

Plate Count Agar (Standard Methods) (NCM0010)

Intended Use

Plate Count Agar (Standard Methods Agar) is used for the enumeration of bacteria in water, wastewater, food, and dairy products in a laboratory setting. Plate Count Agar is not intended for use in the diagnosis of disease or other conditions in humans. This formula conforms to ISO 4833-1&2:2013, ISO 17410:2001, American Public Health Association (APHA), Association of Official Analytical Chemists (AOAC) and FDA Bacteriological Analytical Manual.

Description

Plate Count Agar (Standard Methods Agar) is free from selective supplements and relatively rich in nutrients, making it ideal for the enumeration of viable organisms, either following a pour plate method, or a surface plate method which can be coupled with a spiral plater. Plate Count Agar (Standard Methods Agar) is also referred to as Tryptone Glucose Yeast Agar. This formula is specified in standard method procedures.

Typical Formulation

Enzymatic Digest of Casein	5.0 g/L
Yeast Extract	2.5 g/L
Dextrose (Glucose)	1.0 g/L
Agar	15.0 g/L*

* 9 – 18 g according to gel strength

Final pH: 7.0 ± 0.2 at 25°C

Formula may be adjusted and/or supplemented as required to meet performance specifications.

Precaution

1. Refer to SDS

Preparation

1. Suspend 23.5 g of the medium in one liter of purified water.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. Autoclave at 121°C for 15 minutes.
4. Cool to 45-50°C.

Test Procedure – Commonly associated methods

- For enumeration of foods at 30°C by the pour plate method - Refer to ISO 4833-1:2013
- For enumeration of foods at 30°C by the surface plating method - Refer to ISO 4833-2:2013
- Horizontal method for the enumeration of psychrotrophic microorganisms – Refer to ISO 17410:2001
- Testing methods defined in APHA, AOAC or FDA-BAM

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and light beige.

Prepared Appearance: Prepared medium is trace to slightly hazy, and light beige to medium amber.

Expected Cultural Response: The medium was prepared according to label directions and inoculated with the organisms listed below. Cultures were incubated aerobically at 30 ± 1°C and examined for growth at 69-75 hours.

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<u>MICROORGANISM</u>	<u>ATCC</u>	<u>APPROX. INOCULUM (CFU)</u>	<u>EXPECTED RECOVERY</u>
<i>Escherichia coli</i>	25922	80-120	>70%
<i>Escherichia coli</i>	8739	80-120	>70%
<i>Staphylococcus aureus</i>	25923	80-120	>70%
<i>Bacillus subtilis</i>	6633	80-120	>70%

Raw milk dilutions were prepared and tested following the standardized test method as outlined in Standard Methods for the Microbiological Examination of Dairy Products, incubated at $30 \pm 1^\circ\text{C}$, and examined for growth at 69-75 hours.

<u>Test Sample</u>	<u>Expected Results</u>
Unpasteurized (raw) milk	t-value<2.70

Results

Count colonies on all plates containing 30 - 300 colonies. Calculate bacterial count per milliliter of sample by multiplying the average number of colonies per plate by the reciprocal of the dilution used. Report the count as CFU/mL.

Expiration

Refer to 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.

Limitation of the Procedure

Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Storage

Store dehydrated culture media at $2-30^\circ\text{C}$ away from direct sunlight. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

References

1. **Marshall, R. T. (ed.).** 2004. Standard methods for the microbiological examination of dairy products, 17th ed. American Public Health Association, Washington, D.C.
2. **Cunnif, P. (ed.).** 2016. Official methods of analysis AOAC International, 20th ed. AOAC International, Arlington, VA.
3. **Buchbinder, L., Y. Baris, and L. Goldstein.** 1953. Further studies on new milk-free media for the standard plate count of dairy products. Am J. Public Health 43:869-872.
4. **Buchbinder, L., Y. Baris, E. Alff, E. Reynolds, E. Dillon, V. Pessin, L. Pincus, and A. Strauss.** 1951. Studies to formulate new media for the standard plate count of dairy products. Pub. Health Rep. 66:327-340.
5. **Vanderzant, C., and D. F. Splittstoesser (eds.).** 2015. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
6. **Greenberg, A. E., L. S. Clesceri, and A. D. Eaton (eds.).** 2017. Standard methods for the examination of water and wastewater, 23rd ed. American Public Health Association, Washington, D.C.



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Technical Specification Sheet



7. ISO 17410:2001 - Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of psychrotrophic microorganisms.
8. ISO 4833-1:2013 Microbiology of food the food chain – Horizontal method for the enumeration of microorganisms - Part 1: Colony count at 30 degrees C by the pour plate technique.
9. ISO 4833-2:2013 Microbiology of food the food chain – Horizontal method for the enumeration of microorganisms - Part 2: Colony count at 30 degrees C by the surface plating technique
10. www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalytical manual BAM/default.htm.

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