

**Thermo Scientific**  
Microbiology Products

# Making food safer according to ISO methods

Culture media and associated products for pathogen detection  
and enumeration

**Thermo**  
SCIENTIFIC

# Introduction

The International Standards Organization (ISO) has published over 19,000 international standards that cover many different aspects of food testing.

Many companies choose to test human food, animal feed and environmental samples according to ISO methods. By safeguarding public health through the control of infectious organism levels, applying methods that conform to the standards set by accreditation bodies and regulatory authorities, companies are able to meet the increasing demands of their customers and maintain their reputation for supply of products that are safe to consume.

This guide describes the Thermo Scientific™ Microbiology products that conform to the formulations described in the top 16 most commonly used ISO standards for human food, animal feed and environmental samples.



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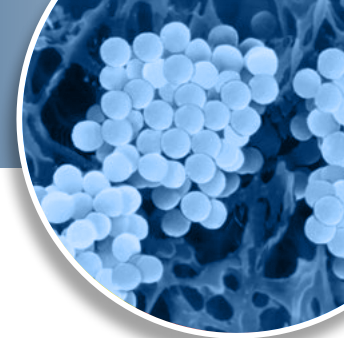


- ① ISO 6888 Horizontal methods for the enumeration of coagulase-positive Staphylococci (*Staphylococcus aureus* and other species)
  - 1.1 ISO 6888-1:1999 A1:2003 Technique using Baird-Parker medium
  - 1.2 ISO 6888-2:1999 A1:2003 Technique using rabbit plasma fibrinogen medium
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- ⑤ ISO 7251:2005 Horizontal method for the detection and enumeration of presumptive *Escherichia coli*—MPN technique
  
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- ⑧ ISO 4831:2006 Horizontal method for the detection and enumeration of Coliforms—MPN technique
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Horizontal method for the enumeration of Coliforms—colony-count technique
- ⑩ ISO 7937:2004 Horizontal method for the enumeration of *Clostridium perfringens*—colony-count technique
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  - 11.3 ISO 16140 Validated alternative—*Brilliance*<sup>™</sup> CampyCount Agar
- ⑫ ISO 21871:2006 Horizontal method for the determination of low numbers of presumptive *Bacillus cereus*—MPN technique and detection methods
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  - 16.2 ISO 21527-2:2008 Colony-count technique in products with water activity less than or equal to 0.95



Part 1: Technique using Baird-Parker medium

# Coagulase-positive Staphylococci

*Staphylococcus aureus* has implications in hygiene control, and also, as it produces enterotoxin, it is a key cause of food poisoning. Found most commonly in cheese, milk and in foods prepared by hand, its prevalence is widespread and of key importance to food manufacturers as it is a common bacterium found in the human nose and on the skin.

## SAMPLE PREPARATION

As directed

## ISOLATION

Surface inoculate 0.1mL of test sample  
or dilution onto  
**Baird Parker Medium**  
**(CM1127 + SR0054)**  
Or 1.0mL onto  
1x140mm plate  
3x90mm plates

*Incubate for 24 hr ± 2 hr at 35°C or 37°C*

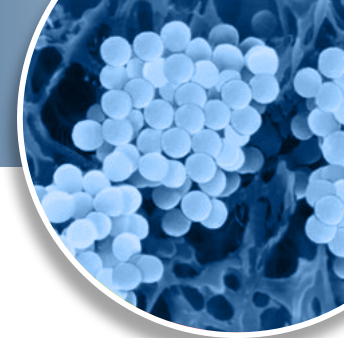
## EXAMINE PLATES

Mark position of typical colonies

*Incubate for 24 hr ± 2 hr at 35°C or 37°C*

## CONFIRMATION

**Brain Heart Infusion Broth**  
**(CM1135)**  
**Rabbit Plasma**  
**(R21050)**



Part 2: Technique using rabbit plasma fibrinogen medium

## Coagulase-positive Staphylococci

*Staphylococcus aureus* has implications in hygiene control, and also, as it produces enterotoxin, it is a key cause of food poisoning. Found most commonly in cheese, milk and in foods prepared by hand, its prevalence is widespread and of key importance to food manufacturers as it is a common bacterium found in the human nose and on the skin.

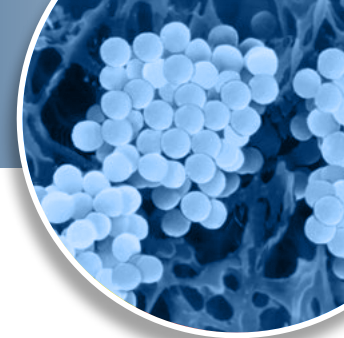
### ISOLATION

Duplicate pour plate using 1mL of test sample or dilution into Rabbit Plasma Fibrinogen (RPF) (CM0961 + SR0122)

*Incubate for 18–24 hr at 35°C or 37°C  
Incubate for a further 24 hr if required*

### REPORT RESULTS

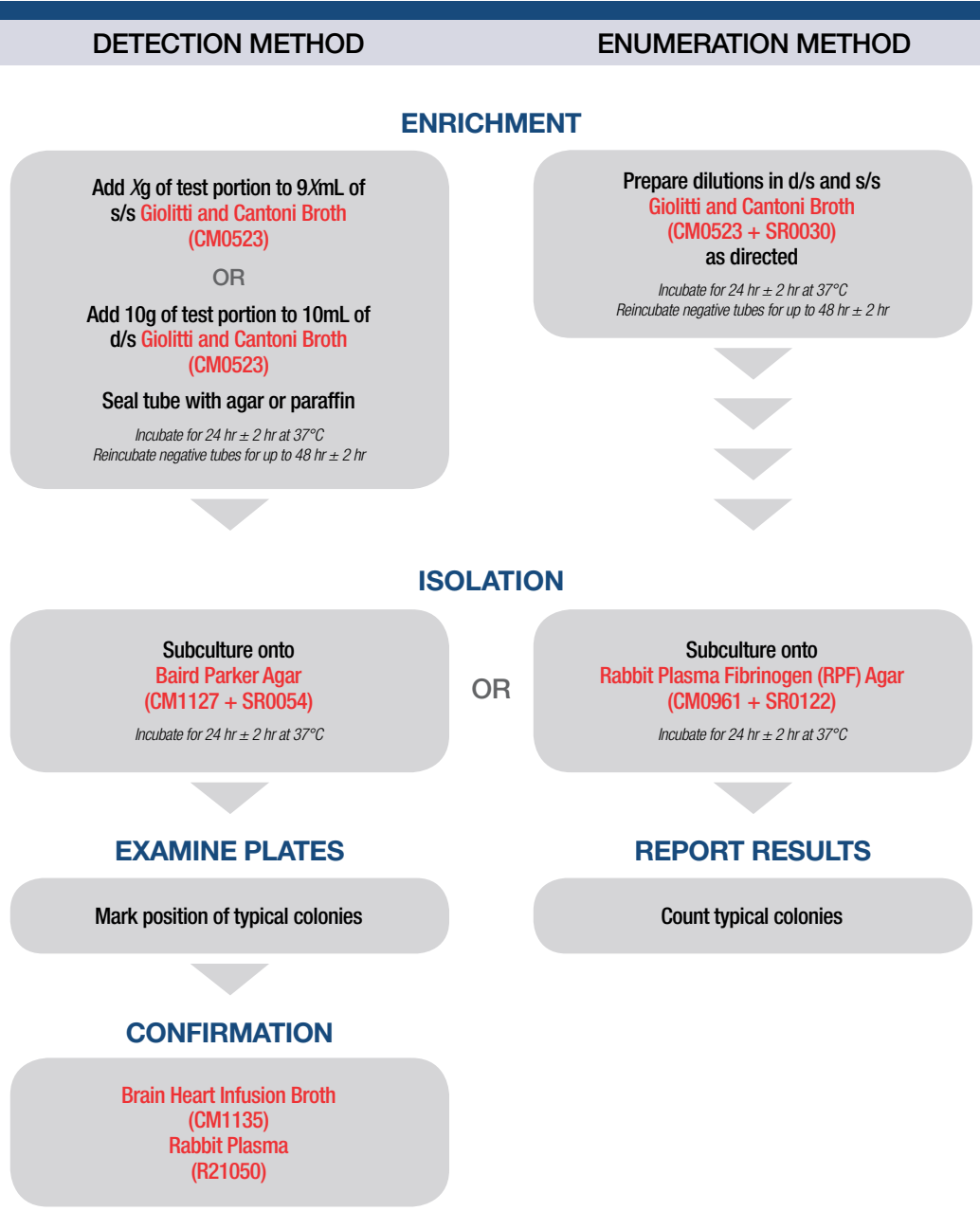
Count typical colonies



Part 3: Detection and MPN technique for low numbers

# Coagulase-positive Staphylococci

*Staphylococcus aureus* has implications in hygiene control, and also, as it produces enterotoxin, it is a key cause of food poisoning. Found most commonly in cheese, milk and in foods prepared by hand, its prevalence is widespread and of key importance to food manufacturers as it is a common bacterium found in the human nose and on the skin.



s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

Products conforming to the stated ISO for

# Coagulase-positive Staphylococci

## 1.1 ISO 6888-1:1999

Product description	Product format	Product code
Baird-Parker (ISO) Medium	Dehydrated Culture Media (CM)	CM1127B – 500g
		CM1127T – 5Kg
	Petri Dish	PO1195A
Egg Yolk Tellurite Emulsion	Bottle	SR0054C – 100mL
Egg Yolk Emulsion	Bottle	SR0047C – 100mL
Potassium Tellurite 3.5%	Tube	SR0030J – 10x2mL
Brain Heart Infusion Broth	Dehydrated Culture Media (CM)	CM1135B – 500g
		CM1135R – 2.5Kg
		CM1135T – 5Kg
Rabbit Plasma With EDTA	Vial	R21050 – 5mL
		R21051 – 15mL
		R21052 – 25mL
		R21060 – 6x5mL

## 1.2 ISO 6888-2:1999

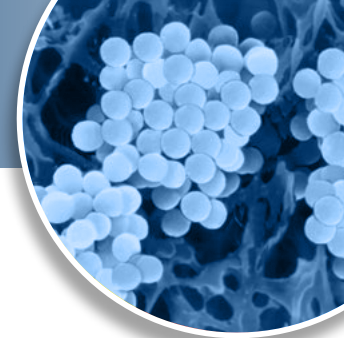
Product description	Product format	Product code
Baird Parker Agar Base (RPF)	Bottle	B00290Y – 10x360mL
		B00290J – 10x90mL
	Dehydrated Culture Media (CM)	CM0961B – 500g
RPF Supplement	Vial	SR0122A – 10x100mL

## 1.3 ISO 6888-3:2003

Product description	Product format	Product code
Baird-Parker (ISO) Medium	Dehydrated Culture Media (CM)	CM1127B – 500g
		CM1127T – 5Kg
	Petri Dish	PO1195A
Egg Yolk Tellurite Emulsion	Bottle	SR0054C – 100mL
Egg Yolk Emulsion	Bottle	SR0047C – 100mL
Potassium Tellurite 3.5%	Tube	SR0030J – 10x2mL
Baird Parker Agar Base (RPF)	Bottle	B00290Y – 10x360mL
		B00290J – 10x90mL
	Dehydrated Culture Media (CM)	CM0961B – 500g
RPF Supplement	Vial	SR0122A – 10x100mL
Brain Heart Infusion Broth	Dehydrated Culture Media (CM)	CM1135B – 500g
		CM1135R – 2.5Kg
		CM1135T – 5Kg
Rabbit Plasma With EDTA	Kit/Reagent	R21050
		R21051
		R21052
		R21060
Giolitti and Cantoni Broth	Dehydrated Culture Media (CM)	CM0523B – 500g
		CM0523R – 2.5Kg



# Thermo Scientific *Brilliance* Staph 24



Thermo Scientific™ *Brilliance*™ Staph 24 Agar—a selective and diagnostic chromogenic medium for the isolation and enumeration of coagulase-positive Staphylococci in foods, within 24 hours.

## OBSERVATION MADE SIMPLE

- Dark blue colonies on a clear background

## RAPID RESULTS

- Enumeration in just 24 hours

## DEFINITIVE ANSWERS

- Detects coagulase-positive Staphylococci, including pathogenic coagulase-positive, non-aureus Staphylococci, such as *S. intermedius*
- Prevents growth of nontarget organisms, therefore, eliminating extensive confirmatory testing and miscalculation of cell counts

## CONFIDENT CONCLUSIONS

- ISO 16140 validated

## ISO 16140 Validation

The Thermo Scientific *Brilliance* Staph 24 Agar method has been validated and approved by MicroVal according to ISO 16140 Standard against the reference method ISO 6888:1999-Horizontal method for the enumeration of coagulase-positive Staphylococci (*Staphylococcus aureus* and other species) – Part 1: Technique using Baird-Parker Agar for all human food products. MicroVal certificates are available in PDF format from [www.microval.org](http://www.microval.org).

## Protocol for enumeration of coagulase-positive Staphylococci using *Brilliance* Staph 24

### Plating

Dilute sample in appropriate diluent

### Plus

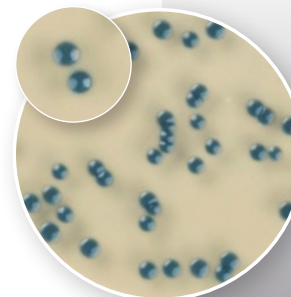
In duplicate, spread 0.1 mL of appropriate dilution onto 2x *Brilliance* Staph 24 Agar plates

Incubate for 24 hr ± 2 hr at 37°C ± 1°C



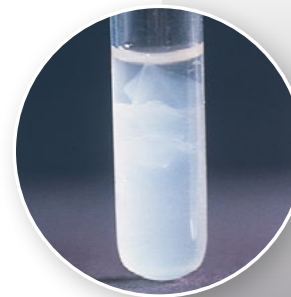
### Results

If present, select 5 well isolated dark blue colonies for use in confirmation



### Confirm

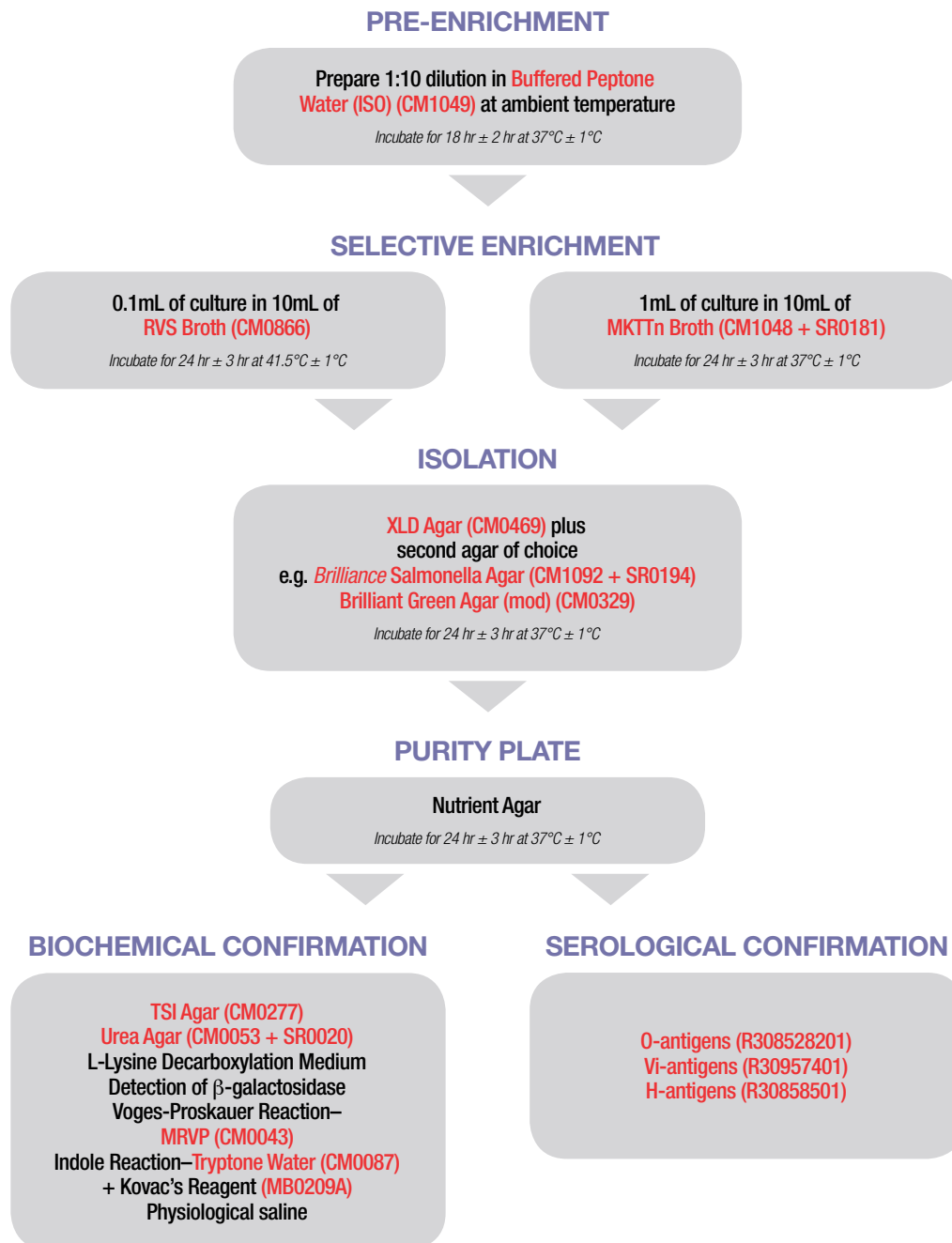
Confirm using tube coagulase



## Horizontal method for the detection of

**Salmonella species**

The genus *Salmonella* belongs to the family Enterobacteriaceae. *Salmonella* bacteria are Gram-negative, non spore forming rods. There are approximately 2,500 serovars of *Salmonella*, which are characterized according to somatic and flagella antigens. *Salmonella* is one of the most frequent causes of food poisoning and a major public health problem worldwide. 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.



# Salmonella species

## 2.1 ISO 6579:2002

Product description	Product format	Product code
Buffered Peptone Water (ISO)	Bottle	B01067S – 10x225mL
		B01067Z – 10x950mL
	Dehydrated Culture Media (CM)	CM1049B – 500g
		CM1049R – 2.5Kg
		CM1049T – 5Kg
	Dry-Bag™	DB1049W
		DB1049M
	ReadyBag	BM1104T
Tube	TV5013D	
Universal	B01067E	
RVS Broth	Dehydrated Culture Media (CM)	CM0866B – 500g
		CM0866R – 2.5Kg
		CM0866K – 25Kg
	Tube	TV5036E
	Universal	EB0499E
EB0499M		
MKTTn Broth	Bottle	B01224K – 10x50mL
	Dehydrated Culture Media (CM)	CM1048B – 500g
	Tube	TV5065E
Novobiocin Supplement	Vial	SR0181E
XLD Agar	Dehydrated Culture Media (CM)	CM0469B – 500g
		CM0469R – 2.5Kg
		CM0469T – 5Kg
	Petri Dish	P00164A
		P05057A
Triple Sugar Iron Agar (TSI)	Dehydrated Culture Media (CM)	CM0277B – 500g
	Tube	TV5074D
Urea Agar	Dehydrated Culture Media (CM)	CM0053B – 500g
	Slope	B00337B – 24x3mL
		EB0337B – 200x3mL
Urea 40% Solution	Vial	SR0020K
MRVP Medium	Dehydrated Culture Media (CM)	CM0043B – 500g
Tryptone Water	Bijou	B00383B
		B00383C
		EB0383B
	Dehydrated Culture Media (CM)	CM0087B – 500g
Kovac's Reagent	Bottle	MB0209A
Salmonella O agglutinating Sera	Kit/Reagent	R30858201
Salmonella Vi agglutinating Sera	Kit/Reagent	R30957401
Salmonella H agglutinating Sera	Kit/Reagent	R30858501

Products conforming to the stated ISO for

# Salmonella species

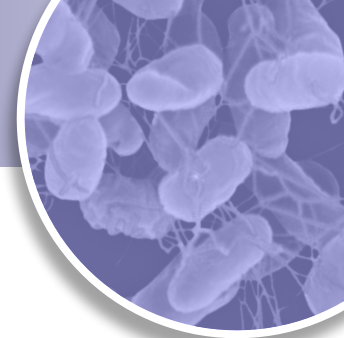
Second Mediums of choice: ISO 6579:2002

Product description	Product format	Product code
Brilliant Green Agar (modified)	Dehydrated Culture Media (CM)	CM0329B – 500g
		CM0329R – 2.5Kg
		CM0329T – 5Kg
		CM0329K – 25Kg
	Petri Dish	P00171A
		P05033A
<i>Brilliance</i> Salmonella Agar Base	Dehydrated Culture Media (CM)	CM1092B – 500g
		CM1092T – 5Kg
	Petri Dish	P05098A
<i>Brilliance</i> Salmonella/XLD Bi-plate	Petri Dish	P05248E
<i>Brilliance</i> Salmonella Selective Supplement	Vial	SR0194E

Salmonella Precip–ISO 16140 Alternate method validated against ISO 6579:2002

Product description	Product format	Product code
<i>Brilliance</i> Salmonella Agar Base	Dehydrated Culture Media (CM)	CM1092B – 500g
		CM1092T – 5Kg
	Petri Dish	P05098A
<i>Brilliance</i> Salmonella Selective Supplement	Vial	SR0194E
ONE Broth-Salmonella Base	Bottle	B01096S – 10x225mL
	Dehydrated Culture Media (CM)	CM1091B – 500g
		CM1091T – 5Kg
	ReadyBag	FR60481
		FR60101
Dry-Bag	DB1091W	
ONE Broth-Salmonella Selective Supplement	Vial	SR0242E – 225mL
		SR0242B – 2.25L
Salmonella Latex Test	Kit/Reagent	FT0203A
Oxoid Salmonella Latex Kit	Kit/Reagent	DR1108A

# 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 by AFNOR Certification to ISO 16140 standard
- Simple procedure—no specialised equipment required
- Single 18-hour enrichment
- Single sample transfer
- Single 24-hour plate incubation
- Quick and convenient confirmation: Thermo Scientific™ Oxoid™ Salmonella Latex Test or ISO 6579:2002 standard tests
- Reduced time to result: 2 days compared with up to 5 days for standard culture methods
- Thermo Scientific™ *Brilliance*™ Salmonella Agar contains novel Thermo Scientific™ Inhibigen™ technology, giving targeted specificity and reduced background flora

## AFNOR Validation

The Salmonella Precis™ method has been validated and approved by AFNOR Certification according to ISO 16140 Standard against the reference method ISO 6579:2002 Standard for the detection of Salmonella in food, animal feed and environmental samples, excluding breeding samples.

For flexibility, confirmation was validated using both Salmonella Latex Test and the tests outlined in ISO 6579:2002. Alternatively, biochemical panels such as Thermo Scientific™ Microbact™ GNB 24E or Thermo Scientific™ RapID ONE™ Panel, may be used.

AFNOR Certification validation certificate (available in PDF format from the AFNOR website [www.afnor-validation.com](http://www.afnor-validation.com)).

## Reactions on *Brilliance*™ Salmonella Agar

	Colony colour/appearance		
	Purple	Blue	Colourless
Enzyme targeted by chromogen	Salmonella (including Lactose positive Salmonella)	<i>Klebsiella</i> , <i>Enterobacter</i> , <i>Serratia</i>	<i>Citrobacter</i> , other bacteria and yeasts
Esterase	+	-/+	-
β-glucosidase	-	+	-

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

## Protocol for Salmonella Precis Method



### Day 0: Enrichment

25g or 25mL of sample + 225mL ONE Broth-Salmonella

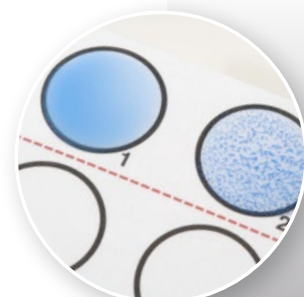
Incubate for 16–20 hr at 42°C



### Day 1: Plating

Using a 10µL microbiological loop inoculate a single *Brilliance* Salmonella Agar plate

Incubate for 20–26 hr at 37°C



### Day 2: Results

If present, select a well isolated purple coloured colony and test using the Oxoid Salmonella Latex Test

Alternatively, confirm purple colonies using standard ISO methods

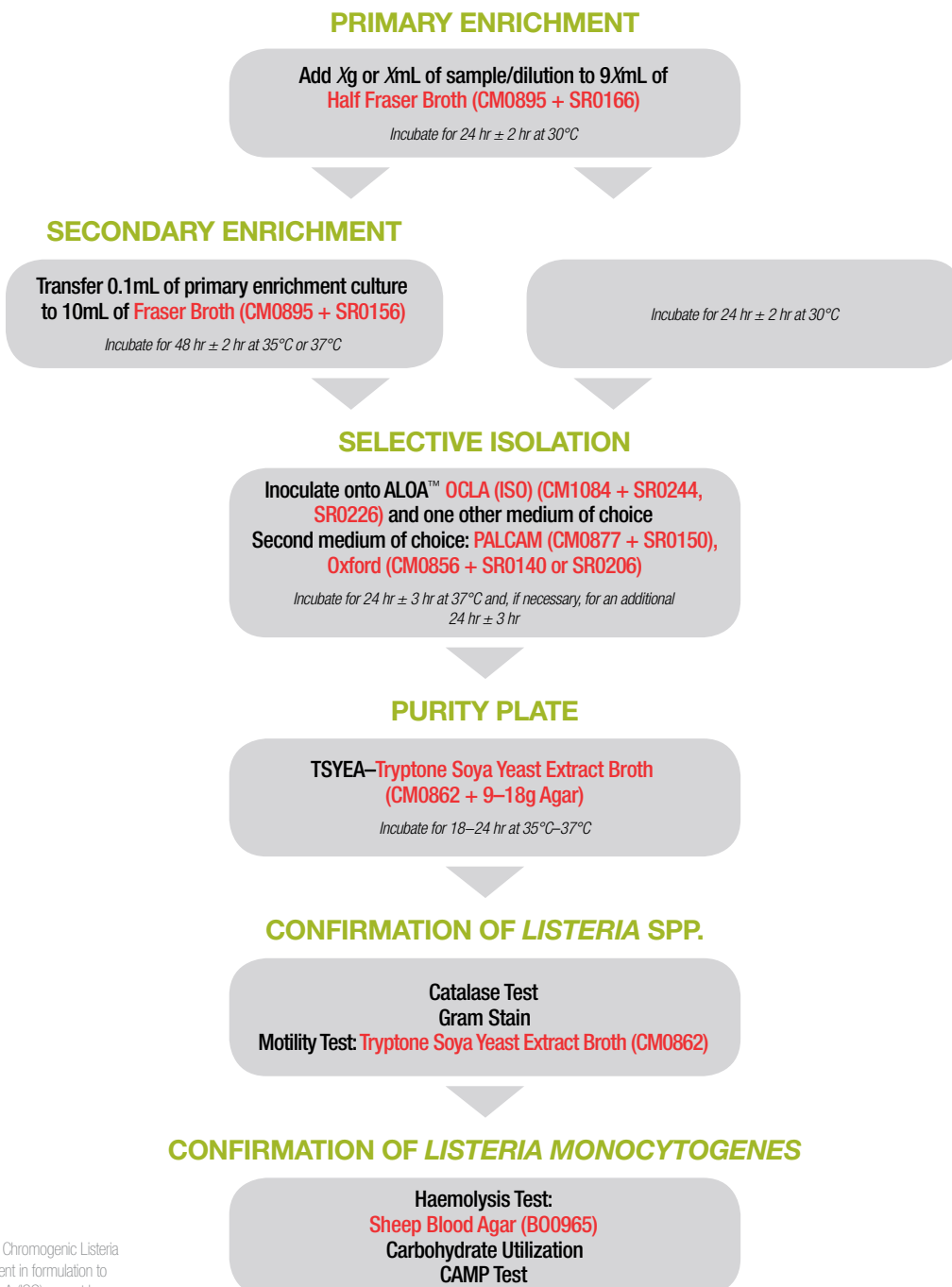
Select purple colonies for confirmation



Part 1: Detection method

# Listeria monocytogenes

Listeria are Gram-positive, catalase positive, non spore forming rods with flagella. *Listeria monocytogenes* and *Listeria ivanovii* are consistently associated with human illness isolated from soil, vegetation and water. With growth temperature from 0°C to 45°C, it is a key foodborne pathogen in chilled, refrigerated and ready-to-eat foods.



s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

OCLA (ISO) is the Thermo Scientific Oxoid Chromogenic Listeria Agar as set out in ISO 11290. It is equivalent in formulation to ALOA but due to trademark restriction OCLA (ISO) cannot be named ALOA.

## *Listeria monocytogenes*

Listeria are Gram-positive, catalase positive, non spore forming rods with flagella. *Listeria monocytogenes* and *Listeria ivanovii* are consistently associated with human illness isolated from soil, vegetation and water. With growth temperature from 0°C to 45°C, it is a key foodborne pathogen in chilled, refrigerated and ready-to-eat foods.



### PRIMARY ENRICHMENT

Add Xg or XmL of sample to 9XmL of  
Buffered Peptone Water (ISO) (CM1049)  
or Half Fraser Broth (CM0895 + SR0166)

Allow suspension to stand for 1 hr ± 5 min at 20°C ± 2°C

### SELECTIVE ISOLATION

Inoculate onto ALQA™  
OCLA (ISO) Agar (CM1084 + SR0244, SR0226)

Incubate for 24 hr ± 3 hr at 37°C

### PURITY PLATE

TSYEA–Tryptone Soya Yeast Extract Broth  
(CM0862 + 9–18g Agar)

Incubate for 18–24 hr at 37°C

### CONFIRMATION OF LISTERIA SPP.

Catalase Test  
Gram Stain  
Motility Test: Tryptone Soya Yeast Extract Broth (CM0862)

### CONFIRMATION OF LISTERIA MONOCYTOGENES

Haemolysis Test: Sheep Blood Agar (B00965)  
Carbohydrate Utilization  
CAMP Test

s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

# Listeria monocytogenes

## 3.1 ISO 11290-1:1996

Product description	Product format	Product code
Fraser Broth Base	Bottle	B00407E – 24x10mL
	Dehydrated Culture Media (CM)	CM0895B – 500g
		CM0895R – 2.5Kg
		CM0895T – 5Kg
	Tube	TV5020E
Fraser Supplement	Vial	SR0156E
Fraser Broth + Supplement	Bottle	B01034E – 24x10mL
		EB1034E – 100x10mL
Half Fraser Supplement	Vial	SR0166E – 225mL
		SR0166G – 2.25L
Half Fraser + Supplement	Bottle	B00350S – 10x225mL
		B00350V – 10x500mL
		B00350Z – 10x450mL
		B00793S – 10x225mL
		B00350J – 10x90mL
	Dry-Bag	DB0895V
		DB0895L
ReadyBag	FR59562	
Oxoid Chromogenic Listeria Agar (OCLA) (ISO)	Dehydrated Culture Media (CM)	CM1084B – 500g
		CM1084R – 2.5Kg
	Petri Dish	PO1196A
OCLA (ISO) Selective Supplement	Vial	SR0226E
OCLA (ISO) Differential Supplement	Vial	SR0244E
Listeria Enrichment Broth Base	Dehydrated Culture Media (CM)	CM0862B – 500g
		CM0862R – 2.5Kg
		CM0862T – 5Kg
Defibrinated Sheep Blood	Vial	SR0051B
Blood Agar No. 2 + Sheep Blood	Bottle	B00965Z – 10x450mL
		B00965M – 10x100mL
	Petri Dish	PB0115A



# Listeria monocytogenes

## 3.2 Second Mediums of choice: ISO 11290-1:1996

Product description	Product format	Product code
PALCAM Agar	Dehydrated Culture Media (CM)	CM0877B – 500g
		CM0877R – 2.5Kg
		CM0877T – 5Kg
	Petri Dish	PO5104A
PALCAM Selective Supplement	Vial	SR0150E – 500mL
		SR0150B – 2.5L
Listeria Selective Agar (Oxford Formulation)	Dehydrated Culture Media (CM)	CM0856B – 500g
		CM0856R – 2.5Kg
		CM0856T – 5Kg
	Petri Dish	PO5026A
Oxford Selective Supplement	Vial	SR0140E
Modified Oxford Supplement	Vial	SR0206E

## Listeria PreciS – ISO 16140 Alternate method validated against ISO 11290-1:1996

Product description	Product format	Product code
<i>Brilliance</i> Listeria Agar Base	Dehydrated Culture Media (CM)	CM1080B – 500g
		CM1080T – 5Kg
		CM1080E – 2L pack
	Petri Dish	PO1102A
		PO5165A
<i>Brilliance</i> Listeria Selective Supplement	Vial	SR0227E
<i>Brilliance</i> Listeria Differential Supplement	Vial	SR0228E
ONE Broth-Listeria Base	Bottle	B01066S – 10x225mL
	Dehydrated Culture Media (CM)	CM1066B – 500g
		CM1066R – 2.5Kg
		CM1066T – 5Kg
	ReadyBag	FR60031
Dry-Bag	DB1066V	
ONE Broth-Listeria Supplement	Vial	SR0234E – 500mL
		SR0234H – 2L
		SR0234B – 2.25L
O.B.I.S. Listeria	Kit/Reagent	ID0600M
Microbact 12L	Kit/Reagent	MB1128A
Microbact 12L Haemolysin Reagent	Kit/Reagent	MB1249A

Products conforming to the stated ISO for

# Listeria monocytogenes

ISO 11290-2:1998

Product description	Product format	Product code
Buffered Peptone Water (ISO)	Bottle	B01067S – 10x225mL
		B01067Z – 10x950mL
	Dehydrated Culture Media (CM)	CM1049B – 500g
		CM1049R – 2.5Kg
		CM1049T – 5Kg
	Dry-Bag	DB1049W
		DB1049M
	ReadyBag	BM1104T
	Tube	TV5013D
	Universal	B01067E
B01071E		
Oxoid Chromogenic Listeria Agar (OCLA) (ISO) Base	Dehydrated Culture Media (CM)	CM1084B – 500g
		CM1084R – 2.5Kg
OCLA (ISO) Selective Supplement	Vial	SR0226E
OCLA (ISO) Differential Supplement	Vial	SR0244E
Oxoid Chromogenic Listeria (OCLA) (ISO) Agar	Petri Dish	P01196A
		P05183A
Listeria Enrichment Broth Base (TSYEB formulation)	Dehydrated Culture Media (CM)	CM0862B – 500g
		CM0862R – 2.5Kg
		CM0862T – 5Kg
Defibrinated Sheep Blood	Vial	SR0051B
Blood Agar No. 2 + Sheep Blood	Petri Dish	PB0115A

Product conforming to the stated ISO for

# *Listeria monocytogenes*

Listeria Precis – ISO 16140 Alternate method validated against ISO 11290 part 1:1996 and part 2:1998

Product description	Product format	Product code
<i>Brilliance</i> Listeria Agar Base	Dehydrated Culture Media (CM)	CM1080B – 500g
		CM1080T – 5Kg
		CM1080E – 2L pack
	Petri Dish	P01102A
P05165A		
<i>Brilliance</i> Listeria Selective Supplement	Vial	SR0227E
<i>Brilliance</i> Listeria Differential Supplement	Vial	SR0228E
ONE Broth-Listeria Base	Bottle	B01066S – 10x225mL
	Dehydrated Culture Media (CM)	CM1066B – 500g
		CM1066R – 2.5Kg
		CM1066T – 5Kg
	ReadyBag	FR60031
Dry-Bag	DB1066V	
ONE Broth-Listeria Supplement	Vial	SR0234E – 500mL
		SR0234H – 2L
		SR0234B – 2.25L
O.B.I.S. Listeria	Kit/Reagent	ID0600M
Microbact 12L	Kit/Reagent	MB1128A
Microbact 12L Haemolysin Reagent	Kit/Reagent	MB1249A

# Listeria Precis Method



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

- Validated by AFNOR Certification to ISO 16140 standard
- Simple procedure—no specialised equipment required
- Single 24-hour enrichment
- Single sample transfer
- Single 24-hour plate incubation
- Quick and convenient confirmation: O.B.I.S. mono test or ISO 11290 standard tests
- Reduced time to result: 2 days compared with up to 7 days for standard culture and confirmation

## AFNOR Validation

The Listeria Precis™ method has been validated and approved by AFNOR according to ISO 16140 Standard against the reference methods ISO 11290 Part 1:1997 and Part 2:1997 incorporating Amendment 1:2004 for the detection and enumeration of *L. monocytogenes* in food and environmental samples. AFNOR Certification validation certificates are available in PDF format from the AFNOR Certification website [www.afnor-validation.com](http://www.afnor-validation.com).

For flexibility, confirmation was validated using either the O.B.I.S. mono test or tests outlined in ISO 11290. Alternatively, biochemical panels, such as Microbact™ 12L or Thermo Scientific™ RapID™ CB Plus Panel, may be used.

	Colony colour/appearance		
	Blue	Blue + halo	Colourless or inhibited
Enzyme targeted	Listeria spp.	<i>L. monocytogenes</i> and pathogenic <i>L. ivanovii</i>	Non-Listeria
β-glucosidase	+	+	-
Lecithinase	-	+	-

The O.B.I.S. mono test allows rapid differentiation of *L. monocytogenes* from other Listeria species. All Listeria species, with the exception of *L. monocytogenes*, possess the enzyme D-alanyl aminopeptidase. Its presence can be detected using the substrate, D-alanyl-7-amido-4-methylcoumarin (DALA), and colour developer, dimethylamino-cinnamaldehyde. O.B.I.S. mono produces a deep purple reaction if this enzyme is present.

## Protocol for Listeria Precis Method

### Day 0: Enrichment

25g or 25mL of sample + 225mL ONE Broth-Listeria

Incubate for 24 hr ± 2 hr at 30°C



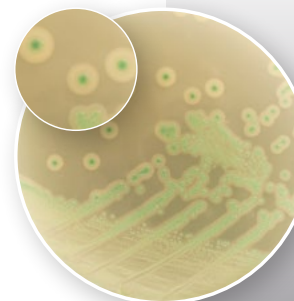
### Day 1: Plating

Using a 10µL microbiological loop inoculate a single Brilliance Listeria Agar plate

Incubate for 22–26 hr at 37°C

Select green/blue colonies with halos for confirmation

(for meat samples re-incubate plates that show no blue/green colonies with halos for a further 22–26 hr at 37°C)



### Day 2: Results

If present, confirm blue/green colonies with halos as *L. monocytogenes* using the O.B.I.S. mono test

Alternatively, confirm using standard ISO methods\*\*



### For Listeria monocytogenes enumeration:

Resuscitate any organisms present in the sample by adding 25g or 25mL to 225mL of Buffered Peptone Water and incubate for 1 hour at 20°C. Inoculate a single Brilliance Listeria plate with 100µL and incubate for 45 to 51 hours at 37°C. Inspect the plate for characteristic blue/green colonies with halos and count. Confirm using O.B.I.S. mono or alternatively, confirm using standard ISO methods.\*\* Calculate CFU/g or CFU/mL of sample.

\*\*If there is insufficient material to carry out an O.B.I.S. mono test, or if a mixed culture of *L. monocytogenes* and other Listeria species is suspected, first purify suspect colonies by sub-culture onto a second Brilliance Listeria plate.

Part 1: Colony-count technique at 44°C using membranes and 5-bromo-4-chloro-3-indolyl- $\beta$ -D-glucuronide

# $\beta$ -glucuronidase-positive *Escherichia coli*

*Escherichia coli* are a member of the family Enterobacteriaceae, and are divided into many sub-groups. *E. coli* is used as an indicator organism in water testing for the presence of faecal coliforms. A persistent cause of diarrheagenic pathogenicity from uncooked food, the most significant group based on severity of illness is *E. coli* EHEC, which includes the O157:H7 strain.



### RESUSCITATION

1 mL of sample/dilution onto membrane on  
Minerals Modified Glutamate Agar

*Incubate for 4 hr  $\pm$  1 hr at 37°C*

### ISOLATION

Transfer membrane to Tryptone-Bile-Glucuronic Agar  
TBX Medium (CM0945)

*Incubate for 18–24 hr at 44°C  
Not more than 4 plates high*

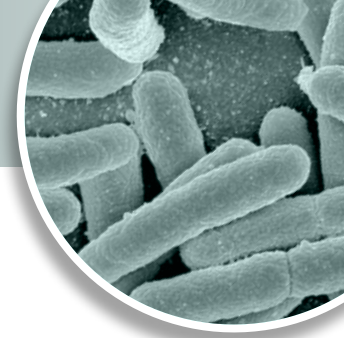
### REPORT RESULTS

Count typical colonies

Part 2: Colony-count technique at 44°C using  
5-bromo-4-chloro-3-indolyl-  $\beta$ -D-glucuronide

# $\beta$ -glucuronidase-positive *Escherichia coli*

*Escherichia coli* are a member of the family Enterobacteriaceae, and are divided into many sub-groups. *E. coli* is used as an indicator organism in water testing for the presence of faecal coliforms. A persistent cause of diarrheagenic pathogenicity from uncooked food, the most significant group based on severity of illness is *E. coli* EHEC, which includes the O157: H7 strain.



### ISOLATION

Pour plates in duplicate using 1 mL of test  
sample/dilution and  
Tryptone-Bile-Glucuronic Agar  
TBX Medium (CM0945) CM0945

*Incubate for 18–24 hr at 44°C*

OR

*Incubate for 4 hr at 37°C followed by 18–24 hr at 44°C  
(if stressed cells are suspected)*

### REPORT RESULTS

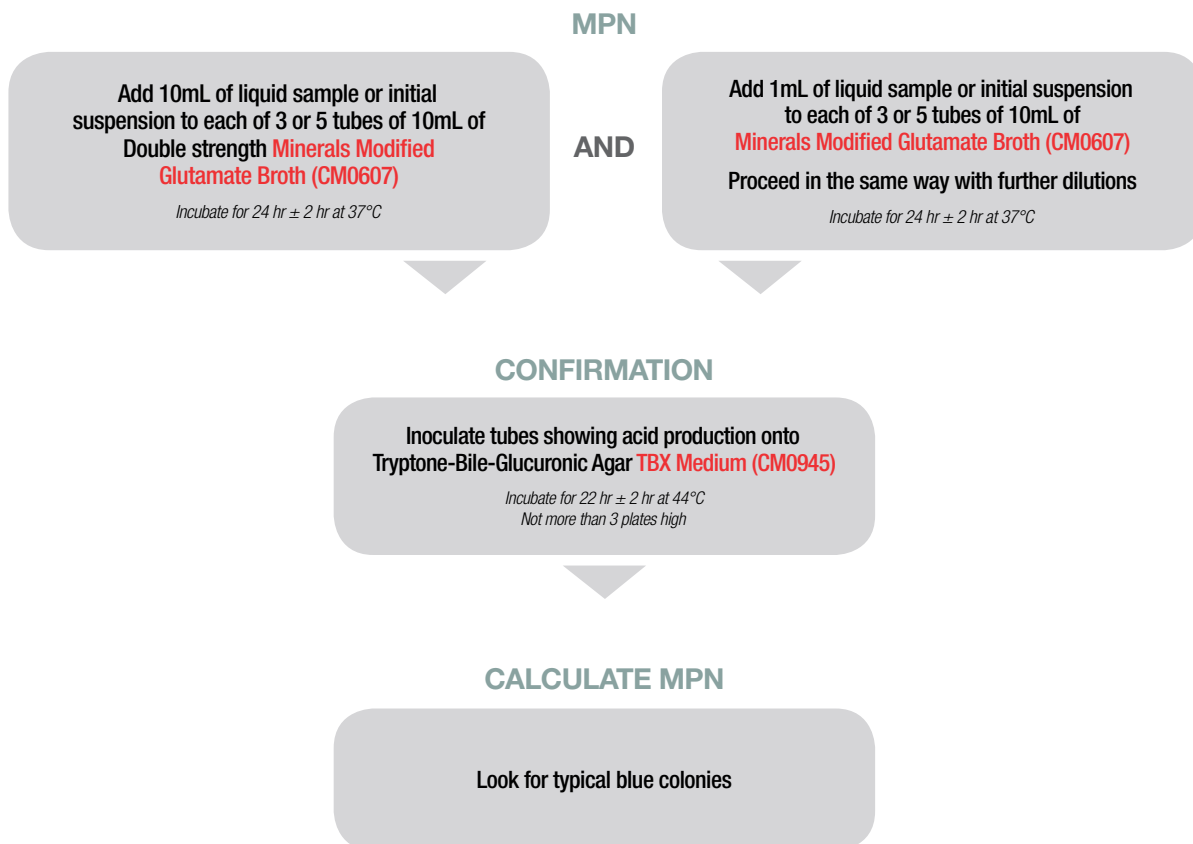
Count typical colonies



Part 3: MPN technique using  
5-bromo-4-chloro-3-indolyl-  $\beta$ -D-glucuronide

# $\beta$ -glucuronidase-positive *Escherichia coli*

*Escherichia coli* are a member of the family Enterobacteriaceae, and are divided into many sub-groups. *E. coli* is used as an indicator organism in water testing for the presence of faecal coliforms. A persistent cause of diarrheagenic pathogenicity from uncooked food, the most significant group based on severity of illness is *E. coli* EHEC, which includes the O157: H7 strain.



Products conforming to the stated ISO for

# $\beta$ -glucuronidase-positive *Escherichia coli*

- 4.1 ISO 16649-1:2001
- 4.2 ISO 16649-2:2001
- 4.3 ISO 16649-3:2005

Product description	Product format	Product code
TBX Medium	Bottle	B00194M – 10x100mL
	Dehydrated Culture Media (CM)	CM0945B – 500g
		CM0945R – 2.5Kg
		CM0945T – 5Kg
	Petri Dish	P00727A
P05109A		

#### 4.3 ISO 16649-3:2005

Product description	Product format	Product code
Minerals Modified Glutamate Broth	Dehydrated Culture Media (CM)	CM0607B – 500g
Sodium Glutamate	Dehydrated Culture Media (CM)	LP0124



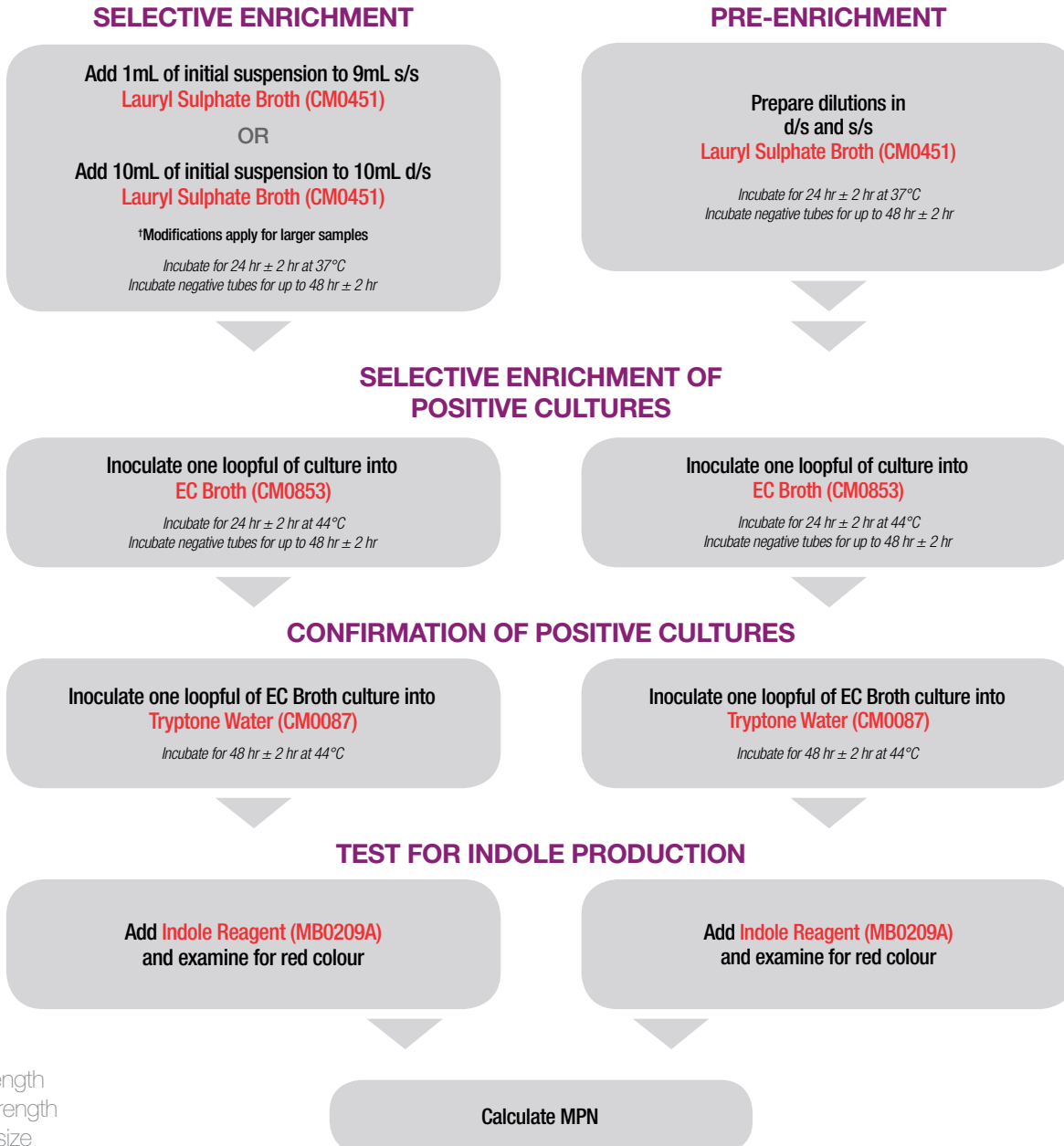


Horizontal method for the detection and enumeration of

## presumptive *Escherichia coli*

Most probable number technique

*Escherichia coli* are a member of the family Enterobacteriaceae, and are divided into many sub-groups. *E. coli* is used as an indicator organism in water testing for the presence of faecal coliforms. A persistent cause of diarrheagenic pathogenicity from uncooked food, the most significant group based on severity of illness is *E. coli* EHEC, which includes the O157: H7 strain.



s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

Products conforming to the stated ISO for

# presumptive *Escherichia coli*

Most probable number technique

## 5 ISO 7251:1005

Product description	Product format	Product code
Lauryl Sulphate Tryptose Broth	Dehydrated Culture Media (CM)	CM0451B – 500g
		CM0451R – 2.5Kg
		CM0451T – 5Kg
	Tube	TV5201G
EC Broth	Dehydrated Culture Media (CM)	CM0853B – 500g
Tryptone Water	Bijou	B00383B
		B00383C
		EB0383B
	Dehydrated Culture Media (CM)	CM0087B – 500g
Indole Reagent	Kit/Reagent	MB0209A
Rapid Spot Indole	Kit/Reagent	R8309002



Horizontal method for the detection of

## *Escherichia coli* 0157

*Escherichia coli* are a member of the family Enterobacteriaceae, and are divided into many sub-groups. *E. coli* is used as an indicator organism in water testing for the presence of faecal coliforms. A persistent cause of diarrheagenic pathogenicity from uncooked food, the most significant group based on severity of illness is *E. coli* EHEC, which includes the 0157:H7 strain.

### SELECTIVE ENRICHMENT

Add Xg or XmL of sample/dilution to 9XmL of  
Modified Tryptone Soya Broth with Novobiocin  
(CM0989 + SR0181)

Incubate for 6 hr at 41.5°C and for a further 12–18 hr

### IMMUNOCAPTURE

Using immunomagnetic separation

### SELECTIVE ISOLATION

Inoculate onto CT-SMAC (CM0813 + SR0172)  
and one other medium of choice e.g.  
CR-SMAC (CM1005 + SR0191)

Incubate for 18–24 hr at 37°C

### PURITY PLATE

Nutrient Agar

Incubate for 18–24 hr at 37°C

### CONFIRMATION

Indole formation: Tryptone Water (CM0087 + MB0209A)  
Serology: *E. coli* 0157 anti-sera  
*E. coli* 0157 Latex: (DR0620M)

s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

# Escherichia coli 0157

## 6 ISO 16654:2001

Product description	Product format	Product code
Modified TSB	Bottle	B01078S – 10x225mL
	Dehydrated Culture Media (CM)	CM0989B – 500g
		CM0989R – 2.5Kg
Novobiocin Supplement	Vial	SR0181E
Cefixime Tellurite Sorbitol MacConkey Agar (C-T SMAC) Base	Dehydrated Culture Media (CM)	CM0813B – 500g
		CM0813R – 2.5Kg
Cefixime Tellurite Selective Supplement	Vial	SR0172E
		SR0172H
C-T SMAC Agar	Petri Dish	P00702A
		P05069A
Tryptone Water	Bijou	B00383B
		B00383C
		EB0383B
	Dehydrated Culture Media (CM)	CM0087B – 500g
DrySpot <i>E. coli</i> 0157	Kit/Reagent	DR0120M
<i>E. coli</i> 0157 Latex Test	Kit/Reagent	DR0620M
Indole Reagent	Kit/Reagent	MB0209A
Rapid Spot Indole	Kit/Reagent	R8309002

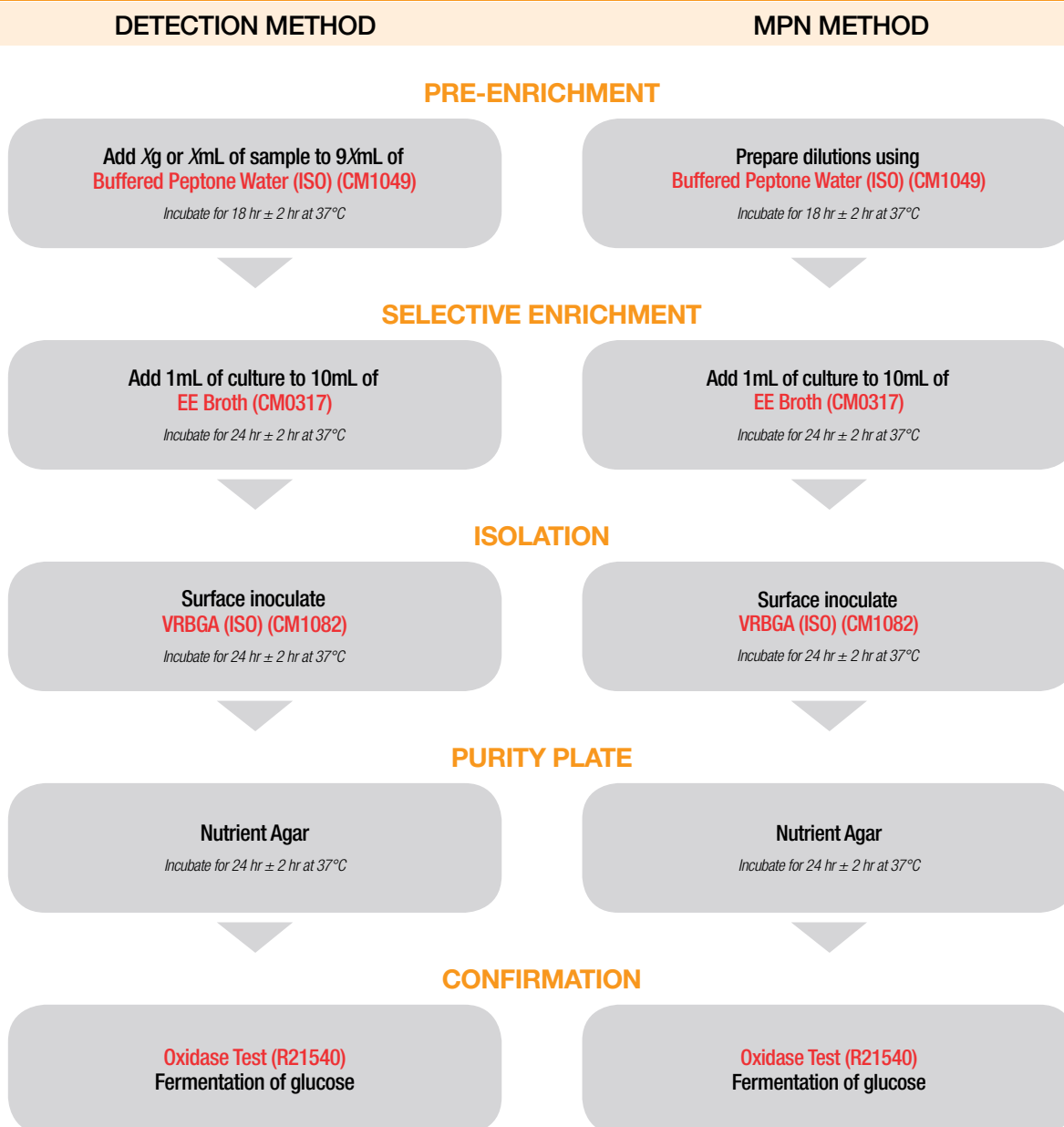
## Second Mediums of choice: 16654:2001

Product description	Product format	Product code
C-Rhamnose SMAC Agar	Dehydrated Culture Media (CM)	CM1005B – 500g
<i>Brilliance E. coli</i> / coliform Agar	Dehydrated Culture Media (CM)	CM0956A – 100g
		CM0956B – 500g
		CM0956R – 2.5Kg
	Petri Dish	P00745A
Cefixime Supplement	Vial	SR0191E

## Part 1: Detection and enumeration by MPN with pre-enrichment

**Enterobacteriaceae**

The Enterobacteriaceae family of Gram-negative bacteria includes *Salmonella*, *Escherichia*, *Klebsiella*, *Shigella*, *Proteus*, *Enterobacter*, *Serratia*, and *Citrobacter*. These families of bacteria are of importance to food manufacturers as many members of this family are a normal part of the human gut flora and gut flora of other animals. Enterobacteriaceae are also found in water or soil and as such are used as key indicator organisms to determine the presence of more virulent and pathogenic bacteria, as well as an indicator of poor manufacturing hygiene, disrupted processes or contaminated environments.



s/s = single strength  
 d/s = double strength  
 XmL = sample size  
 Xg = sample size



## Part 2: Colony-count method

## Enterobacteriaceae

The Enterobacteriaceae family of Gram-negative bacteria includes *Salmonella*, *Escherichia*, *Klebsiella*, *Shigella*, *Proteus*, *Enterobacter*, *Serratia*, and *Citrobacter*. These families of bacteria are of importance to food manufacturers as many members of this family are a normal part of the human gut flora and gut flora of other animals. Enterobacteriaceae are also found in water or soil and as such are used as key indicator organisms to determine the presence of more virulent and pathogenic bacteria, as well as an indicator of poor manufacturing hygiene, disrupted processes or contaminated environments.

### ISOLATION

Pour plate in duplicate of 1 mL of  
test sample/dilution in  
**VRBGA (ISO) (CM1082)**  
with overlay

*Incubate for 24 hr ± 2 hr at 37°C*

### COUNT

Count typical colonies

### PURITY PLATE

Nutrient Agar

*Incubate for 24 hr ± 2 hr at 37°C*

### BIOCHEMICAL CONFIRMATION

**Oxidase Test (R21540)**  
Fermentation of glucose

# Enterobacteriaceae

## 7.1 ISO 21528-1:2004

Product description	Product format	Product code
Buffered Peptone Water (ISO)	Bottle	B01067S – 10x225mL
		B01067Z – 10x950mL
	Dehydrated Culture Media (CM)	CM1049B – 500g
		CM1049R – 2.5Kg
		CM1049T – 5Kg
	Dry-Bag	DB1049W
		DB1049M
	ReadyBag	BM1104T
	Tube	TV5013D
	Universal	B01067E
B01071E		
EE Broth	Bottle	B00443Z – 10x90mL
		B00598M – 10x100mL
		B00076M – 10x100mL
	Dehydrated Culture Media (CM)	CM0317B – 500g
		CM0317R – 2.5Kg
		CM0317T – 5Kg
	Tube	TV5041E
Universal	B00598E	
VRBGA (ISO)	Dehydrated Culture Media (CM)	CM1082B – 500g
Oxidase Test	Kit/Reagent	R21540

## 7.2 ISO 21528-2:2004

Product description	Product format	Product code
VRBGA (ISO)	Dehydrated Culture Media (CM)	CM1082B – 500g
Oxidase Test	Kit/Reagent	R21540

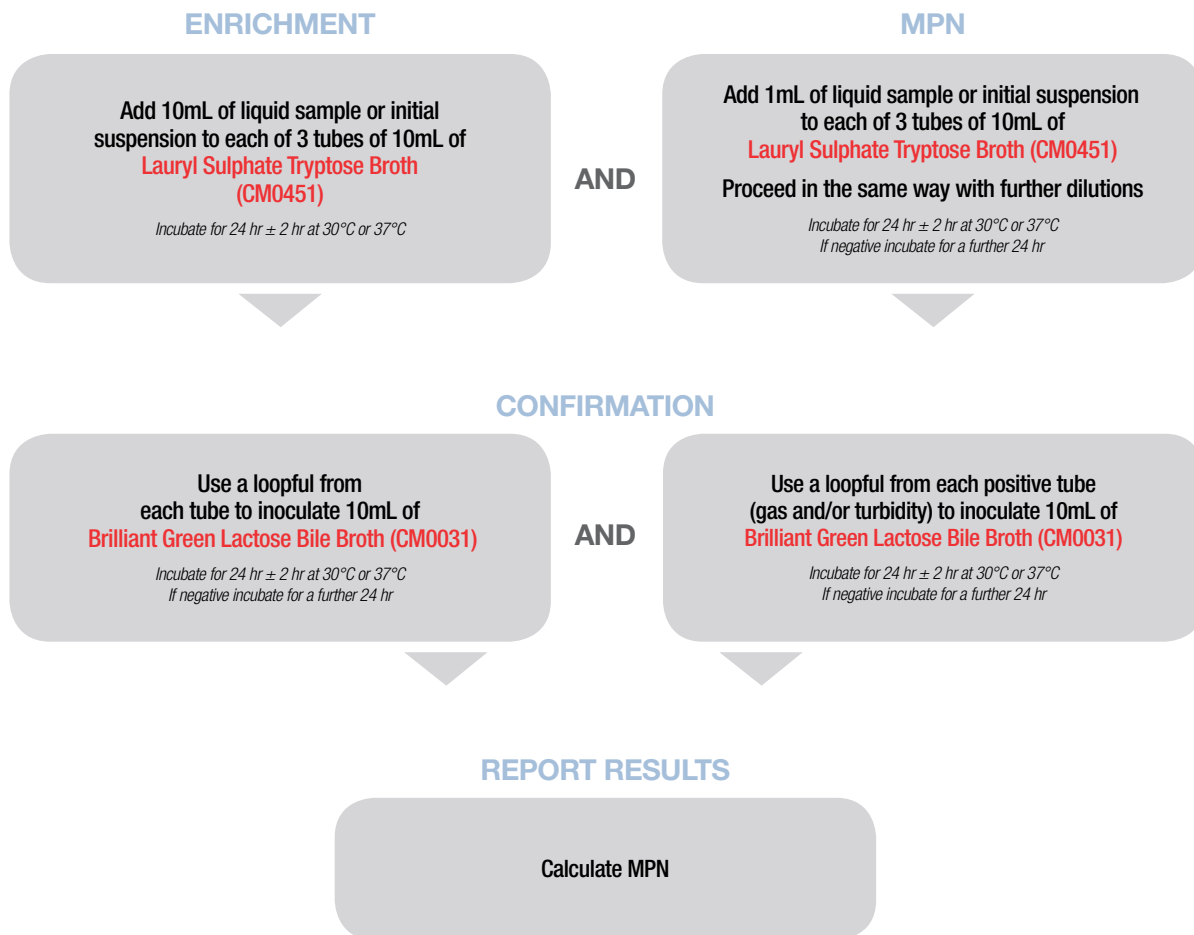


## Horizontal method for the detection and enumeration of

# Coliforms

## Most probable number technique

Coliform bacteria are commonly used as bacterial indicators of sanitary quality in foods and water. They are Gram-negative rods, which can ferment lactose with the production of acid and gas when incubated at 35°C to 37°C. Coliforms can be found in the faeces of warm-blooded animals and while themselves are not causes of serious illness, are easy to culture, and their presence is used to indicate that other pathogenic organisms of faecal origin may be present.



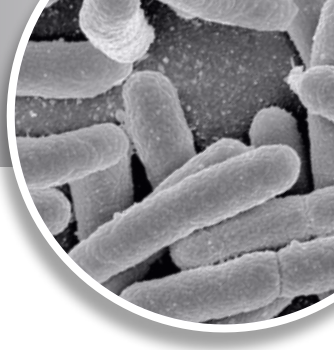


# Coliforms

Most probable number technique

**8 ISO 4831:2006**

Product description	Product format	Product code
Lauryl Sulphate Tryptose Broth	Dehydrated Culture Media (CM)	CM0451B – 500g
		CM0451R – 2.5Kg
		CM0451T – 5Kg
	Tube	TV5201G
Brilliant Green Bile Broth	Dehydrated Culture Media (CM)	CM0031B – 500g
		CM0031R – 2.5Kg
		CM0031T – 5Kg
		CM0031K – 25Kg
	Tube	TV5009E
	Universal	B00345E
EB0345E		



Horizontal method for the enumeration of

# Coliforms

## Colony-count technique

Coliform bacteria are commonly used as bacterial indicators of sanitary quality in foods and water. They are Gram-negative rods, which can ferment lactose with the production of acid and gas when incubated at 35°C to 37°C. Coliforms can be found in the faeces of warm-blooded animals and while themselves are not causes of serious illness, are easy to culture, and their presence is used to indicate that other pathogenic organisms of faecal origin may be present.

### ISOLATION

1 mL into sterile Petri dish (duplicate) + overlay  
**VRBLA (ISO) Agar (CM0968)**

*Incubate for 24 hr ± 2 hr at 30–37°C (as agreed)*

### CONFIRMATION

**Brilliant Green Bile Broth (CM0031)**

*Incubate for 24 hr at 30°C or 37°C + durhams tube*

**Look for gas production**

Products conforming to the stated ISO for

# Coliforms

Colony-count technique

9 ISO 4832:2006

Product description	Product format	Product code
Brilliant Green Bile Broth	Dehydrated Culture Media (CM)	CM0031B – 500g
		CM0031R – 2.5Kg
		CM0031T – 5Kg
		CM0031K – 25Kg
	Tube	TV5009E
	Universal	B00345E
EB0345E		
VRBLA (ISO)	Dehydrated Culture Media (CM)	CM0968B – 500g

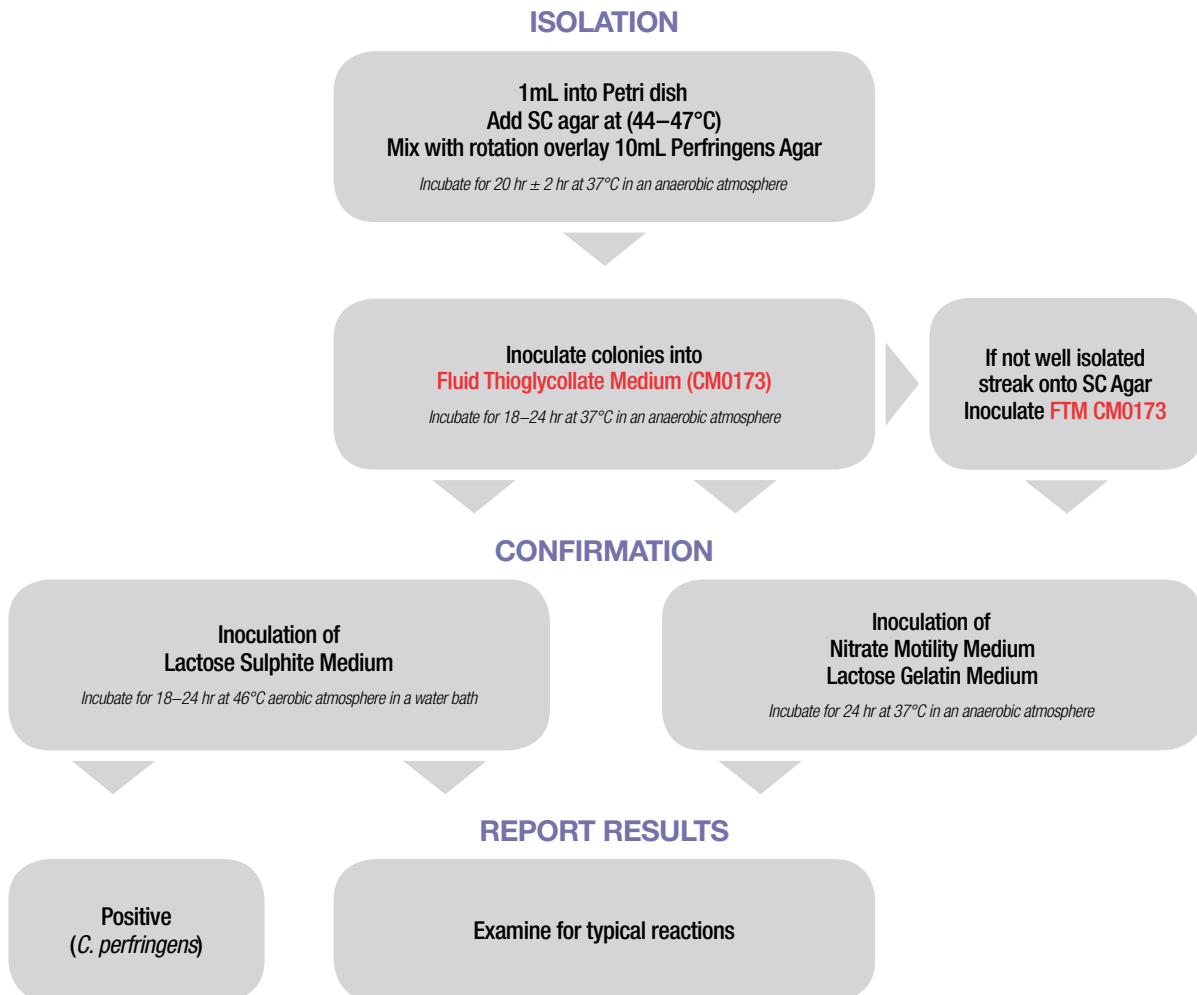


Horizontal method for the enumeration of

## *Clostridium perfringens*

### Colony-count technique

Of the Clostridia family *Clostridium perfringens* is the most commonly isolated from food. *C. perfringens* is a Gram-positive anaerobic sporulating bacillus unusual among Clostridia in being non-motile. Categorized into sub categories dependant upon the toxin produced, it is a key food poisoning pathogen in meat dishes.



Products conforming to the stated ISO for

# *Clostridium perfringens*

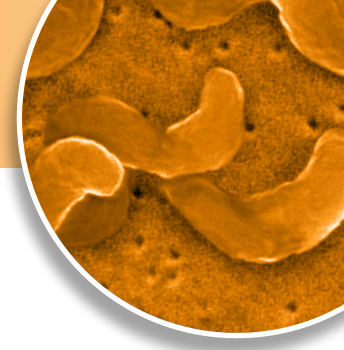
Colony-count technique

10 ISO 7937:2004

Product description	Product format	Product code
Fluid Thioglycolate Medium	Bottle	B00211Z – 80x39mL
		B01045M – 10x100mL
		B00157M – 10x100mL
		B00157Z – 10x450mL
		B00211M – 10x100mL
		B00368F – 24x15mL
		B00368M – 10x100mL
		B00368Y – 24x30mL
		B00510M – 10x100mL
		B00510V – 10x500mL
		B008760 – 10x80mL
		B00990R – 10x200mL
	Dehydrated Culture Media (CM)	CM0173B – 500g
		CM0173R – 2.5Kg
		CM0173T – 5Kg
		CM0173K – 25Kg
	Tube	TV5001D
Universal	B00211G	

# Campylobacter species

The Campylobacter genus is part of the family Campylobacteraceae and is a microaerophilic organism, Gram-negative, oxidase positive, spiral-shaped rods with flagella. Two key species within the genus are *C. jejuni* and *C. coli*, both a cause of the majority of diarrheal illness from poultry.



## SELECTIVE ENRICHMENT

Add Xg to 9mL of Bolton Broth  
(CM0983 + SR0203/SR0183 + SR0048)

## ENRICHMENT

Incubate in a microaerobic atmosphere  
for 4–6 hr at 37°C and then for 44 hr ± 4 hr at 41.5°C

## ISOLATION

mCCD Agar (CM0739 + SR0155)  
+ 2nd medium, if preferred:  
Karmali (CM0935 + SR0167)  
Skirrow (CM0331 + SR0069)  
Butzler (CM0331 + SR0214)

Incubate in a microaerobic atmosphere for 44 hr ± 4 hr at 41.5°C

Characteristic colonies

## CONFIRMATION

Columbia Blood Agar (CM0331 + SR0051)

Incubate for 24–48 hr at 41.5°C

## IDENTIFICATION

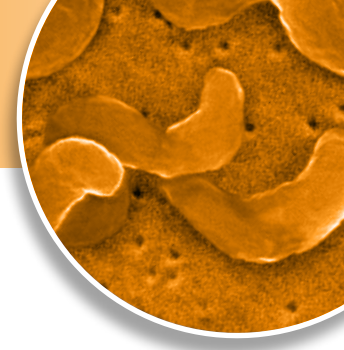
Brucella Broth Growth at 25°C, 41.5°C (aerobic)  
Oxidase (MB0266A)

(CM0337 MHA + SR0051)

s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

# Campylobacter species

The Campylobacter genus is part of the family Campylobacteraceae and is a microaerophilic organism, Gram-negative, oxidase positive, spiral-shaped rods with flagella. Two key species within the genus are *C. jejuni* and *C. coli*, both a cause of the majority of diarrheal illness from poultry.



## ISOLATION

**mCCDA (CM0739 + SR0155)**

*Incubate in a microaerobic atmosphere for 40–48 hr at 41.5°C*

## CONFIRMATION

**Sub-culture to  
Columbia Blood Agar (CM0331 + SR0051)**

*Incubate for 24–48 hr at 41.5°C*

## IDENTIFICATION

**Brucella Broth Growth at 25°C, 41.5°C (aerobic)  
Oxidase (MB0266A)**

# Campylobacter species

## 11.1 ISO 10272-1:2006

Product description	Product format	Product code
Bolton Broth	Bottle	B01070S – 10x225mL
	Dehydrated Culture Media (CM)	CM0983B – 500g
		CM0983R – 2.5g
Bolton Broth Selective Supplement	Vial	SR0183E
Modified Bolton Broth Selective Supplement	Vial	SR0203E
Lysed Horse Blood	Vial	SR0048C
mCCD Agar Base	Dehydrated Culture Media (CM)	CM0739B – 500g
		CM0739R – 2.5Kg
		CM0739T – 5Kg
mCCDA Selective Supplement	Vial	SR0155E – 500mL
		SR0155H – 2L
mCCD Agar	Petri Dish	PO0966E – Bi-plate
		P05091A
		P00119A
Muller Hinton Agar Base	Dehydrated Culture Media (CM)	CM0337B – 500g
		CM0337R – 2.5Kg
		CM0337T – 5Kg
		CM0337K – 25Kg
Defibrinated Sheep Blood	Vial	SR0051C
Muller Hinton Agar + Sheep Blood	Petri Dish	PB0431A
		PB5007A
Columbia Blood Agar Base	Bottle	B00966M – 10x100mL
	Dehydrated Culture Media (CM)	CM0331B – 500g
		CM0331R – 2.5Kg
		CM0331T – 5Kg
Columbia Blood Agar + Sheep Blood	Petri Dish	CM0331K – 25Kg
		PB5008A
		PB5039A
		PB0123A

## Second Mediums of choice: ISO 10272-1:2006

Product description	Product format	Product code
Karmali Selective Medium Base	Dehydrated Culture Media (CM)	CM0935B – 500g
Karmali Selective Supplement	Vial	SR0167E
Karmali Selective Supplement (Modified)	Vial	SR0205E
Karmali Selective Agar	Petri Dish	P05041A
		P05219E – Bi-plate
Columbia Blood Agar Base	Bottle	B00966M – 10x100mL
	Dehydrated Culture Media (CM)	CM0331B – 500g
		CM0331R – 2.5Kg
		CM0331T – 5Kg
		CM0331K – 25Kg
Skirrow Selective Supplement	Vial	SR0069E
Columbia Agar - Skirrow	Petri Dish	PB0118A
Butzler Selective Supplement	Vial	SR0214E



# Campylobacter species

## 11.2-3 ISO 10272-2:2006 (Includes *Brilliance CampyCount* as an ISO 16140 validated alternative to mCCDA)

Product description	Product format	Product code
mCCD Agar Base	Dehydrated Culture Media (CM)	CM0739B – 500g
		CM0739R – 2.5Kg
		CM0739T – 5Kg
mCCDA Selective Supplement	Vial	SR0155E – 500mL
		SR0155H – 2L
mCCD Agar	Petri Dish	P00966E – Bi-plate
		P05091A
		P00119A
Defibrinated Sheep Blood	Vial	SR0051C
Columbia Blood Agar Base	Bottle	B00966M – 10x100mL
	Dehydrated Culture Media (CM)	CM0331B – 500g
		CM0331R – 2.5Kg
		CM0331T – 5Kg
Columbia Blood Agar + Sheep Blood	Petri Dish	PB5008A
		PB5039A
		PB0123A

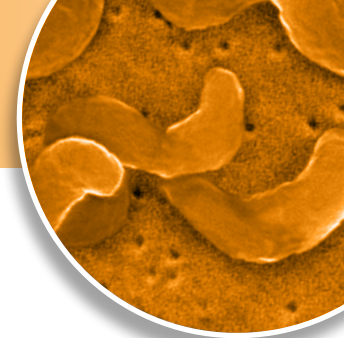
### 11 Alternative method

Product description	Product format	Product code
<i>Brilliance CampyCount</i> Agar	Petri Dish	P01185A
O.B.I.S. Campy	Kit	ID0600M

### 11 Gas Generation—All above methods

Product description	Product format	Product code
CampyGen	For Microaerophilic Gas Conditions	CN0025A – 2.5L Jar
		CN0035A – 3.5L Jar
		CN0020C – 1–4 plates
AnaeroJar	2.5L Capacity Jar	AG0025A
Anaerobic Jar	3.5L Capacity Jar	HP0011A

# Brilliance CampyCount



Thermo Scientific™ *Brilliance*™ CampyCount Agar—a chromogenic selective medium for the enumeration of *C. jejuni* and *C. coli* from poultry and related samples.

## OBSERVATION MADE SIMPLE

- Dark red colonies on a clear background

## QUANTITATIVE

- Novel selectivity enables accurate, quantitative recovery of target organisms

## ACCURATE CALCULATION

- Transparent medium allows enumeration on plate readers

## EASY IDENTIFICATION

- Reduced *Campylobacter* swarming for improved isolation of individual colonies

## VALIDATED

- ISO 16140 validated by MicroVal

## ISO 16140 Validation

*Brilliance* CampyCount Agar has been validated and approved by MicroVal according to the ISO 16140:2003 Standard against the reference method ISO 10272-2: 2006 for the selective enumeration of thermotolerant *Campylobacter* spp., in particular *C. jejuni* and *C. coli*, in poultry products. For flexibility, this study included both the O.B.I.S. Campy kit and DrySpot *Campylobacter* latex tests as alternative confirmation methods to those described in the reference method ISO 10272-2: 2006. The MicroVal certificate is available in PDF format from [www.microval.org](http://www.microval.org).

Sensitivity was tested using a total of 81 *Campylobacter* strains isolated from poultry and associated environments and specificity was tested using 139 non-target strains.

Media	Specificity (n=139)	Sensitivity (n=81)
mCCDA	91%	100%
<i>Brilliance</i> CampyCount Agar	99%	100%

## Protocol for enumeration of *C. jejuni* and *C. coli* using *Brilliance* CampyCount Agar

### Day 0: Plating

Dilute sample in appropriate diluent

### Plus

In duplicate, spread 0.1 mL of appropriate dilution onto 2x *Brilliance* CampyCount Agar plates

Incubate for 48 hr ± 1 hr at 41.5°C in a microaerobic atmosphere



### Day 2: Results

If present, select at least 5 well isolated, dark red colonies

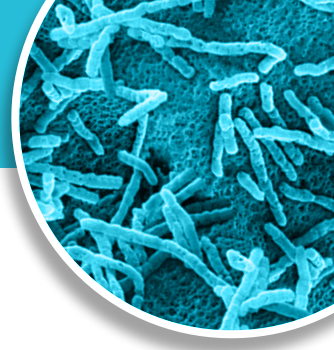


### Confirm

Confirm using O.B.I.S. Campy

Alternatively, confirm colonies using standard ISO methods



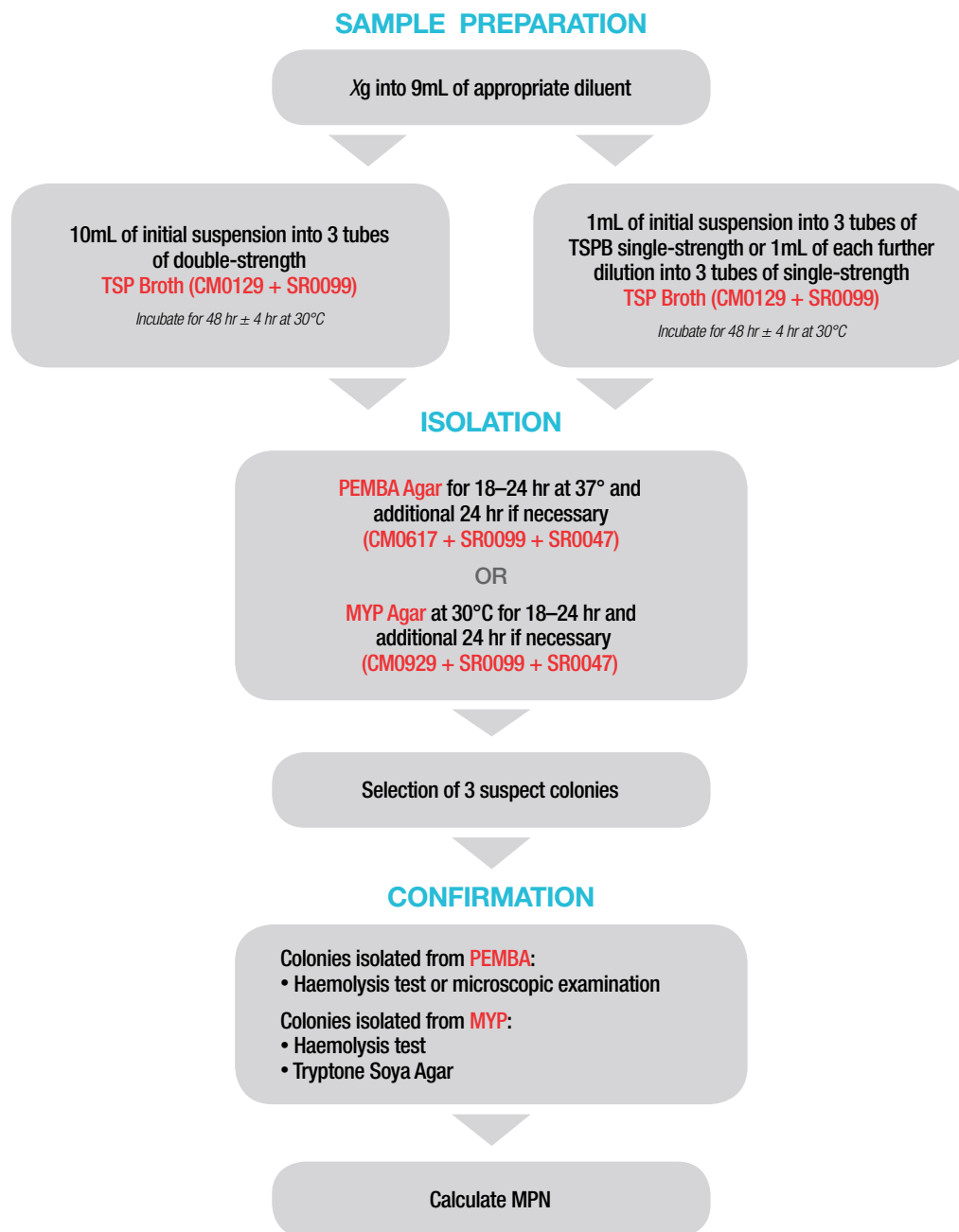


## Horizontal method for the enumeration of

# presumptive *Bacillus cereus*

## Most probable number technique and detection methods

A sporulating, Gram-positive organism that grows aerobically. Most commonly isolated from rice, cereals and pasta, its ability to cause food poisoning and spoil foods is well known. The ability of *Bacillus cereus* to produce two separate toxins that cause vomiting or diarrhea in relatively short incubation times is a more recent discovery, and has led to tighter controls around detection in certain foods.



s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

# presumptive *Bacillus cereus*

Most probable number technique and detection methods

## 12 ISO 21871:2006

Product description	Product format	Product code
TSP Broth Base	Dehydrated Culture Media (CM)	CM0129B – 500g
		CM0129R – 2.5Kg
		CM0129T – 5Kg
		CM0129K – 25Kg
MYP Agar Base	Bottle	B01032J – 10x90mL
	Dehydrated Culture Media (CM)	CM0929B – 500g
	Petri Dish	P05133A
		P00711A
Polymixin B Supplement	Vial	SR0099E
Egg Yolk Supplement	Bottle	SR0047C – 100mL
<i>Bacillus cereus</i> Selective Agar (PEMBA)	Dehydrated Culture Media (CM)	CM0617B – 500g
		CM0617R – 2.5Kg
		CM0617T – 5Kg
	Petri Dish	P05048A
Defibrinated Sheep Blood	Vial	SR0051C
Blood Agar No. 2 + Sheep Blood	Bottle	B00965Z – 10x450mL
		B00965M – 10x100mL
	Petri Dish	PB0115A



Horizontal method for the enumeration of

## presumptive *Bacillus cereus*

Colony-count technique at 30°C

A sporulating, Gram-positive organism that grows aerobically. Most commonly isolated from rice, cereals and pasta, its ability to cause food poisoning and spoil foods is well known. The ability of *Bacillus cereus* to produce two separate toxins that cause vomiting or diarrhea in relatively short incubation times is a more recent discovery, and has led to tighter controls around detection in certain foods.

### SAMPLE PREPARATION

Xg in 9mL of diluent  
according to sample type

### ISOLATION

Surface inoculation onto  
**MYP Agar (CM0929 + SR0099 + SR0047)**  
(0.10mL) to 2 plates  
Or 1.0mL to 3 plates (in duplicate)

*Incubate for 18–24 hr at 30°C  
(and an additional 24 hr if colonies are not clearly visible)  
Streak or stab selected colonies onto Sheep Blood Agar*

### CONFIRMATION

Haemolysis reaction using  
Sheep Blood Agar

*Incubate for 24 hr ± 2 hr at 30°C*

Positive is presumptive for *Bacillus cereus*

s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

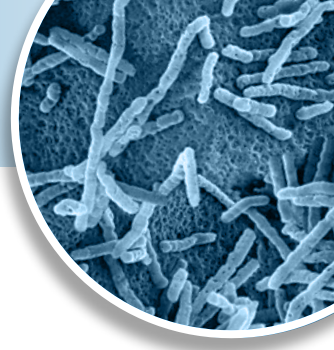
Products conforming to the stated ISO for

# presumptive *Bacillus cereus*

Colony-count technique at 30°C

## 13 ISO 7932:2004

Product description	Product format	Product code
MYP Agar Base	Dehydrated Culture Media (CM)	CM0929B – 500g
Polymixin B Supplement	Vial	SR099E
Egg Yolk Supplement	Bottle	SR0047C – 100mL
Defibrinated Sheep Blood	Vial	SR0051C
Blood Agar Base No. 2 + Sheep Blood	Bottle	B00965Z – 10x450mL
		B00965M – 10x100mL
	Petri Dish	PB0115A



Horizontal method for the enumeration of

## mesophilic lactic acid bacteria

Colony-count technique at 30°C

Lactic acid bacteria are Gram-positive, acid tolerant, rods or cocci that usually produce lactic acid as the major metabolic end product of carbohydrate fermentation. The industrial importance of *Lactobacillus*, *Leuconostoc*, *Pediococcus*, *Lactococcus*, and *Streptococcus* species in brewing, baking and food preparation is well known, but their presence in other foods can cause spoilage, unwanted characteristics or appearance, and in some cases, mild food poisoning.



Products conforming to the stated ISO for

# mesophilic lactic acid bacteria

Colony-count technique at 30°C

## 14 ISO 15214:1998

Product description	Product format	Product code
MRS (ISO) Agar	Dehydrated Culture Media (CM)	CM1153B – 500g
	Petri Dish	P01228A

## 14 Gas Generation—All above methods

Product description	Product format	Product code
CampyGen	For Microaerophilic Gas Conditions	CN0025A – 2.5L Jar
		CN0035A – 3.5L Jar
		CN0020C – 1– 4 plates
AnaeroJar	2.5L Capacity Jar	AG0025A
Anaerobic Jar	3.5L Capacity Jar	HP0011A

*A wide range of atmosphere generation workstations are available that have accurate incubation, humidity and gas generation for microaerophilic and anaerobic culturing. Please speak to your local rep about our range of Ruskin Workstations for more information or see the Thermo Scientific Microbiology Catalogue.*

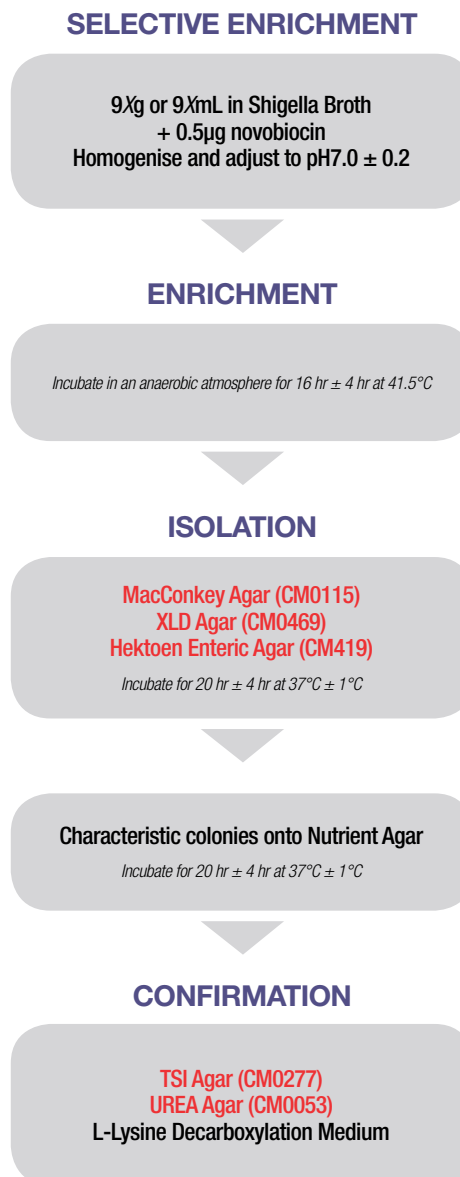
*A wide range of microbiological incubators are available to provide a high capacity, air flow and minimal footprint solution to your ISO testing needs. Please speak to your local rep about Heratherm Incubators for more information or see the Thermo Scientific Microbiology Catalogue.*





## Horizontal method for detection of **Shigella species**

Shigella are related to *E. coli* phenotypically and genetically appear the same. All species of Shigella are pathogenic to humans and cause dysentery. The increasing awareness of Shigella as a foodborne pathogen has led to many advances in detection and increased regulation around detection.

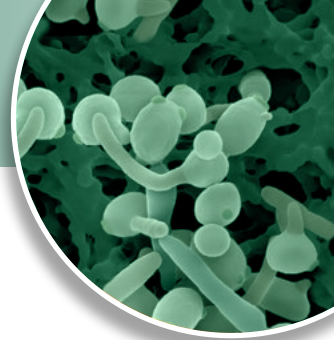


s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

# Shigella species

15 ISO: 21567:2004

Product description	Product format	Product code
MacConkey Agar N°3	Dehydrated Culture Media (CM)	CM0115B – 500g
		CM0115R – 2.5Kg
		CM0115T – 5Kg
		CM0115K – 25Kg
	Petri Dish	P05002A
		P00495A
XLD Agar	Dehydrated Culture Media (CM)	CM0469B – 500g
		CM0469R – 2.5Kg
		CM0469T – 5Kg
	Petri Dish	P00164A
		P05057A
	Hektoen Enteric Agar	Dehydrated Culture Media (CM)
CM0419R – 2.5Kg		
CM0419T – 5Kg		
CM0419K – 25Kg		
Petri Dish		P05100A
		P00142A
Triple Sugar Iron Agar (TSI)	Dehydrated Culture Media (CM)	CM0277B – 500g
	Tube	TV5074D
Urea Agar	Dehydrated Culture Media (CM)	CM0053B – 500g
	Slope	B00337B – 24x3mL
		EB0337B – 200x3mL



## Part 1: Colony-count technique in products with water activity greater than 0.95

# Yeasts and moulds

Yeast and mould are widespread in nature and grow especially well in organic environments. Yeasts appear as single, separate, oval cells when mature, whereas moulds tend to link together to form long, branching hyphae. Some yeast and mould may produce toxic metabolites known as mycotoxins. Most mycotoxins are resistant to destruction by food processing or cooking. Food types particularly prone to yeast and mould infection include grains, nuts, beans and fruits.

### SAMPLE PREPARATION

Prepare sample dilution

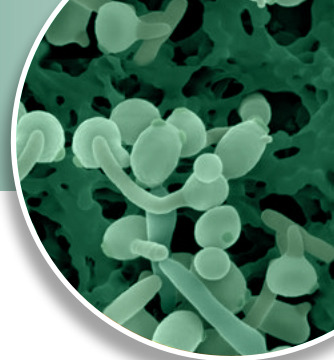
### ISOLATION

**DRBC Agar (CM1148 + SR0078 or CM1149)**

*Incubate for 5 days at 25°C ± 1°C then leave to stand in diffuse daylight for 1–2 days*

### EXAMINE PLATES

Count typical colonies



Part 2: Colony-count technique in products with water activity less than or equal to 0.95

## Yeasts and moulds

Yeast and mould are widespread in nature and grow especially well in organic environments. Yeasts appear as single, separate, oval cells when mature, whereas moulds tend to link together to form long, branching hyphae. Some yeast and mould may produce toxic metabolites known as mycotoxins. Most mycotoxins are resistant to destruction by food processing or cooking. Food types particularly prone to yeast and mould infection include grains, nuts, beans and fruits.

### SAMPLE PREPARATION

Prepare sample dilution

### ISOLATION

0.1mL of test sample onto  
DG18 Agar (CM1150 + SR0078 or CM1151)  
Onto a second plate transfer 0.1mL  
of the first decimal dilution onto  
DG18 Agar (CM1150 + SR0078 or CM1151)

*Incubate for 5–7 days at 25°C ± 1°C then leave to  
stand in diffuse daylight for 1–2 days*

### EXAMINE PLATES

Count typical colonies

# Yeasts and moulds

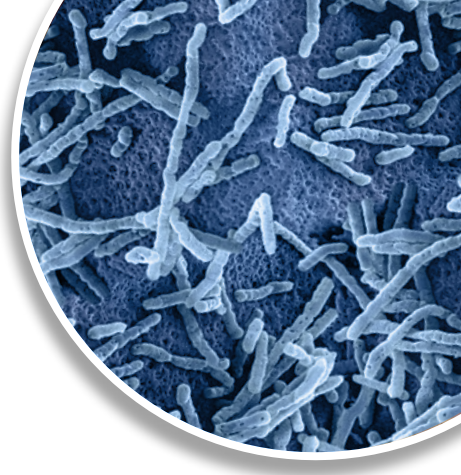
## 16.1 ISO 21527-1:2008

Product description	Product format	Product code
DRBC (ISO) Agar Base	Dehydrated Culture Media (CM)	CM1148B – 500g
Chloramphenicol Supplement	Vial	SR0078E
		SR0078H
Pre-supplemented DRBC (ISO) Agar	Dehydrated Culture Media (CM)	CM1149B – 500g
	Petri Dish	P01227A

## 16.2 ISO 21527-2:2008

Product description	Product format	Product code
DG18 (ISO) Agar Base	Dehydrated Culture Media (CM)	CM1150B – 500g
Chloramphenicol Supplement	Vial	SR0078E
		SR0078H
Pre-supplemented DG18 (ISO) Agar	Dehydrated Culture Media (CM)	CM1151B – 500g

# Precautions



## ISO Standard Formulation Conformity

The Thermo Scientific products featured in this brochure conform to the stated ISO standard formulation in their relevant organism section.

## Products Not Included

The Thermo Scientific product range may include a dehydrated or prepared culture media with the same or similar name to the media described within an ISO standard, but these products do not appear in this brochure because they do not conform to the formulation set out in the ISO standard.

## 'Specials'

Some products listed in this brochure are classified as 'special' formulations or formats and are not held in stock, therefore they may be subject to extended lead times for ordering.

## Ancillary Products

The Thermo Scientific product range contains many products that provide solutions to anaerobic or microaerophilic cultivation, incubation and refrigeration that can be used in conjunction with the culture media offering. Where applicable these products have been identified underneath the culture media offering. These products are not recommended by ISO but can be used along with the culture media to complete the testing methodology.

## Alternative Products

In some sections of this brochure there are products or methods that have been added as validated alternatives to the stated method. These alternatives have been validated by either NF Validation or another validation body using the ISO 16140 Standard against the stated method, and have been given AFNOR or MicroVal certification.

## ISO Flow Diagrams

The ISO flow diagrams used in this brochure have been simplified for easy identification of available products. To follow the ISO testing protocol and see the full flow description please refer to the specified ISO standard document.

[thermoscientific.com/microbiology](http://thermoscientific.com/microbiology)

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