

## TM 571 – PA BROTH

### INTENDED USE

For detection of presence and absence of coliform bacteria in water.

### PRODUCT SUMMARY AND EXPLANATION

Acidic media are not completely suitable for counting yeasts and moulds in foods since yeast cells, stressed by heat do Availability of clean water for bathing, drinking and cooking is critical for modern civilization. Different pathogens can be transmitted through water contaminated by faeces and other sources leading to diseases such as diarrhea, typhoid, cholera etc. Different strategies have been developed for bacteriological examination of water. Weiss and Hunter proposed a simplified procedure for the bacteriological examination of treated water. Later on the PA (Presence Absence) test was developed as a simplified version of the test based on the principle that coliforms and other bacterial indicators of pollution should not be found in 100 ml samples of treated water. Other aspects of PA test were studied by Clark et al. PA Broth has been included as a tentative standard in the Standard Methods for the Examination of Water and Wastewater justified on the theory that a 100 ml sample of drinking water should not contain any coliform. The Presence Absence (PA) test for the coliform group is a simple modification of the multiple-tube procedures and provides a qualitative estimate of coliforms. This test is intended for use on routine samples collected from distribution system or water treatment plants. When PA test is positive, coliform densities can be determined quantitatively in repeat samples to indicate the magnitude of the contamination. PA test maximizes coliform detection in samples containing many organisms that could overgrow coliforms and cause problems in detection.

### COMPOSITION

| Ingredients                    | Gms / Ltr |
|--------------------------------|-----------|
| Peptic digest of animal tissue | 5.000     |
| Tryptose                       | 9.830     |
| Beef extract                   | 3.000     |
| Lactose                        | 7.460     |
| Sodium chloride                | 2.460     |
| Dipotassium phosphate          | 1.350     |
| Monopotassium phosphate        | 1.350     |
| Sodium lauryl sulphate         | 0.050     |
| Bromo cresol purple            | 0.0085    |

### PRINCIPLE

The medium consists of peptic digest of animal tissue, tryptose, beef extract which supply nitrogenous growth factors and trace ingredients to the coliforms. Lactose serves as the fermentable carbohydrate and energy source for bacterial metabolism. Phosphates provide buffering action while sodium lauryl sulphate inhibits many organisms other than coliforms. Bromocresol purple is the pH indicator which turns yellow at acidic pH. Majority of the lactose fermenting coliforms utilize the lactose to form acid. This acidity is detected by the pH indicator (Bromocresol purple) which change colour from purple to yellow at acidic pH. The medium is used a triple strength medium when examining 100 ml samples.

### INSTRUCTION FOR USE

- Dissolve 30.51 grams in 500 ml purified / distilled water or dissolve 91.53 grams in 1000 ml distilled water to prepare a triple strength medium.
- Heat if necessary to dissolve the medium completely.
- Dispense 50 ml volumes into screw capped tubes.
- Sterilize by autoclaving at 15 psi pressure (121°C) for 12 minutes.

### QUALITY CONTROL SPECIFICATIONS

- Appearance of Powder** : Light yellow to greenish yellow homogeneous free flowing powder.
- Appearance of prepared medium** : Purple coloured clear solution without any precipitate.
- pH (at 25°C)** : 6.8 ± 0.2

### INTERPRETATION

Cultural characteristics observed after incubation.

| Microorganism                 | ATCC  | Inoculum (CFU/ml) | Growth         | Colour of medium   | Incubation Temperature | Incubation Period |
|-------------------------------|-------|-------------------|----------------|--------------------|------------------------|-------------------|
| <i>Enterobacter aerogenes</i> | 13048 | 50-100            | Good-luxuriant | Light yellow       | 35-37°C                | 18-24 Hours       |
| <i>Escherichia coli</i>       | 25922 | 50-100            | Good-luxuriant | Yellow             | 35-37°C                | 18-24 Hours       |
| <i>Enterococcus faecalis</i>  | 29212 | ≥10 <sup>3</sup>  | Inhibited      | -                  | 35-37°C                | 18-24 Hours       |
| <i>Klebsiella pneumoniae</i>  | 13883 | 50-100            | Good-luxuriant | Yellow             | 35-37°C                | 18-24 Hours       |
| <i>Salmonella</i> Typhimurium | 14028 | 50-100            | Good-luxuriant | No change (purple) | 35-37°C                | 18-24 Hours       |

### PACKAGING:

In pack size of 500 gm bottles.

### STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.

**Product Deterioration:** Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.












## DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

## REFERENCES

1. Weiss J.E. and Hunter C.A., 1939, J. Am. Water Works Assoc., 31 : 707.
2. Clark J. A., 1969, Can. J. Microbiol., 5: 771.
3. Clark J. A., Burger C.A. and Sabatinos L. E., 1982, Can. J. Microbiol., 28 : 1002.
4. Eaton A. D., Clesceri L.S. and Greenberg A. W.,(Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st Ed., APHA, Washington, D.C.

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|--|---|---|--|---|
| <br>GMP<br>Good Manufacturing Practices Certified | <br>Best Before                          | <br>QTY.<br>Quantity               | <br>REF<br>Catalogue Number | <br>Manufacturer |
| <br>Temperature Unit                              | <br>LOT/<br>B. NO.<br>Lot / Batch Number | <br>Consults Instructions for Use | <br>QR Code                 |   |

**NOTE:** Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

**\*For Lab Use Only**  
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