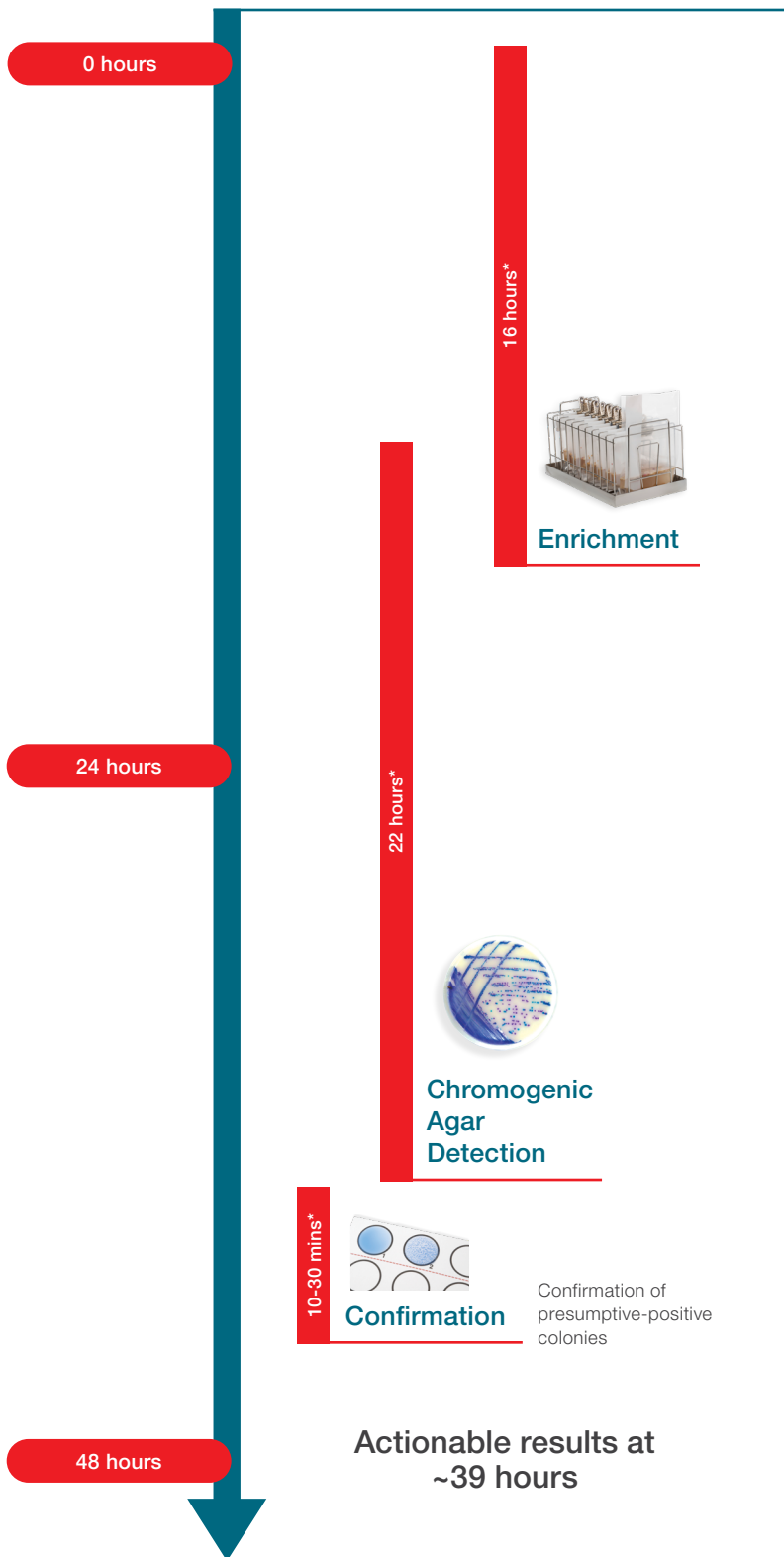
Reliable

Thermo Scientific™ SureTect™, SureCount™ and RapidFinder™ PCR Assay methods and Thermo Scientific™ Precis™ methods are ISO 16140-2:2016 validated by AFNOR or MicroVAL Certification and/or AOAC certified according to the Performance Tested Methods (PTM) or Official MethodsSM of AnalysisSM (OMA) certification scheme.

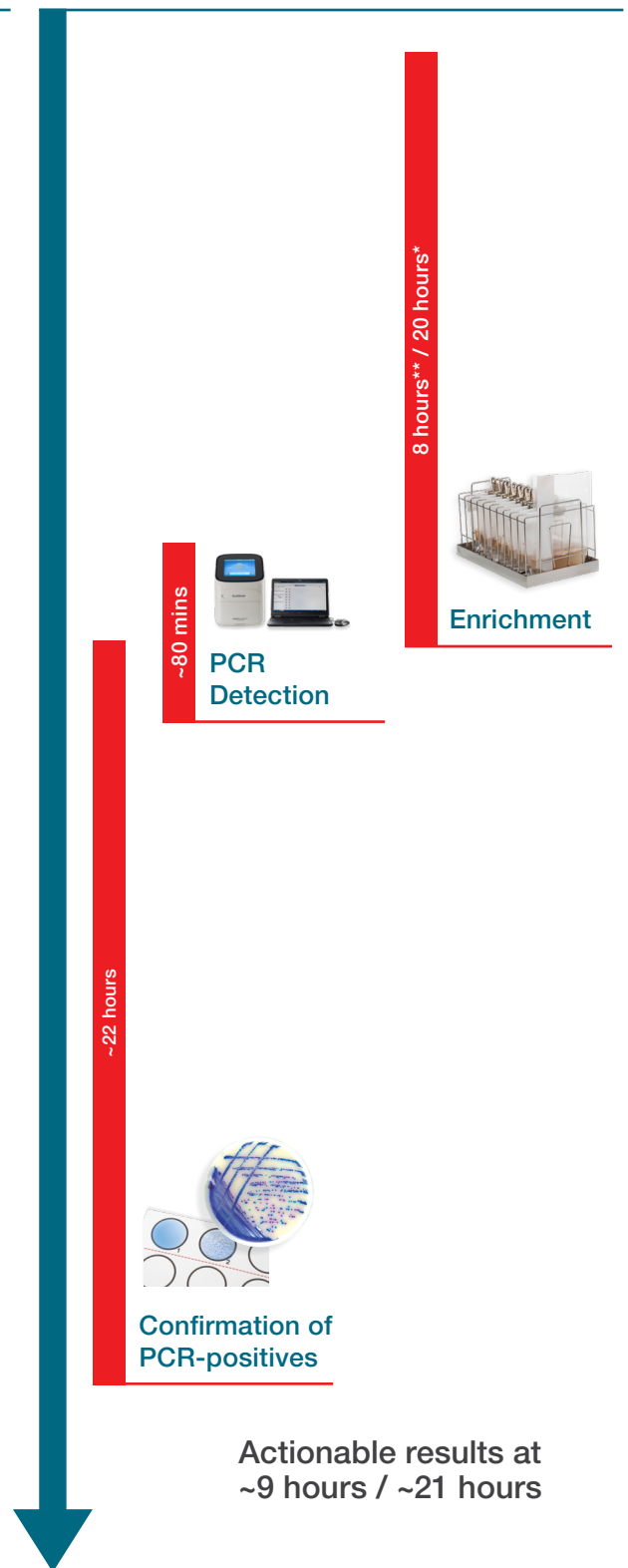
- Complete and flexible workflow solutions from enrichment to confirmation with a choice of formats to suit your laboratory.
- Extensive validation of our PCR- and chromogenic culture media-based Precis methods for a wide range of food and environmental sample types.
- Short time-to-results: results in under 24 hours using the SureTect PCR Assay methods, or in under 48 hours using the Precis Detection and Enumeration Methods.
- Simultaneous *Salmonella* detection and serotyping in under 24 hours with the RapidFinder Salmonella species, Typhimurium Enteritidis and Multiplex PCR Kit and SureTect Salmonella Infantis PCR Assay.
- Simultaneous *Salmonella* detection, quantification and serotyping in around 8 hours with the SureCount Salmonella species, Typhimurium and Enteritidis Multiplex PCR Kit method.

Typical workflows for Thermo Scientific alternative methods

Precis Method workflow overview



SureTect PCR Assay Method overview



- Full portfolio of products for the complete enrichment to detection and confirmation workflow.
- Full range of different solutions from molecular to culture media to rapid identification methods.

Problem solved:

How Thermo Fisher can help

Your challenges



Different testing at multiple processing steps can complicate workflows



Waiting for results slows throughput



Salmonella serotype tracking is fundamental in poultry, but it drains productivity



Regional regulatory differences put compliance at risk



Challenging matrices threaten confidence in results



A full range of complete workflow solutions for the poultry sector



Smarter analytical tools



Validated for complete confidence



Simple workflows for quick and easy implementation



Formats to suit your laboratory

Our solutions

Our solutions are flexible: can be configured to meet your needs, covering enrichment, detection, serotyping and confirmation, and are validated over a wide range of matrices.

PCR-based methods: SureTect PCR Assay methods provide results for pathogens of interest to the poultry industry in under 24 hours. Enumeration results for *Salmonella* spp. *S. Typhimurium* and *S. Enteritidis* are available in under 8 hours with the SureCount Salmonella Multiplex PCR Kit method.

Alternative culture-media based methods: The Precis Methods quickly detect pathogens in under 48 hours.

The RapidFinder Salmonella Multiplex PCR Kit method detects all *Salmonella* species and simultaneously differentiates between *S. Enteritidis* and *S. Typhimurium* in under 24 hours. Additionally the SureTect Salmonella Infantis PCR Assay can be used to simultaneously detect *Salmonella Infantis* in the same sample.

Quantification and serotyping of *Salmonella* can also be achieved in under 8 hours with a single PCR test by using the SureCount Salmonella Multiplex PCR Kit methods.

Culture-media and PCR-based Thermo Scientific alternative methods are validated according to ISO 16140-2 (by AFNOR or MicroVAL), AOAC PTM or AOAC OMA program.

Our solutions are validated with the most challenging poultry matrices, including primary production samples, intermediate and finished poultry products, and production environment samples.

From reference to alternative, validated methods, we offer the complete workflow from primary production to market release and environmental monitoring, from enrichment to detection, quantification and confirmation.

Thermo Scientific solutions can help you meet your current and future needs in pathogen and quality indicator analysis, whatever they might be.

Configure your workflow to suit your laboratory's own matrices, resources, and requirements. Optimise workflows to reduce hands-on time and shorten time-to-results.

Flexible. Adaptable. Reliable.

Protect your customers and your brand by choosing analytical methods you can trust, no matter where in the world you operate.

From enrichment to confirmation, our alternative, validated workflows are simple and easy-to-use, helping you to boost productivity by reducing training requirements and hands-on time.

Choose from dehydrated culture media and supplements or ready-to-use or ready-to-hydrate culture media formats. Agar plates can also be purchased ready-to-use for maximum convenience or prepared in-house from dehydrated culture media and supplements as needed.

Choose from a comprehensive range of Thermo Scientific™ solutions to screen, track, and analyze the full range of pathogens and quality indicators relevant to the poultry industry

Target	Method	Technology	Organisms detected	Validation**
Salmonella	Salmonella Precip Detection Method Learn more »	Culture media	<i>Salmonella</i> spp.	AFNOR »
	Salmonella Rapid Culture Method Using ONE Broth Salmonella and Brilliance Salmonella Agar Learn more »	Culture media	<i>Salmonella</i> spp.	AOAC-PTM »
	RapidFinder™ Salmonella Species, Typhimurium and Enteritidis Multiplex PCR Kit Learn more »	PCR	<i>Salmonella</i> Enteritidis, <i>Salmonella</i> Typhimurium and <i>Salmonella</i> spp.	AFNOR » AOAC-PTM »
	SureCount™ Salmonella species, Typhimurium and Enteritidis Multiplex PCR Kit Learn more »	PCR	<i>Salmonella</i> Enteritidis, <i>Salmonella</i> Typhimurium and <i>Salmonella</i> spp.	AOAC-PTM
	SureTect™ Salmonella species PCR Assay Learn more »	PCR	<i>Salmonella</i> spp.	AFNOR and MicroVal » AOAC-PTM & OMA »
	Thermo Scientific™ RapidFinder™ Salmonella Species, Typhimurium and Enteritidis Multiplex Flex PCR Kit Learn more »	PCR	<i>Salmonella</i> Enteritidis, <i>Salmonella</i> Typhimurium and <i>Salmonella</i> spp.	AFNOR »
	Thermo Scientific™ SureTect™ Salmonella Infantis PCR Assay Learn more »	PCR	<i>Salmonella</i> Infantis	AOAC-PTM
Campylobacter	Brilliance™ CampyCount Agar Learn more »	Culture media	<i>Campylobacter</i> spp.	MicroVal »
	SureTect™ Campylobacter jejuni, C. coli and C. lari PCR Assay Learn more »	PCR	<i>Campylobacter jejuni</i> , <i>Campylobacter coli</i> and <i>Campylobacter lari</i>	AOAC-PTM »
Listeria	Listeria Precip (Enumeration) Learn more »	Culture media	<i>Listeria monocytogenes</i>	AFNOR »
	Listeria Precip (Detection) Learn more »	Culture media	<i>Listeria monocytogenes</i>	ISO 16140-2 »
	SureTect™ Listeria monocytogenes PCR Assay Learn more »	PCR	<i>Listeria monocytogenes</i>	ISO 16140-2 » AOAC-PTM & OMA »
	SureTect™ Listeria species PCR Assay Learn more »	PCR	<i>Listeria</i> spp.	AFNOR » AOAC-PTM & OMA »
E. coli O157:H7 and other STEC	SureTect™ E. coli O157:H7 PCR Assay Learn more »	PCR	<i>E. coli</i> O157:H7	AOAC-PTM » AFNOR »
	SureTect™ Escherichia coli O157:H7 and STEC Screening PCR Assay Learn more »	PCR	<i>E. coli</i> O157:H7 and STEC serotypes O26, O45*, O121*, O145, O103 and O111	AFNOR » AOAC-PTM »
	SureTect™ Escherichia coli STEC Identification PCR Assay Learn more »			

*These serogroups, O45 and O121, are covered by AOAC-PTM certification only.

** In the case of AFNOR and MicroVal validation, this is in accordance with ISO 16140:2 2016



The flexibility of SureTect PCR System

Detection or confirmation, with simultaneous serotyping when needed

According to the ISO 7218:2007 standard, the use of molecular hybridization may be used to confirm colonies if the assay performances are properly assessed and validated.

All Thermo Scientific PCR Assays for pathogen detection are validated according to ISO 16140-2:2016 validated requirements by AFNOR or MicroVAL Certification and/or according to AOAC-PTM and/or AOAC-OMA scheme and therefore may also be used for:

- detection when testing enrichment broths
- or for confirmation of presumptive-positive colonies grown on agar plates used as part of other validated alternative methods or ISO reference method

In addition, the RapidFinder Salmonella Multiplex PCR Kit, SureTect Salmonella Infantis PCR Assay, the SureCount Salmonella Multiplex PCR Kit, the SureTect Escherichia coli O157:H7 and STEC Screening and Identification PCR Assays enable serotyping either in the detection workflow or in the confirmation workflow.

- The RapidFinder Salmonella Multiplex PCR Kit method detects *Salmonella* species and identifies regulated serotypes, *S. Typhimurium* and *S. Enteritidis*, at the same time and the SureTect Salmonella Infantis PCR Assay can be added for additional serotype information. Starting from enriched samples or from characteristic colonies the test is unique in the market, providing a powerful tool for *Salmonella* control programs in poultry production and other segments.
- The SureTect *E. coli* O157:H7 PCR Assay for the screening and identification of *E. coli* O157:H7, the SureTect *E. coli* O157:H7 and STEC Screening PCR Assay and SureTect STEC Identification Assay enables the detection and typing of *E. coli* O157:H7 and O- groups O26, O45, O103, O111, O121, O145 at the same time. STEC are not commonly associated with poultry, but their presence is increasing within multicomponent ready-to-eat foods, thus posing a concern.

Learn more at thermofisher.com/poultry-testing-solutions

Thermo Fisher Scientific products are distributed globally. The appropriate use, application and availability of products in each country depends on local regulatory marketing authorization status.