Plate Count Agar (PCA) ISO/APHA

Cat #: MM-M-056

For the total plate count of aerobic microorganisms.

Principles and uses:

Plate Count Agar (PCA) is recommended by APHA for the counting of bacteria of sanitary interest, which are indicators of contamination or microbial load in foods.
Enzymatic Digest of Casein provides nitrogen, vitamins, minerals and amino acids essential for growth. Yeast extract is source of vitamins, particularly the B-group. Dextrose is the fermentable carbohydrate providing carbon and energy. Bacteriological agar is the solidifying agent.
This medium is recommended by ISO 4833 for the colony count technique of microorganisms at 30ºC in the food chain.

Formula per Litre:

Enzymatic digest of casein	5g	Bacteriological agar	15g
Glucose anhydrous	1g	Yeast extract	2.5g

Preparation:

Suspend 23.5 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. Sterilize in autoclave at 121ºC for 15 minutes. Cool to 44-47ºC and dispense into appropriate containers

Instructions for use:

For the colony count at 30ºC according to ISO 4833:

Pour plate technique:

- Inoculate 1 ml of the sample, (if necessary 2 continuous decimal dilutions to be able to count between 15-300 colonies per plate).
- Put 12-15 ml per plate of agar cooled to 44 - 47ºC in each Petri dish. The time of preparation shouldn't exceed 45 minutes.
- Invert the plates and incubate at 30 ± 1ºC for 72 ± 3 hours.
- Post incubation, count the colonies.

Surface plating technique:

- Inoculate 0.1ml of the sample, (if necessary 2 continuous decimal dilutions to be able to count between 15-300 colonies per plate).
- Spread the inoculum on the surface of the agar plate.
- Leave the plates with the caps on for 15 minutes to allow the inoculum to be absorbed into the agar.
- Invert the plates and incubate at 30 ±1°C for 72 ± 3 hours.
- After the incubation, count the colonies.

According to APHA, incubate the Petri dishes at 32 ± 2°C for 18 – 48 hours and count the developed colonies. Consult the specific texts of APHA for the particular sample applications.

Quality control:

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	Light toasted	Amber, slightly opalescent	7.0 ± 0.2

Microbiological test:

According to ISO 11133; Escherichia coli ATCC 8739, Staphylococcus aureus ATCC 6538 and Bacillus subtilis ATCC 6633: Incubation conditions: (30±1ºC / 72±3 h).
Inoculation conditions: Productivity quantitative (100±20. Min. 50 cfu). Reference media: TSA.
According to APHA; Escherichia coli ATCC 8739, Staphylococcus aureus ATCC 25923 and Staphylococcus epidermidis ATCC 12228: Incubation conditions: (32±2ºC / 18-48 h).

Microorganisms	Specification
Staphylococcus epidermidis ATCC 12228	Good growth
Staphylococcus aureus ATCC 25923	Good growth
Staphylococcus aureus ATCC 6538	Good growth >70%
Bacillus subtilis ATCC 6633	Good growth >70%
Escherichia coli ATCC 8739	Good growth >70%

Storage:

Temperature: 2ºC - 25ºC

Bibliography:

International Standard ISO 4833 Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of microorganisms -- Colony-count technique at 30ºC

Standard Methods for the Examination of Dairy Products, 13th Ed. APHA, 1972. American Public Health Association.

Recommended Methods for the Microbiological Examination of Foods, APHA Inc. New York, 1958. Standard Methods for the Examination of Water and Wastewater, APHA Inc. New York, 1960.

*APHA: American Public Health Association Inc.