Food Microbiology Testing Methods: *Salmonella* species

ThermoFisher SCIENTIFIC

Salmonella species

The genus *Salmonella* belongs to the family *Enterobacteriaceae*. *Salmonella* are Gram-negative, non-spore forming rods. There are over 2,500 serovars of Salmonella, which are characterized according to somatic (O) and flagellar (H) antigens.

Salmonellae are chemoorganotropic, with an ability to metabolize nutrients by both respiratory and fermentative pathways. The bacteria are oxidase and catalase negative, grow optimally at 37°C, and catabolize D-glucose and other carbohydrates with the production of acid and gas. However, they readily adapt to extreme environmental conditions and can grow at both elevated and refrigerator temperatures.

Incidence

Salmonellosis is the most frequently reported cause of foodborne illness. An estimated one million cases occur annually in the United States; of these, approximately 35,000 are laboratory-confirmed cases reported to Centers for Disease Control and Prevention.

Infective dose

The ingestion of 1-10 cells can constitute a human infectious dose. Low cell numbers can be highly infectious, especially in high fat foods where the microorganism can escape the gastric acidity and be released in the intestine through bile mediated dispersion of the lipids.

Foods affected

Despite the general perception that chicken and egg products are the primary source of *Salmonella* infections, many outbreaks in recent years have been associated with tomatoes, peanut butter, and vegetable sprouts. Other affected foods include: raw meat, powdered infant formula, milk and dairy products, fish, shrimp, salad dressing, cake mixes and chocolate.

The detection of *Salmonella* in foods before they are consumed is vital for safeguarding public health, and essential for preserving the financial health and reputation of food businesses.

Methods Overview

The following methods illustrated for *Salmonella* species include reference and alternative validated and certified methods as follows:

1. Reference method: ISO 6579-1:2017 Microbiology of the food chain – Horizontal method for the detection, enumeration and serotyping of Salmonella – Part 1: Detection of *Salmonella* spp.

2. Alternative method: Thermo Scientific™ SureTect™ Salmonella species PCR Assay workflow

3. Alternative method: Thermo Scientific™ RapidFinder™ Salmonella species, Typhimurium and Enteritidis Multiplex PCR Assay methods

4. Alternative method: Thermo Scientific™ Salmonella Precis™ method

References

United States Food and Drug Administration. Bad Bug Book, 2nd Edition: Foodborne pathogenic microorganisms and natural toxins handbook: Salmonella: https://www.fda.gov/food/foodborne-pathogens/bad-bug-book-second-edition:

D'Aoust J, Maurer J. 2007. Salmonella Species, p 187-236. In Doyle M, Beuchat L (ed), Food Microbiology: Fundamentals and Frontiers, Third Edition. ASM Press, Washington, DC.

Reference Method: ISO 6579:2017 Microbiology of the food chain – Horizontal method for the detection, enumeration and serotyping of Salmonella – Part 1: Detection of *Salmonella* spp.

This is a summary of the ISO 6579 Part 1: Detection of *Salmonella* spp. in food (including milk and milk products), in animal feed, in animal faeces, and in environmental samples from the primary production stage.

Workflow overview for ISO 6579:2017 Part 1

Day 0

25 g + 225 mL Buffered Peptone Water (BPW)
1 swab + 10 mL BPW
1 sponge + 100 mL BPW
1 wipe + 225 mL BPW

Incubate for 16-20 h at 34-38 °C

Day 1

Add 100 µL of primary enrichment to 10 mL of Rappaport-Vassiliadis Peptone Soya broth (RVS) or Modified Semi-solid Rappaport Vassiliadis (MRSV) agar.

Incubate for 21-27 h at 40.5-42.5 °C

Add 100 µL of primary enrichment broth to 10 mL of Muller-Kauffman Tetrathionate Broth (MKTTn) supplemented with Novobiocin and Iodine-iodide.

Incubate for 21-27 h at 34-38 °C

Day 2

Plate 10 µL of secondary enrichment broth onto Xylose Lysine Deoxycholate Agar (XLD) and a secondary isolation medium
and
Plate 0.1 µL from MSRV or RVS onto XLD and a secondary isolation medium
Incubate XLD plates for 21-27 h at 34-38 °C
(incubate the secondary isolation medium according to the manufacturer's instructions)

Day 3

Confirm up to five presumptive-positive colonies by selecting either well isolated colonies where there is sufficient growth, or by first sub-culturing on to a non-selective agar such as Nutrient Agar.

Incubate for 21-27 h at 34-38 °C

Day 4-5

Biochemical confirmation
Refer to ISO standard for method details.

Acid and gas production: Triple Sugar Iron Agar (TSI)
Detection of urease: Urea Agar
Detection of β-galactosidase: L-Lysine Decarboxylation
Indole reaction: Tryptone Water, Kovac's Reagent

Serological confirmation
Refer to ISO standard for method details.

Detection of O, Vi and H antigens:
Salmonella O Polyvalent Agglutinating Sera
Salmonella Vi Polyvalent Agglutinating Sera
Salmonella H Polyvalent Agglutinating Sera

Product order information for testing according to ISO 6579:2017 Part 1: Detection of *Salmonella* spp.

Product description			Format	Order code
Thermo Scientific™ Oxoid™ Culture Media	Buffered Peptone Water (ISO) (BPW)		500 g, makes 25 L	CM1049B
	RVS Broth		500 g, makes 18.7 L	CM0866B
	MSRV Agar (ISO)	MRSV Agar (ISO) Base	500 g, makes 15.8 L	CM1112B
	Novobiocin	Novobiocin Supplement - freeze-dried	10 vials of 10 mg	SR0181E
		Novobiocin Supplement - liquid (40 mL/vial)	10 vials of 40 mg	SR0249A
	MKTTn Broth	MKTTn Broth Base	500 g, makes 6.1 L	CM1048B
	XLD Agar		500 g, makes 9.4 L	CM0469B
	Brilliance™ Salmonella Agar	*Brilliance*™ Salmonella Agar Base	500 g, makes 9.3 L	CM1092B
		Brilliance™ Salmonella Agar Selective Supplement	10 vials, each for 500 mL	SR0194E
	Nutrient Agar		500 g, makes 17.8 L	CM0003B
	TSI Agar		500 g, makes 7.7 L	CM0277B
	Urea Agar	Urea Agar Base	500 g, makes 20.8 L	CM0053B
		40% Urea Solution	10 vials, each for 100 mL	SR0020K
	Tryptone Water		500 g, makes 33.3 L	CM0087B
Thermo Scientific™ Oxoid™ Kovac's Reagent			10 mL bottle	MB0209A
Thermo Scientific™ Remel™ Salmonella O Polyvalent Agglutinating Sera (group A - S)			2 mL vial	R30858201
Thermo Scientific™ Remel™ Salmonella O/Vi Polyvalent Agglutinating Sera			2 mL vial	R30957401
Thermo Scientific™ Remel™ Salmonella H Polyvalent Agglutinating Sera			2 mL vial	R30858501

Please note that a range of alternative formats of culture media such as Bagged Enrichment Media and Prepared Plate Media are available. Please contact your local representative or technical services to find out more.

Alternative Method: Thermo Scientific SureTect Salmonella species PCR Assay

A rapid real-time PCR method for the enrichment, detection and confirmation of *Salmonella* species in food, feed products and environmental samples:

- Validated according to ISO 16140-part 2:2016 standard
- Streamlined and rapid workflows – 96-well runs can be prepared with just a few simple steps
- Single enrichment protocols for faster time-to-result and streamlined workflow
- Pre-dispensed reagents, reducing handling steps and risk of error
- Universal PCR conditions for detecting multiple targets in the same run
- Intuitive, user-friendly software, avoiding subjective interpretation
- 'Plug and play' ready-to-use instruments out of the box
- Reduced time to result: 1 day compared with up to 5 days for the ISO reference method

Enrichment

Single enrichment step

Lysis

Direct lysis automatically carried out in Applied Biosystems SimpliAmp

Run & Read

Results automatically interpreted

Report/Confirm

Report PCR negative results and confirm PCR positive results after overnight incubation

Validation

The Thermo Scientific™ SureTect™ Salmonella Assay workflow has been validated and approved by NF VALIDATION for AFNOR Certification according to ISO 16140-2:2016 standard against the reference method ISO 6579-1:2017 Detection of *Salmonella* spp.

AFNOR Certification validation certificate No. UNI 03/07-11/13 is available in PDF format from the AFNOR website https://nf-validation.afnor.org/en/food-industry/salmonella-spp/.

Workflow overview for SureTect Salmonella Species PCR Assay validated according to ISO 16140-part 2:2016 method

Day 0

Environmental samples:

- 25 g + 225 mL BPW
- 1 swab + 10 mL BPW
- 1 sponge + 100 mL BPW
- 1 wipe + 225 mL BPW

20–24 h at 36-38 °C

Meat products, seafood and vegetables:

25 g + 225 mL BPW + 12 mg/L Novobiocin

20–24 h at 36-38 °C

Raw beef meats:

25 g + 225 mL pre-warmed BPW

9–24 h at 40.5-42.5°C

Dairy products:

- 25 g + 225 mL BPW + 12 mg/L Novobiocin

20–24 h at 36-38 °C

- 25 g + 225 mL ONE Broth Salmonella + 12 mg/L Novobiocin

20–24 h at 36-38 °C

Powdered infant formula (10 g):

25 g + 225 mL BPW

16–20 h at 36-38 °C

Powdered milk products:

375 g + 3375 mL BPW + 6 mg/L Vancomycin

18–22 h at 36-38 °C

Day 1

Add 10 µL of SureTect Proteinase K to each required SureTect Lysis Tube (supplied pre-filled with Lysis Reagent 1).

Add 10 µL enriched sample to the SureTect Lysis Tube. For the 7500 Fast; add 10 µL sterile nuclease-free water to a SureTect Lysis Tube as a negative control.

Incubate SureTect Lysis Tubes in the Applied Biosystems SimpliAmp Thermal Cycler at *36-38* °C for 10 minutes followed by 94-96 °C for 5 minutes, and 2 minutes at 9-11 °C.

Dilute 1:5 the lysate of cocoa and chocolate products in BPW to avoid PCR inhibition and transfer 20 µL of lysate to SureTect PCR Tubes.

Load SureTect PCR Tubes to the Applied Biosystems 7500 Fast or the Applied Biosystems QuantStudio 5 PCR Instrument. Start PCR and review results at end of run.

Report negative results

Day 2

Confirm PCR positive results by plating 10 µL of enrichment broth onto *Brilliance*™ Salmonella or XLD.
For samples with high background microflora first subculture in RVS Broth *(incubate for 21-27 h at 41.5 °C).*

Confirm presumptive-positive colonies with the Oxoid™ Salmonella Latex Kit, MicroBact™ GNB24E or confirmatory tests described in ISO 6579-1:2017 method or with an ISO 16140-part 6:2019 validated confirmatory test.

Product order information for SureTect Salmonella Species PCR Assay workflow

Product description			Format	Order code
Thermo Scientific™ Oxoid™ Culture Media	Buffered Peptone Water	Buffered Peptone Water (ISO)	500 g, makes 25 L	CM1049B
		Buffered Peptone Water (ISO-meat peptone)	500 g, makes 25 L	CM1211B
	Novobiocin Supplement	Novobiocin Supplement - freeze-dried	10 vials of 10 mg	SR0181E
		Novobiocin Supplement - liquid (40 mL/vial)	10 vials of 40 mg	SR0249A
	Vancomycin Supplement	Vancomycin Supplement - freeze-dried	10 vials of 3 mg	SR0186E
		Vancomycin Supplement - freeze-dried	10 vials of 5 mg	SR0247E
	ONE Broth Salmonella	ONE Broth Salmonella Base	500 g, makes 20 L	CM1091B
		ONE Broth Salmonella Supplement	10 vials, each for 225 mL	SR0242B
	Brilliance™ Salmonella Agar	*Brilliance*™ Salmonella Agar Base	500 g, makes 9.3 L	CM1092B
		Brilliance™ Salmonella Agar Selective Supplement	10 vials, each for 500 mL	SR0194E
	XLD Agar		500 g, makes 9.4 L	CM0469B
	RVS Broth		500 g, makes 18.7 L	C0866B
Thermo Scientific SureTect Salmonella species Assay (includes Proteinase K, Lysis Reagent 1, Lysis Tubes (pre-filled with Lysis Reagent 1), Salmonella spp. PCR Tubes (pre-filled with Salmonella PCR tablets), Lysis Tube caps and PCR Tube caps)			96 tests	PT0100A
Thermo Scientific™ Oxoid™ Salmonella Latex Kit			100 tests	DR1108A
Thermo Scientific™ Microbact GNB24E			80 tests	MB1074A
Applied Biosystems™ SimpliAmp™ Thermal Cycler (Lysis step)			Instrument	A24811
Applied Biosystems™ QuantStudio™ 5 Food Safety Real-Time PCR System (includes Thermo Scientific™ RapidFinder™ Analysis Software v1.0 or higher and laptop computer)			Instrument	A36328

Please note that a range of alternative formats of culture media such as Bagged Enrichment Media and Prepared Plate Media are available. Please contact your local representative or technical services to find out more.

Alternative Method: Thermo Scientific RapidFinder Salmonella species, Typhimurium and Enteritidis Multiplex PCR Assays

A rapid method for the enrichment, detection and confirmation of *Salmonella* species, *Salmonella* Typhimurium and *Salmonella* Enteritidis in raw pork and poultry, ready-to-eat and ready-to-reheat pork and poultry, production environment samples and primary production samples (PPS):

- Validated according to ISO 16140-part 2:2016 standard
- First validated multiplex PCR assay for simultaneous detection of *Salmonella* species, and *Salmonella* serovars; Typhimurium and Enteritidis
- Designed as a tool specifically for *Salmonella* control programs in pork and poultry production
- Streamlines testing workflow and reduces waiting time for product release or intervention
- Reduced time to results as little as 16 hours compared with up to 5 days for standard culture methods

Enrichment

Single enrichment step for meat and production environment samples

Lysis

Direct lysis and DNA extraction automatically carried out in SimpliAmp Thermal Cycler or KingFisher Flex Purification System

Run & Read

Results automatically interpreted

Report/Confirm

Report PCR-negative results and confirm *Salmonella* spp., SE/ST results with single plate and serology

Validation

The RapidFinder™ Salmonella Multiplex Assay and RapidFinder™ Salmonella Multiplex Flex Assay methods have been validated and approved by NF VALIDATION for AFNOR Certification according to ISO 16140-2:2016 standard against the reference method ISO 6579-1 2017 Detection and serotyping of *Salmonella* spp.

NF VALIDATION certificate No. UNI 03/12-01/18 is available in PDF format from the AFNOR website https://nf-validation.afnor.org/en/food-industry/salmonella-spp/.

Workflow overview for RapidFinder Salmonella species, Typhimurium and Enteritidis Multiplex PCR Assay validated according to ISO 16140-part 2:2016 standard

Day 0

Raw and ready-to-eat pork and poultry samples: 25 g + 225 mL BPW (ISO-meat peptone) supplemented with 12 mg/L Novobiocin.

40.5-42.5 °C for 14-18 hours

Production environment samples: Add 25 g of production environment sample to 225 mL of BPW (ISO-meat peptone). Add 1 swab to 10 mL of BPW (ISO-meat peptone). Add 1 sponge to 100 mL of BPW (ISO-meat peptone). Add 1 wipe to 225 mL of BPW (ISO-meat peptone).

40.5-42.5 °C for 14-18 hours

Day 1

Remove ~1.5 mL of enrichment to a sterile sealable tube.

First, add 10 µL of Proteinase K to each required Lysis Tube.

Second, add 10 µL of enrichment to the Lysis Tube.

Incubate SureTect Lysis Tubes in the Applied Biosystems SimpliAmp Thermal Cycler at 36-38°C for 10 minutes followed by 94-96 °C for 5 minutes, and 2 minutes at 9-11 °C.

Transfer 20 µL to RapidFinder PCR Tubes.

7500 Fast PCR Instrument

Load samples to the Applied Biosystems 7500 Fast Food Safety PCR Instrument, with the addition of a negative control tube (prefilled with Lysis Reagent 1) containing nuclease free sterile water and start PCR, review results at end of run (approx. 45 min)

OR

QuantStudio 5 PCR Instrument

Load into the Applied Biosystems QuantStudio 5 Food Safety PCR Instrument and start PCR, review results at end of run (approx. 50 min)

Report PCR-negative results and confirm PCR-positive results by culturing onto *Brilliance*™ Salmonella Agar

Day 2

Confirm colonies grown on the *Brilliance* Salmonella Agar using biochemical and serological procedures described in ISO 6579-1:2017 or with an ISO 16140-part 6:2019 validated confirmatory test.

Workflow overview for Thermo Scientific RapidFinder Salmonella species, Typhimurium and Enteritidis Multiplex Flex PCR Assay according to ISO 16140-part 2:2016 standard

Day 0

Primary production samples (PPS): Add 25 g sample to 225 mL Tetrathionate (Hajna) Broth (TT Broth) supplemented with Iodine-iodide

Incubate for 16-20 hours at 36-38 °C

Day 1

1 mL of enriched sample is transferred in 9 mL BPW

Incubate for 4-6 hours at 36-38 °C

KingFisher Flex Instrument

500 µL of secondary enrichment is loaded onto the KingFisher Flex Instrument

Allow lysates to cool at room temperature for at least 2 min, then transfer 20 µL to RapidFinder Salmonella PCR Tubes

7500 Fast Food Safety Instrument

Load PCR Tubes into the Applied Biosystems 7500 Fast Food Safety Instrument, with the addition of a negative control tube containing nuclease free sterile water and start PCR, review results at end of run (approx. 45 min)

QuantStudio 5 Food Safety Instrument

Load PCR Tubes into Applied Biosystems QuantStudio 5 Food Safety Instrument and start PCR, review results at end of run (approx. 50 min)

Report PCR-negative results and confirm PCR-positive results by culturing onto *Brilliance*™ Salmonella Agar

Day 2

Confirm colonies grown on the *Brilliance* Salmonella Agar using Oxoid Salmonella Latex Test (*Salmonella* species), or biochemical and serological procedures (*Salmonella* Enteritidis and *Salmonella* Typhimurium) procedures described in ISO 6579-1:2017 standard or with an ISO 16140-part 6:2019 validated confirmatory test.

Product order information for RapidFinder Salmonella Multiplex PCR Kit workflows

	Product description		Format	Order code
Thermo Scientific™ Oxoid™ Culture Media	Buffered Peptone Water – (ISO-Meat Peptone)		500 g, makes 25 L	CM1211B
	Novobiocin Supplement	Novobiocin Supplement - freeze-dried	10 vials of 10 mg	SR0181E
		Novobiocin Supplement - liquid (40 mL/vial)	10 vials of 40 mg	SR0249A
	TT Broth		500 g, makes 10.9 L	CM0671B
	Brilliance™ Salmonella Agar	*Brilliance*™ Salmonella Agar Base	500 g, makes 9.3 L	CM1092B
		Brilliance™ Salmonella Agar Selective Supplement	10 vials, each for 500 mL	SR0194E
	Tryptone Soya Agar		500 g, makes 12.5 L	CM0131B
	Thermo Scientific RapidFinder Salmonella species, Typhimurium and Enteritidis Multiplex Assay – for use with the SimpliAmp Thermal Cycler (includes Proteinase K, Lysis Reagent 1, Lysis Tubes (pre-filled with Lysis Reagent 1), Salmonella multiplex PCR Tubes (pre-filled with Salmonella multiplex PCR tablets), Lysis Tube caps and PCR Tube caps)		96 tests	A33227
	Thermo Scientific RapidFinder Salmonella species, Typhimurium and Enteritidis Multiplex Flex Assay – for use with KingFisher Flex Purification System (includes Dynabeads™ anti-Salmonella, Proteinase K, Lysis Reagent 1, Salmonella multiplex PCR Tubes (pre-filled with Salmonella multiplex PCR tablets) and PCR Tube caps)		96 tests	A33227KF
	Thermo Scientific™ Oxoid™ Salmonella Latex Kit		100 tests	DR1108A
	Thermo Scientific™ Microbact GNB24E		80 tests	MB1074A
Thermo Scientific™ Remel™ Agglutinating Sera	Salmonella O Factor 4 (Group B)		2 mL vial	R30956901
	Salmonella H (i)		2 mL vial	R30161601
	Salmonella H (1,2)		2 mL vial	R30163301
	Salmonella O Factor 9 (Group D)		2 mL vial	R30957301
	Salmonella H (g,m)		2 mL vial	R30161201
	Salmonella H (1,7)		2 mL vial	R30163601
	Applied Biosystems™ SimpliAmp™ Thermal Cycler (Lysis step)		Instrument	A24811
	Applied Biosystems™ QuantStudio™ 5 Food Safety Real-Time PCR System (includes Thermo Scientific™ RapidFinder Analysis Software v1.0 or higher and laptop computer)		Instrument	A36328
	Assurance Service Plan – Additional 1-year warranty		Service agreement	SCQS5FSAT

Please note that a range of alternative formats of culture media such as Bagged Enrichment Media and Prepared Plate Media are available. Please contact your local representative or technical services to find out more.

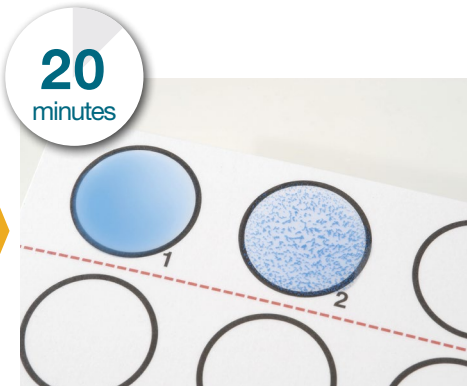
Alternative Method: Thermo Scientific Salmonella Precis Method

A quick and easy method for the enrichment, detection and confirmation of *Salmonella* species from food, animal feed and environmental samples.

- Validated according to ISO 16140-part 2:2016 standard against ISO 6579-1:2017
- Simple procedure—no specialised equipment required
- Single overnight enrichment
- Single sample transfer
- Single 24-hour plate incubation
- Quick and convenient confirmation: Oxoid Salmonella Latex Test or ISO 6579:2017 standard tests
- Reduced time to result: 2 days compared with up to 5 days for standard culture methods
- *Brilliance* Salmonella Agar contains novel Inhibigen technology, giving targeted specificity and reduced background flora

Single overnight enrichment

Single 24-hour plate incubation



Rapid and easy confirmation with Salmonella Latex Test or ISO 6579-1 confirmation steps

Reactions on Thermo Scientific™ Oxoid™ *Brilliance*™ Salmonella Agar

	Colony colour/apperance		
	Purple	**Blue**	**Colourless**
Enzyme targeted by chromogen	*Salmonella* (including Lactose positive *Samonella*)	*Kiebsiella*, *Enterobacter*, *Serratia*	*Citrobactor*, other bacteria and yeasts
Esterase	+	-/+	-
β-glucosidase	-	+	-

E. coli and other bacteria and yeasts are inhibited by the combination of the Inhibigen and other selective agents in the medium.

Validation

The Salmonella Precis™ method has been validated and approved by NF VALIDATION for AFNOR Certification according to ISO 16140-2:2016 standard against the reference method ISO 6579-1:2017 Detection of *Salmonella* spp.

For flexibility, confirmation was validated using both the Oxoid Salmonella Latex Test and the tests outlined in ISO 6579:2017. Alternatively, biochemical panels such as Thermo Scientific™ Microbact™ GNB 24E or Thermo Scientific™ RapID ONE™ Panel, may be used.

AFNOR Certification validation certificate No. UNI 03/06-12/07 is available in PDF format from the AFNOR website https://nf-validation.afnor.org/en/food-industry/salmonella-spp/.

Workflow overview for Thermo Scientific Salmonella Precis Method validated according to NF VALIDATION for AFNOR Certification

Day 0

Food and feed:

25 g + 225 mL
BPW (ISO)
+ 12 mg/L
Novobiocin
16-20 h at 36-38 °C
or
25 g + 225 mL
ONE Broth
Salmonella
16-20 h at 40-42 °C

Environmental samples:

- 25 g + 225 mL
- 1 wipe + 225 mL
- 1 swab + 10 mL
- 1 sponge + 100 mL

BPW (ISO)
16-20 h at 36-38 °C
or
ONE Broth
Salmonella
16-20 h at 40-42 °C

Up to 375 g Milk powder, Infant formula* and Infant cereals*:

Up to 375 g
diluted 1:10 with
BPW (ISO)
+ 6 mg/L
Vancomycin
19-23 h at 36-38 °C

Up to 375 g Cocoa and chocolate products:

Up to 375 g
diluted 1:10 with
prewarmed
BPW (ISO)
22-28 h at 34-38 °C

Recommendations of the ISO 6887-4:2017 method
20-26 h at 34-38 °C

Up to 150 g Animal feed:

Up to 150 g
diluted 1:10 with
BPW (ISO)
+ 12 mg/L
Novobiocin
20-26 h at 34-38 °C

Day 1

Inoculate onto *Brilliance* Salmonella Agar

Incubate for 22-26 h at 36-38 °C

Day 2

Confirm typical colonies as *Salmonella* using Oxoid *Salmonella* Latex Test

or

ISO 6579-1:2017 confirmatory tests tests or with an ISO 16140-part 6:2019 validated confirmatory test.

*with or without probiotics

Product order information for Thermo Scientific Salmonella Precis Method

Product description			Format	Order code
Thermo Scientific™ Oxoid™ Culture Media	Buffered Peptone Water	Buffered Peptone Water (ISO)	500 g, makes 25 L	CM1049B
		Buffered Peptone Water (ISO-meat peptone)	500 g, makes 25 L	CM1211B
	Novobiocin Supplement	Novobiocin Supplement - freeze-dried	10 vials of 10 mg	SR0181E
		Novobiocin Supplement - liquid (40 mL/vial)	10 vials of 40 mg	SR0249A
	Vancomycin Supplement	Vancomycin Supplement - freeze-dried	10 vials of 3 mg	SR0186E
		Vancomycin Supplement - freeze-dried	10 vials of 5 mg	SR0247E
	ONE Broth Salmonella	ONE Broth Salmonella Base	500 g, makes 20 L	CM1091B
		ONE Broth Salmonella Supplement	10 vials, each for 225 mL	SR0242B
	Brilliance™ Salmonella Agar	*Brilliance*™ Salmonella Agar Base	500 g, makes 9.3 L	CM1092B
		Brilliance™ Salmonella Agar Selective Supplement	10 vials, each for 500 mL	SR0194E
Thermo Scientific™ Oxoid™ Salmonella Latex Kit			100 tests	DR1108A

Please note that a range of alternative formats of culture media such as Bagged Enrichment Media and Prepared Plate Media are available. Please contact your local representative or technical services to find out more.

thermo scientific

Find out more at
thermofisher.com/salmonella-testing-food

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