

**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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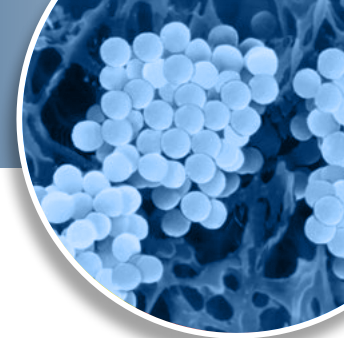


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Part 1: Technique using Baird-Parker medium

# 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

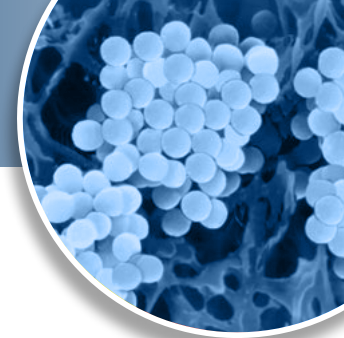
Mark position of typical colonies

*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.

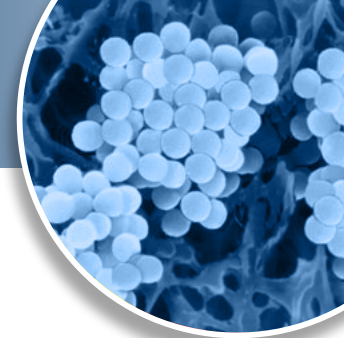
### ISOLATION

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

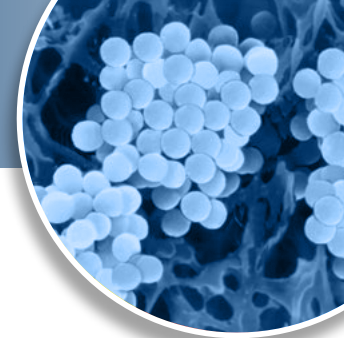
| Product description          | Product format                | Product code       |
|------------------------------|-------------------------------|--------------------|
| Baird Parker Agar Base (RPF) | Bottle                        | B00290Y – 10x360mL |
|                              |                               | 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

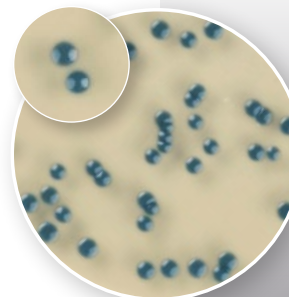
In duplicate, spread 0.1 mL of appropriate dilution onto 2x *Brilliance* Staph 24 Agar plates

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



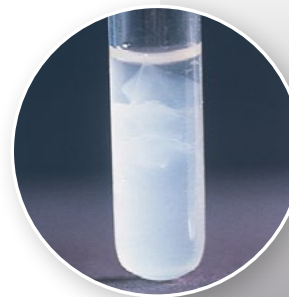
### Results

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



### Confirm

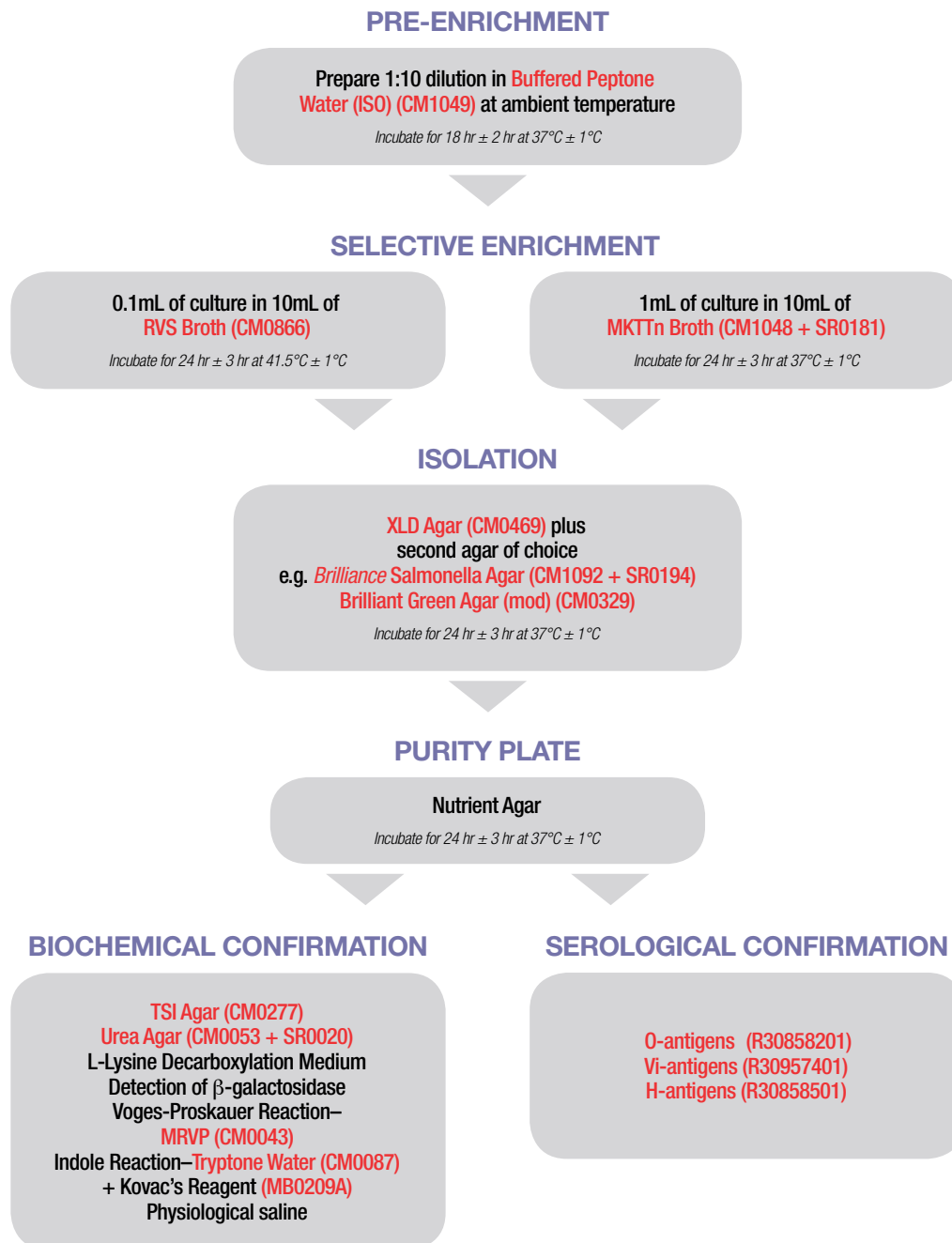
Confirm using tube coagulase



## 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

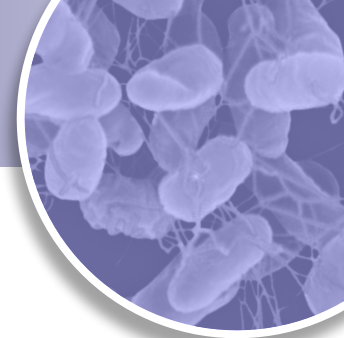
Second Mediums of choice: ISO 6579:2002

| 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> ,<br><i>Enterobacter</i> ,<br><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

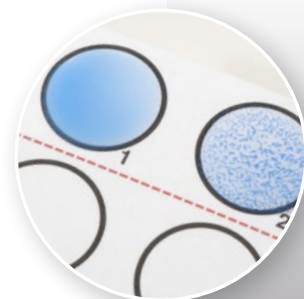
Incubate for 16–20 hr at 42°C



### 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

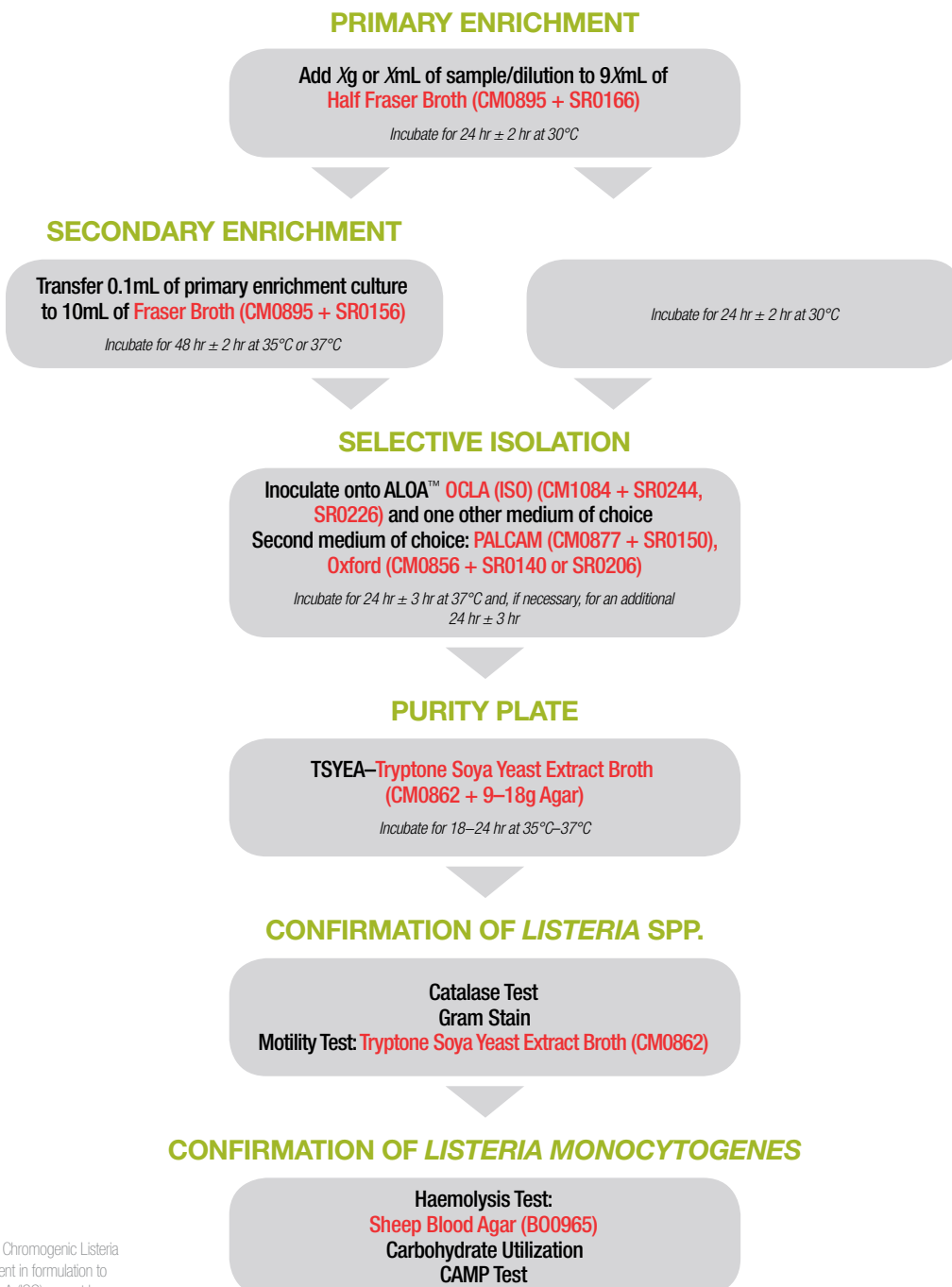
Select purple colonies for confirmation



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 X<sub>m</sub>L of sample to 9X<sub>m</sub>L 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  
X<sub>m</sub>L = sample size  
X<sub>g</sub> = 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                    | P05104A         |
| 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                    | P05026A         |
| 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                    | 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            |

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



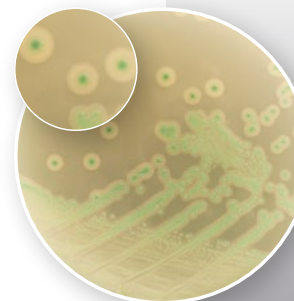
### Day 1: Plating

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.

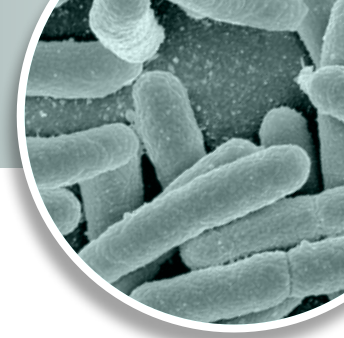
\*\*If there is insufficient material to carry out an O.B.I.S. mono test, or if a mixed culture of *L. monocytogenes* and other Listeria species is suspected, first purify suspect colonies by sub-culture onto a second Brilliance Listeria plate.



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*

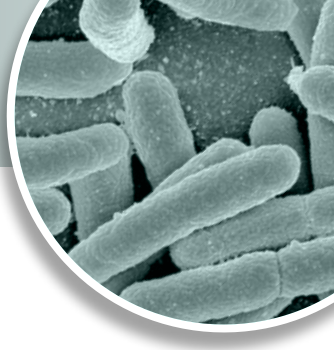
### REPORT RESULTS

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

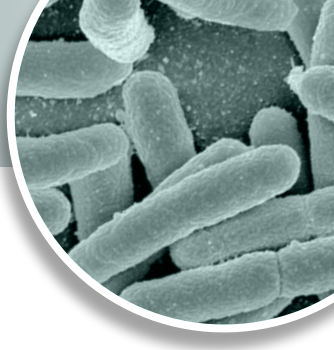
*Incubate for 18–24 hr at 44°C*

OR

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

### REPORT RESULTS

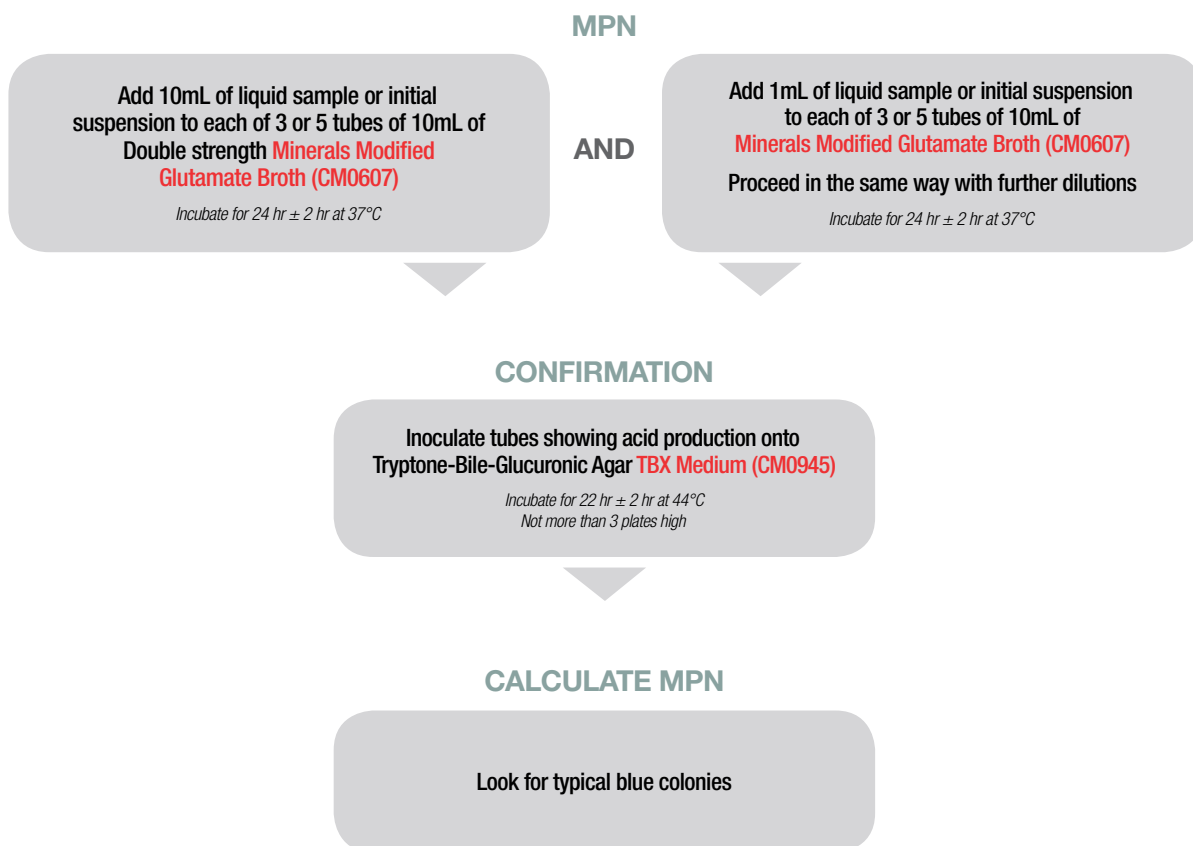
Count typical colonies



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         |

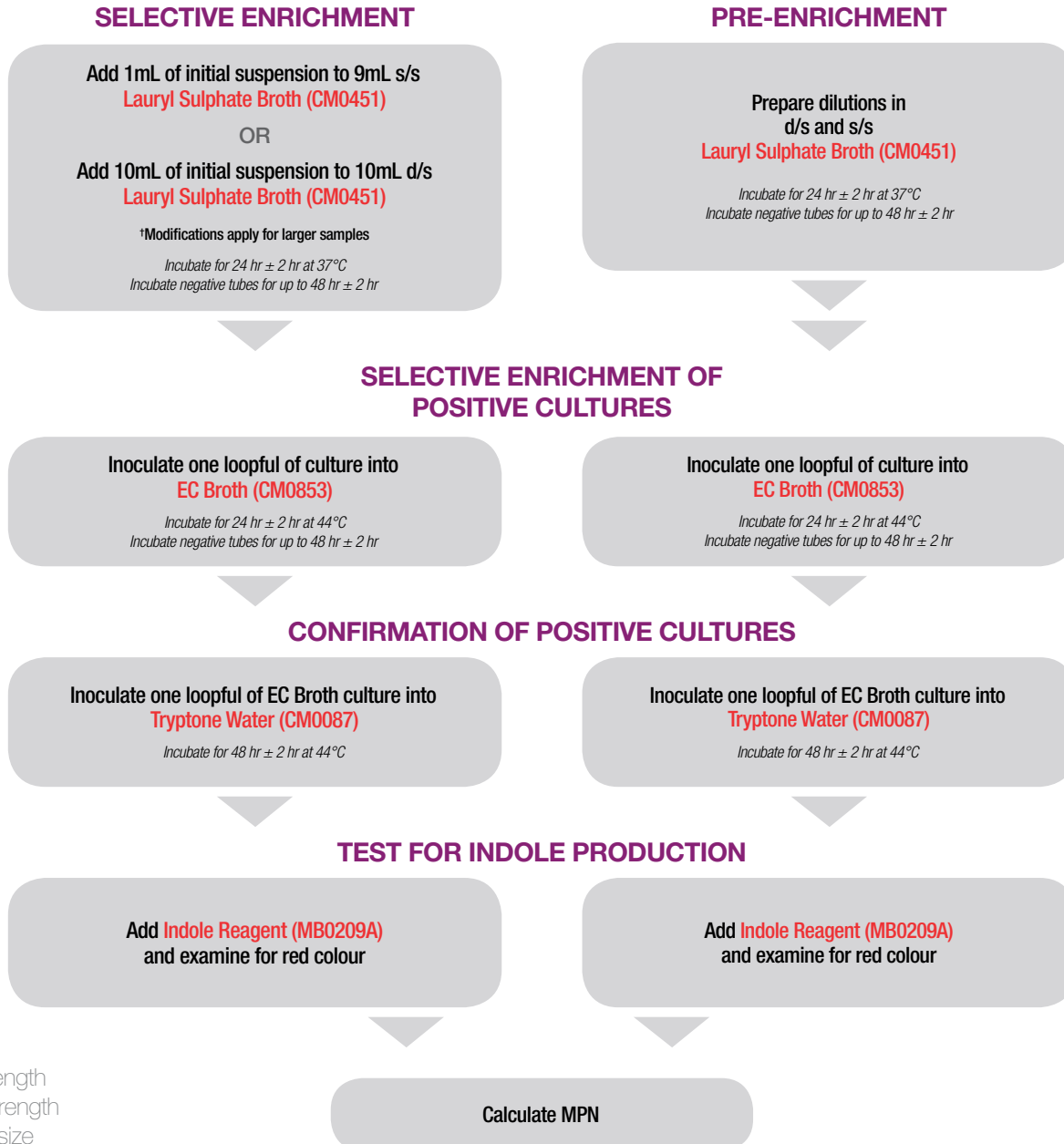


Horizontal method for the detection and enumeration of

## 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           |

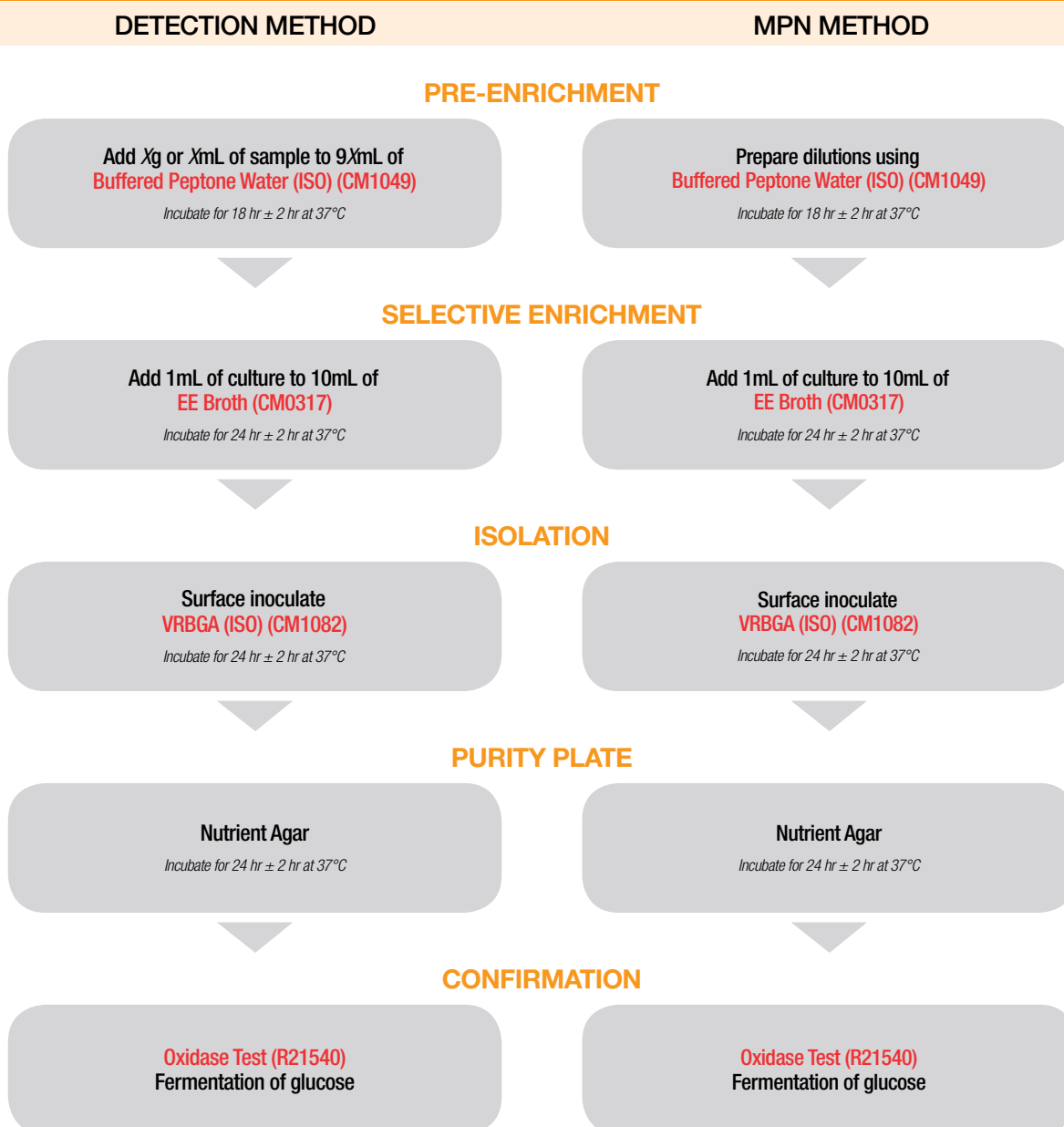
## Second Mediums of choice: 16654:2001

| 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

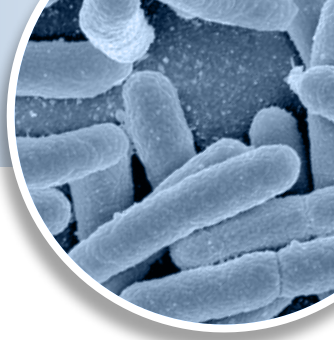
# Enterobacteriaceae

## 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         |

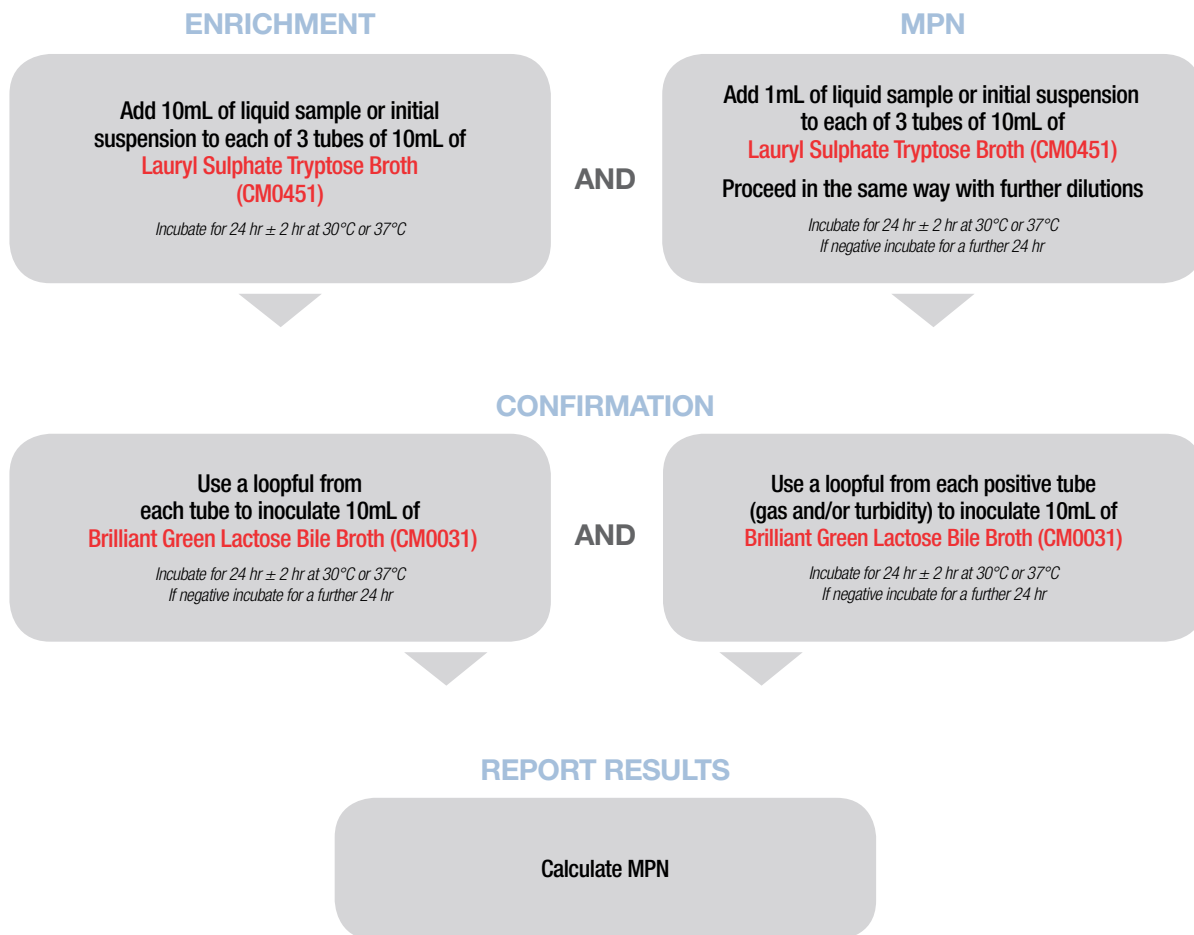


## Horizontal method for the detection and enumeration of

# 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.

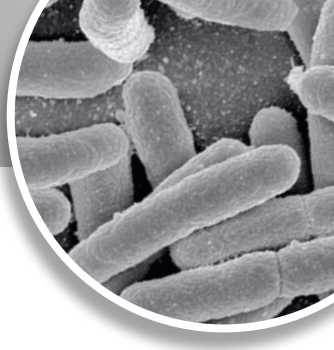


# Coliforms

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  |

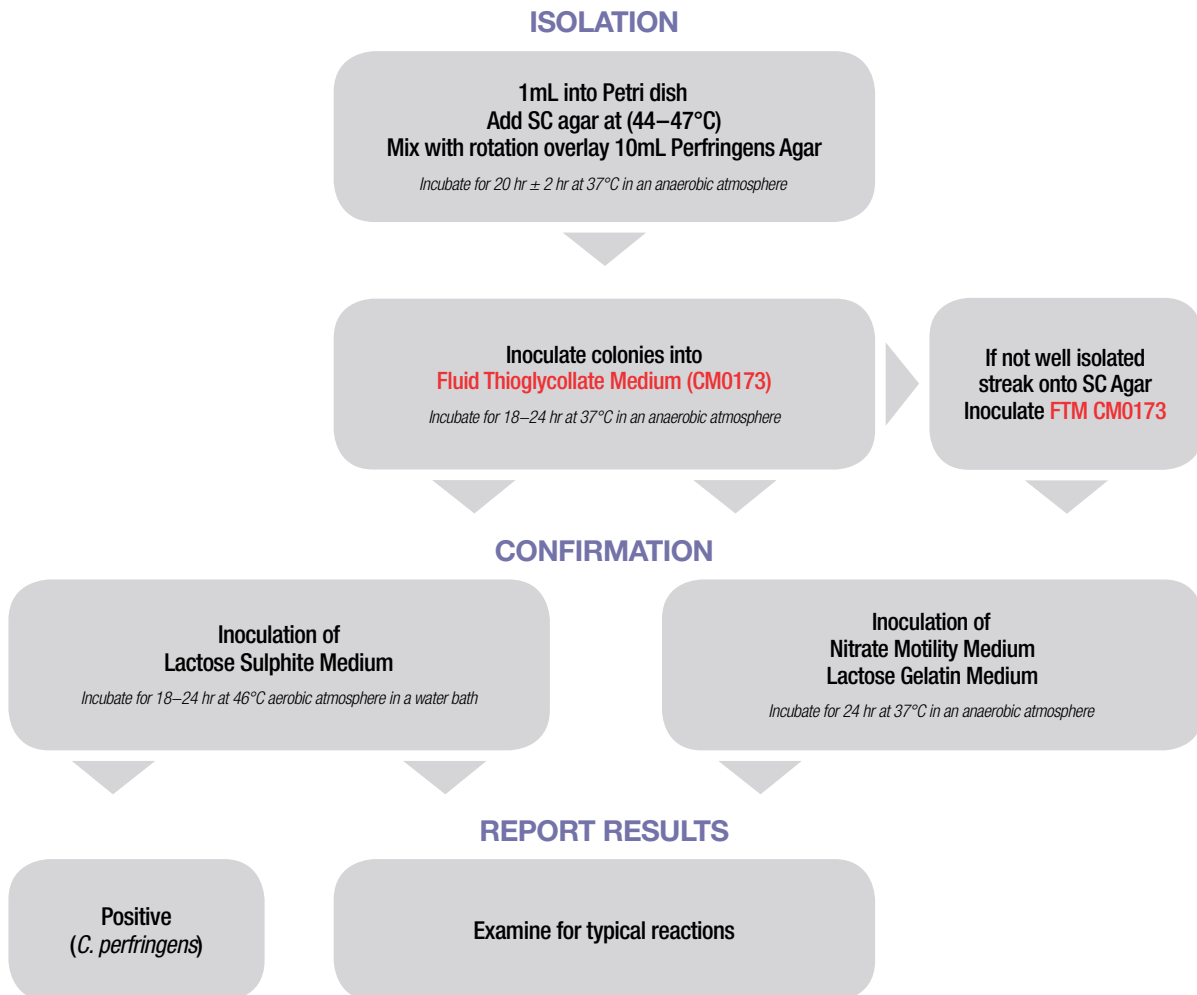


Horizontal method for the enumeration of

## *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*

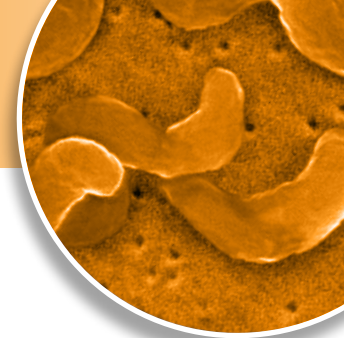
Colony-count technique

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

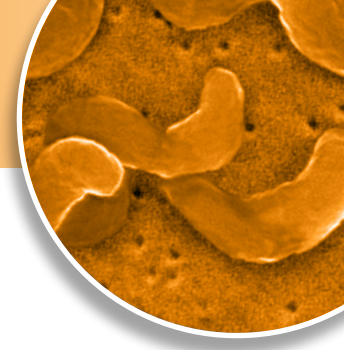
Brucella Broth Growth at 25°C, 41.5°C (aerobic)  
Oxidase (MB0266A)

(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      |
| Skirrow Selective Supplement            | Vial                          | CM0331K – 25Kg     |
|   |                               | 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            |

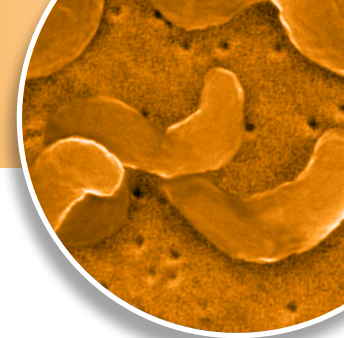
### 11 Alternative method

| 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

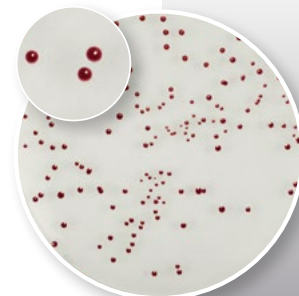
In duplicate, spread 0.1 mL of appropriate dilution onto 2x *Brilliance* CampyCount Agar plates

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



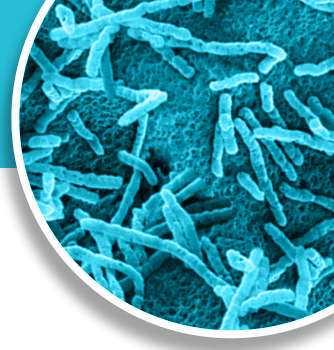
### Confirm

Confirm using O.B.I.S. Campy

Alternatively, confirm colonies using standard ISO methods





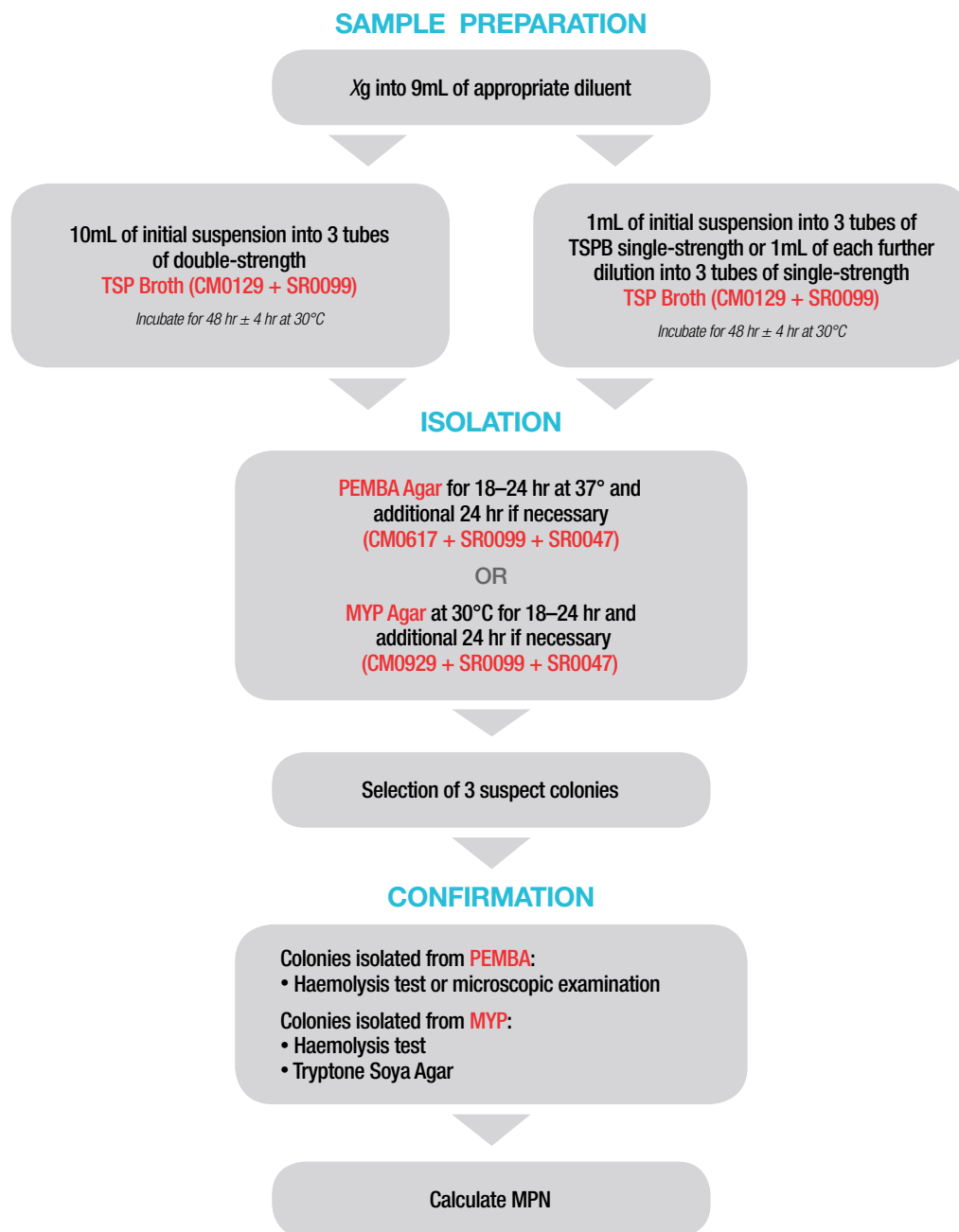


## Horizontal method for the enumeration of

# 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

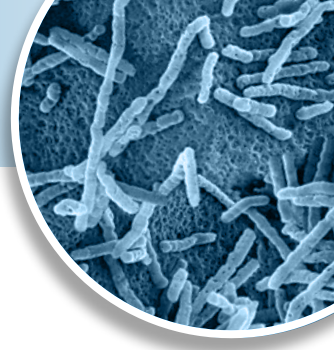
Products conforming to the stated ISO for

# 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               |

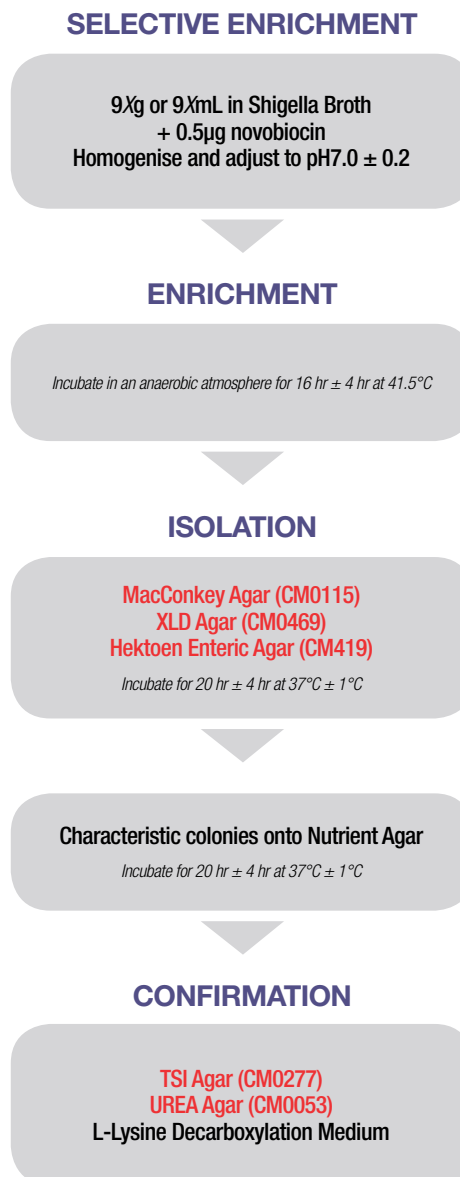
*A wide range of atmosphere generation workstations are available that have accurate incubation, humidity and gas generation for microaerophilic and anaerobic culturing. Please speak to your local rep about our range of Ruskin Workstations for more information or see the Thermo Scientific Microbiology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



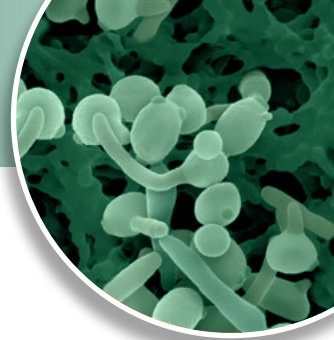
s/s = single strength  
d/s = double strength  
XmL = sample size  
Xg = sample size

# 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

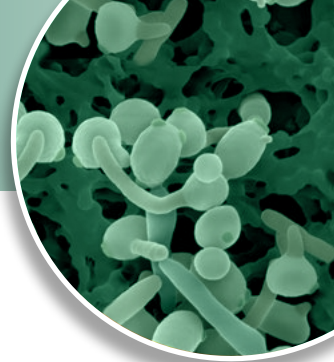
### ISOLATION

**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

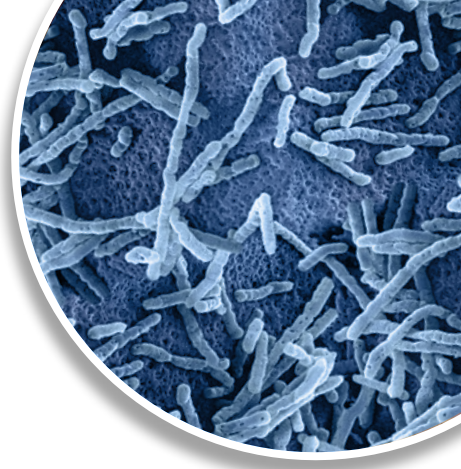
## 16.1 ISO 21527-1:2008

| 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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