



PRODUCT SPECIFICATION SHEET

Phenol Red Sucrose Broth (DM208)

Intended Use

Phenol Red Sucrose Broth (DM208) is recommended for sucrose fermentation studies of microorganisms.

Product Summary and Explanation

The fermentative properties of bacteria are valuable criteria in their identification.^(1,2) In 1950, Vera used a fermentation test medium employing the pH indicator phenol red and obtained accurate results.⁽³⁾ Phenol Red Broth Medium with various added carbohydrates serves as a differential medium by aiding in differentiation of various species and genera by their ability to ferment the specific carbohydrate, with the production of acid or acid and gas.⁽⁴⁻⁶⁾ Phenol Red Broth Medium is used as a negative control for studying fermentations or as a base for the addition of carbohydrates. Phenol Red Broth Base and Phenol Red Broth with Carbohydrates are referenced in the *Bacteriological Analytical Manual* for the differentiation of *Bacillus* and *Salmonella*. Phenol Red Sucrose Broth is used to study sucrose fermentation in various bacteria.

Principles of the Procedure

Phenol Red Broth Base contains proteose peptone and beef extract which provides the carbon and nitrogen required for good growth of a wide variety of organisms. Sodium chloride maintains the osmotic balance of the medium. Sucrose is the fermentable carbohydrate. Phenol red serves as a pH indicator. A positive sucrose fermentation reaction is indicated by the production of a yellow colour in broth due to the effect of acid production. Gas formation is seen in Durham's tubes. All of the *Enterobacteriaceae* grow well in this medium. In addition to producing a pH colour shift, the production of mixed acids, notably butyric acids, often results in a pungent, foul odour from the culture medium.

Formula / Liter

| Ingredients | Gms / Liter |
|--|-------------|
| Proteose peptone | 10.00 |
| Beef extract | 1.00 |
| Sodium chloride | 5.00 |
| Sucrose | 5.00 |
| Phenol red | 0.018 |
| Final pH: 7.4 ± 0.2 at 25°C | |
| Formula may be adjusted and/or supplemented as required to meet performance specifications | |

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 21 grams of the medium in one liter of distilled water.
2. Heat to boiling, to dissolve the medium completely.
3. Distribute in fermentation tubes (tubes containing inverted Durham's tubes).
4. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.

Quality Control Specifications

| | |
|---------------------------|--|
| Dehydrated Appearance | Light yellow to pink homogeneous free flowing powder |
| Prepared Medium | Red coloured clear solution without any precipitate |
| Reaction of 2.1% solution | pH 7.4 ± 0.2 at 25°C |
| Gel Strength | Not Applicable |



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Expected Cultural Response: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

| Sr. No. | Organisms | Results to be achieved | | | |
|---------|--|------------------------|----------------|-------------------------------------|-------------------|
| | | Inoculum (CFU) | Growth | Acid | Gas |
| 1. | <i>Citrobacter freundii</i> ATCC 8090 | 50-100 | good-luxuriant | positive reaction, yellow colour | positive reaction |
| 2. | <i>Escherichia coli</i> ATCC 25922 | 50-100 | good-luxuriant | negative reaction, no colour change | negative reaction |
| 3. | <i>Enterobacter aerogenes</i> ATCC 13048 | 50-100 | good-luxuriant | positive reaction, yellow colour | positive reaction |
| 4. | <i>Klebsiella pneumoniae</i> ATCC 13883 | 50-100 | good-luxuriant | positive reaction, yellow colour | positive reaction |
| 5. | <i>Proteus vulgaris</i> ATCC 13315 | 50-100 | good-luxuriant | positive reaction, yellow colour | positive reaction |
| 6. | <i>Salmonella Typhi</i> ATCC 6539 | 50-100 | good-luxuriant | negative reaction, no colour change | negative reaction |
| 7. | <i>Salmonella Typhimurium</i> ATCC 14028 | 50-100 | good-luxuriant | negative reaction, no colour change | negative reaction |
| 8. | <i>Serratia marcescens</i> ATCC 8100 | 50-100 | good-luxuriant | positive reaction, yellow colour | positive reaction |
| 9. | <i>Shigella flexneri</i> ATCC 12022 | 50-100 | good-luxuriant | negative reaction, no colour change | negative reaction |

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

- Using a heavy inoculum, inoculate tubes of media with growth from an 18- to 24-hour old pure culture using an inoculating loop.
- Incubate tubes with loosened caps at 35 - 37°C for 18-24 hours either in an aerobic or anaerobic atmosphere depending on the organism being evaluated.

Results

- A yellow color in the medium indicates a positive reaction for carbohydrate fermentation.
- If a Durham tube is used, bubbles in the inverted tube is an indication of gas production.
- The presence of a single bubble is recorded as positive for the production of gas.
- Refer to appropriate references for typical reactions produced by various microbial species.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.



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Limitations of the Procedure

- To ensure accuracy of interpretation, uninoculated control tubes and/or inoculated Phenol Red Broth Base control tubes should be run in parallel with the fermentation tests.

Packaging

Product Name : Phenol Red Sucrose Broth

Product Code : DM208

Available Pack sizes : 100gm / 500gm

References

- MacFaddin. 2000. Biochemical tests for identification of medical bacteria, 3rd ed., Lippincott Williams & Wilkins, Baltimore, Md.
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- U.S. Food and Drug Administration. 2001. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
- Becton, Dickinson and Co. 2007. BBL quality control and product information manual for plated and tubed media, BD Diagnostics, Sparks, Md.™
- Ewing. 1986. Edwards and Ewing's identification of *Enterobacteriaceae*, 4th ed. Elsevier Science Publishing Co., New York, N.Y.

Further Information

For further information please contact your local MICROMASTER Representative.






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