

EC (Escherichia coli) Broth (i23239)

For the detection of *coliform* bacteria at 35°C and of *Escherichia coli* at an elevated temperature (44.5 or 45.5°C).

Industry: Water / Food

Principles & Uses

EC Medium, developed by Hajna and Perry, serves as a selective tool for identifying *coliform* bacteria and *Escherichia coli* (*E. coli*) in various substances, including water and food. It's endorsed by ISO 7251 for *E. coli* enumeration using the MPN technique.

This medium enhances *coliform* detection, particularly *E. coli*, and finds application in assessing water quality, wastewater treatment systems, shellfish, and food products. The inclusion of bile salts inhibits Gram-positive bacteria but allows *E. coli* to thrive, while potassium salts help maintain pH. Enzymatic digest of casein provides essential nutrients, and lactose serves as the fermentable carbohydrate. Sodium chloride maintains osmotic balance. EC Medium operates at 35°C for *coliform* detection and 44.5°C for *E. coli* isolation.

EC Medium can offer insights into the source of *coliform* groups (fecal or non-fecal) as a confirmatory test. While it should not be used for direct *coliform* isolation, prior enrichment in a presumptive medium is necessary.

For *E. coli* and *coliform* detection, gas formation at specific temperatures signifies their presence, while false negatives can result from factors like low pH, refrigeration, or bactericidal agents. This medium, with its controlled conditions, aids in assessing water and food safety.

Composition (gr/L)

Enzymatic Digest of Casein 20, Lactose 5, Bile Salts Mixture 1.5, Dipotassium Phosphate 4, Monopotassium Phosphate 1.5, Sodium Chloride 5.
Final pH at 25°C 6.9 ± 0.2

Preparation from dehydrated Powder

Suspend 37 g of the powder in one Liter of distilled water. Mix Thoroughly. Dispense into tubes containing inverted fermentation vials (Durham). Autoclave at 121°C for 15 minutes.

Quality Control

Dehydrated Appearance: Light beige, free-flowing, homogeneous.

Prepared Appearance: Light amber, clear.

Reaction of 3.7% Solution at 25°C: pH 6.9 ± 0.2

Cultural Response

Cultural characteristics were observed after incubation at 44.5 ± 2°C for 24-48 hours.

Organism (ATCC*)	Growth at 44.5 °C	Gas at 44.5 °C
<i>Escherichia coli</i> (25922)	Good	+
<i>Escherichia coli</i> (8739)	Good	+
<i>Citrobacter freundii</i> (8090)	None/ fair	-
<i>Enterococcus faecalis</i> (19433)	None/ fair	-
<i>Enterobacter cloacae</i> (13047)	None/ fair	-
<i>Pseudomonas aeruginosa</i> (27853)	Poor/fair	-

*ATCC is a registered trade mark of the American Type Culture Collection.



Amber-colored prepared medium (left). *E. coli* growth and gas accumulation in Durham tube at 44°C (right)

Storage

Keep the container at 15-30 °C. Store prepared medium at 2-8 °C.