



# **Crossley SM Medium**

## **Intended Use:**

Recommended for examination of meat and meat products for sporing anarobes

#### **Composition\*\***

Ingredients	Gms / Litre
SM powder #	100.000
Peptone	10.000
Bromocresol purple	0.100
Final pH ( at 25°C)	6.8±0.2
**Formula adjusted, standardized to suit performance para	meters

# Equivalent to Skim milk powder

### Directions

Suspend 110.1 grams in 100 ml purified / distilled water, agitating continuously. Mix well and make up the volume to 1000 ml. Dispense into tubes or flasks as desired. Sterilize by autoclaving at 15 lbs pressure (121°C) for 5 minutes.

### **Principle And Interpretation**

SM powder contains the carbohydrate lactose along with three main proteins i.e. casein, lactalbumin and lactoglobulin (1). Therefore an organism may exhibit one or several of the following metabolic properties, each specific for a particular species aiding bacterial identification. The various metabolic functions are lactose fermentation, clot formation, peptonization (digestion) and gas formation (5).

This medium was originally described by Crossley for the examination of meat and meat products for the detection of anaerobic bacteria (2). 10 ml of the medium is inoculated with 1-2 grams of food sample. The tubes are incubated at 35-37°C for 3-4 days. Peptone serves as a source of carbonaceous and nitrogeneous compounds, long chain amino acids, vitamins and other essential nutrients. Bromo cresol purple is the pH indicator. The reaction are observed at regular intervals to determine the change.

### Reaction

1. Neutral or alkaline pH (Purple colour) gas production, soft curd followed	Cl.putrificum, Cl.sporogenes,
by rapid digestion of casein, clear brown liquid, formation of black sediment	Cl.histolyticum
followed by typical foul odour	

- 2. No initial change of pH, formation of soft curd within 2-3 days, slight gas formation. Complete digestion later with alkaline reaction, no odour
- 3. Slight acidity (pale yellow colour), formation of soft curd, and whey, slight gas production
- 4. Acid (bright yellow colour), formation of firm clot and gas. Bleaching of the indiacator may occur
- 5. a. Acid, formation of stormy clot
  - b. Acid and stormy clot, but with less gas and cloudy whey
- Stormy alkaline pH, with peptonization commencing at the surface and spreading downwards. Digestion not complete, no blackening, no odour, no gas production
- 7. Acid and clot, or slightly acid only . Peptonization in some cases

Bacillus cereus Bacillus coagulans

**Organism** indicated

Cl. centrosporogenes

Cl. sphenoides

Cl. butyricum

a.)Cl. perfringens

Bacillus vulgaris

b) Usually *Cl.tertium Bacillus subtilis* 

## **Type of specimen**

Meat and meat products

M2105

### **Specimen Collection and Handling**

For meat and meat products,10 ml of the medium is inoculated with 1-2 grams of food sample. The tubes are incubated at 35-37°C for 3-4 days. The reaction are observed at regular intervals to determine the change. After use, contaminated materials must be sterilized by autoclaving before discarding.

#### Warning and Precautions

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

### Limitations

- 1. Some strains may show poor growth dure to nutritional variations.
- 2. Further biochemical and serological testing may be required for complete identification.

#### **Performance and Evaluation**

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

### **Quality Control**

#### Appearance

Light yellow to pale blue homogeneous free flowing powder .

### Colour and Clarity of prepared medium

Pale blue coloured opaque milky solution

### Reaction

Reaction of 11.0% w/v aqueous solution at 25°C. pH : 6.8±0.2

pН

#### 6.60-7.00

#### **Cultural Response**

Cultural characteristics observed after an incubation at 35-37°C for upto 3-5 days and record the reactions of various intervals during the incubation.

Organism	Reaction
Clostridium sporogenes ATCC 19404	Purple colour gas production, soft curd
Bacillus cereus ATCC 10876	Yellow colour, acid and clot
Salmonella Typhimurium ATCC 14028 (00031*)	Alkaline reaction (either green/blue

Key : (\*) Corresponding WDCM numbers.

### **Storage and Shelf Life**

Store between  $10-30^{\circ}$ C in a tightly closed container and the prepared medium at  $2-8^{\circ}$ C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Use before expiry date on the label.

Product performance is best if used within stated expiry period.

### Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (8,9).

Please refer disclaimer Overleaf.

#### Reference

1.Cantarow A., Schepartz B., Biochemistry, 3rd Ed., Philadelphia: W B Saunders, 1962:273,792-793

2.Crossley E.L. (1941) J. Soc. Chem. Ind. 60 131-136

- 3. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2<sup>nd</sup> Edition.
- 4. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
- 5. MacFaddin J. F., 2000, Biochemical tests for Identification of Medical Bacteria, 3rd Ed., Lippincott, Williams and Wilkins, Baltimore.

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