Buffered Peptone Water ISO

Cat. 1402

Recommended as a diluent for the homogenization of samples in the microbiological analysis and for the preenrichment of Enterobacteriaceae and Salmonella.

Practical information

Aplications	Categories
Enrichment	Enterobacteria
Enrichment	Salmonella
Diluent	General use

Industry: Water / Pharmaceutical/Veterinary / Cosmetics / Food

Regulations: ISO 11133 / ISO 11290 / ISO 19250 / ISO 21528 / ISO 6579 / ISO 6887

Principles and uses

Buffered Peptone Water is a non-selective medium recommended as a preenrichment medium by the ISO 6579 and ISO 19250 normative for Salmonella detection in food and water respectively and by the ISO 21528 normative for Enterobacteriaceae detection.

A feature common to all selective media is that sublethally injured organisms are not generally detected and therefore a recovery step must be included in examination procedures. This is of importance, particularly in the food industry as various processes such as heat, desiccation, preservation processes, pH changes, etc, cause sublethal injuries to Salmonella. The broth is rich in nutrients and produces high resuscitation rates for sublethally injured bacteria and intense growth.

Changes in pH may cause damages to bacteria growth. Buffered Peptone Water maintains a high pH over the enrichment period via the phosphate buffer system and allows repair of injured cells sensitive to low pH. Pancreatic digest of casein provides nitrogen, vitamins, minerals and amino acids essential for growth. Sodium chloride supplies essential electrolytes for transport and osmotic balance.

Salmonella can be present in food and water in small numbers and are usually found with considerably larger numbers of other Enterobacteriaceae or other families. Pre-enrichment is necessary to allow the detection of small numbers of Salmonella or injured Salmonella.

Buffered Peptone Water is also recommended by the ISO 6887 as a diluent for all enumerations of microorganisms and by the ISO 11290 as a diluent for Listeria monocytogenes enumeration.

Formula in g/L

Enzymatic digest of casein	10	Potassium dihydrogen phosphate	1,5
Sodium chloride	5	Di-sodium hydrogen phosphate	3,5

Preparation

Suspend 20 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Dispense into appropriate containers and sterilize in autoclave at 121°C for 15 minutes.

Instructions for use

For preenrichment of Salmonella spp. in food, animal feed, animal faeces, and environmental samples according to ISO 6579:
- Inoculate the Buffered Peptone Water with the sample or dilutions, and incubate at 34-38 ºC for 18 h.

For preenrichment of Salmonella spp. in water samples according to ISO 19250:
- Inoculate the Buffered Peptone Water with the sample or dilutions, and incubate at 36±2 ºC for 18±2 h.

For the preenrichment of Enterobacteriaceae according to ISO 21528:
- Inoculate Buffered Peptone Water (BPW) with the portion to be tested and incubate at 37 °C for 48 hours.

For the dilution stage in the Listeria enumeration method according to ISO 11290:
- Prepare an initial suspension 1:10 of sample and Buffered Peptone Water for analysis. Listeria 1/2 Fraser Broth (Cat. 1183) can be used as a diluent if

the detection and enumeration procedures are carried out simultaneously.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	White cream-slightly toasted	Light amber	7,0 ± 0,2

Microbiological test

According to ISO 11133:

Incubation conditions:

Escherichia coli ATCC 8739 according ISO 6887(20-25 °C / 45min -1h) / Staphylococcus aureus ATCC 25923 according to ISO 6887 (20-25 °C / 45min -1h) / Listeria monocytogenes ATCC 13932 according to ISO 11290 (1h±5min / 20±2 ºC)

Escherichia coli ATCC 8739 according ISO 21528 (37±1 °C /18±2 h) / Salmonella enteritidis ATCC 13076 according ISO 21528 (37±1 °C /18±2 h) / Salmonella Typhimurium ATCC 14028 according ISO 21528 (37±1 °C /18±2 h) / Salmonella Typhimurium ATCC 14028 according ISO 6579 (34-38 °C /18±2 h) / Salmonella enteritidis ATCC 13076 according ISO 6579 (34-38 °C /18±2 h) / Salmonella Typhimurium ATCC 14028 according ISO 19250 (36±2 °C /18±2 h) / Salmonella enteritidis ATCC 13076 according ISO 19250 (36±2 °C /18±2 h).

Inoculation conditions: Dilution (10^4 CFU) / Productivity qualitative (10^3-10^4 CFU).

Reference media: TSA.

Microorganisms	Specification
Salmonella enteritidis ATCC 13076	Turbidity (1-2) for the productivity test
Listeria monocytogenes 4b ATCC 13932	±30% of original count for the dilution test
Salmonella typhimurium ATCC 14028	Turbidity (1-2) for the productivity test
Staphylococcus aureus ATCC 25923	±30% of original count for the dilution test
Escherichia coli ATCC 8739	±30% of original count for the dilution test / Turbidity (1-2) for the productivity test

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

M.R. Pascual Anderson (1982) Techniques for Microbiological Analysis of Foods and Drinks, CeNAN.
ISO 6579. Microbiology of food stuff for humans and animals. Horizontal method to detect Salmonella spp.
ISO 19250 Water quality-Detection of Salmonella spp.
ISO 6887 Microbiology of the food chain -- Preparation of test samples, initial suspension and decimal dilutions for microbiological examination.
ISO 11290 Microbiology of the food chain – Horizontal method for the detection and enumeration of Listeria monocytogenes and of Listeria spp.