

Technical Data Sheet

GranuCult® prime

Plate Count Agar

acc. ISO 4833, ISO 17410, IFU, FDA-BAM and SMWW

Ordering number: 1.05463.0500 / 1.05463.5000

For the determination of the total microbial content from food and animal feed, water and other materials.

Plate Count Agar acc. ISO 4833, ISO 17410, IFU, FDA-BAM and SMWW is also known as PCA, Tryptone Glucose Yeast Agar (TGE agar, TGYA), Casein-Peptide Dextrose Yeast Agar as well as Standard Methods Agar (SMA).

This culture medium complies with the specifications given by EN ISO 4833-1:2013/Amd 1:2022, EN ISO 4833-2:2013/Amd 1:2022, ISO 17410:2019, IFU Methods No. 6:2018 and No. 12:2019, APHA, AOAC Official Methods 940.36, 966.23, 977.27, FDA-BAM Medium M124, SMWW Part 9215:2023, USDA-FSIS MLG 1.14:2024, GB 4789.2-2022 and GB 4789.43-2016 as well as USP chapter <1231>.

The performance test of this culture medium complies with the current versions of EN ISO 11133, ISO 17410 and GB 4789.28.

This culture medium is released by the quality control laboratory of Merck KGaA, Darmstadt, Germany. The laboratory is accredited by the German accreditation authority DAkkS as registered test laboratory D-PL-15185-01-00 according to DIN EN ISO/IEC 17025 for the performance testing of media for microbiology according to DIN EN ISO 11133.

Mode of Action

This medium is relatively nutrient rich and does not contain any inhibitors or indicators. The enzymatic digest of casein (tryptone) is a nitrogen source containing a high level of free amino acids and yeast extract primarily supplies the B-complex vitamins. Glucose (Dextrose) provides an energy source for the growth of bacteria whilst agar is the solidifying agent.

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Typical Composition

APHA and USP chapter <1231> specify no composition for Plate Count Agar.

Specified by EN ISO 4833-1/-2:2013/ Amd 1:2022, ISO 17410:2019, IFU Method No. 12:2019		Specified by AOAC 940.36, 966.23, 977.27, IFU Method No.6:2018, FDA-BAM Medium M124, SMWW Part 9215, USDA-FSIS MLG 1.14:2024, GB 4789.2-2022, GB 4789.43-2016		GranuCult® prime Plate Count Agar acc. ISO 4833, ISO 17410, IFU, FDA-BAM and SMWW	
Enzymatic digest of casein	5 g/l	Tryptone	5 g/l	Enzymatic Digest of Casein (Tryptone)*	5 g/l
Yeast Extract	2.5 g/l	Yeast Extract	2.5 g/l	Yeast Extract	2.5 g/l
Glucose, anhydrous	1 g/l	Glucose**	1 g/l	D(+)-Glucose anhydrous	1 g/l
Agar	9-18 g/l ***	Agar	15 g/l	Agar-Agar****	14 g/l
Water	1000 ml/l	Water	1000 ml	Water	n/a
pH at 25 °C	7.0 ± 0.2	pH at 25 °C	7.0 ± 0.2 *****	pH at 25 °C	7.0 ± 0.2

* Enzymatic digest of casein is equivalent to Tryptone.

** FDA BAM und USDA-FSIS specify dextrose which is equivalent to the term glucose.

*** Depending on the gel strength of the agar.

**** Agar-Agar is equivalent to other different terms of agar. The agar-agar content was adjusted depending on its gelling properties in accordance with EN ISO 11133.

***** AOAC and USDA-FSIS specify pH 7.0 ± 0.1 after autoclaving,
GB 4789.2-2022 specifies pH 7.0 ± 0.2 before autoclaving and
GB 4789.43-2016 specifies pH 7.2 ± 0.2 before autoclaving.

Preparation

Dissolve 22.5 g in 1 l of purified water. Heat in boiling water and agitate frequently until completely dissolved. Autoclave (15 min at 121 °C). Cool the medium, mix well and use it according to the intended application.

If the medium is to be used immediately for poured plate technique, cool it to 44 °C to 47 °C in a thermostatically controlled water bath before use. Use the molten medium as soon as possible, it should not be retained for more than 4 h, as specified by EN ISO 4833-1 and EN ISO 11133.

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If the medium is used for surface plate technique, allow the prepared medium to equilibrate at room temperature if it was stored at a lower temperature. There should be no visible moisture on the plates before use. When moisture is present, the plates should be dried for the minimum time required to remove visible moisture, following the procedure as described by EN ISO 11133.

The dehydrated medium is a granulate with beige colour.

The prepared medium is clear and yellowish to yellowish-brown.

The pH value at 25 °C is in the range of 7.0 ± 0.2 .

When dairy products are examined, add Skim milk powder for microbiology, Cat. No. 115363, at 1,0 g/l of the culture medium prior to sterilization. The skimmed milk powder shall be free from inhibitory substances. GranuCult® prime Plate Count skimmed milk agar acc. ISO 4833 and ISO 17410, Cat. No. 115338, already contains skim milk powder free from inhibitors.

Experimental Procedure and Evaluation

Depend on the purpose for which the medium is used.

According to EN ISO 4833-1, overlay technique may be used only in case where it is suspected that the product under examination contains microorganisms whose colonies overgrow the surface of the medium. In this case, pour about 4 ml plate count agar at 44 °C to 47 °C on to the surface of the inoculated medium. Allow to solidify before starting the incubation.

Incubate the inoculated plates under aerobic conditions, e.g. acc. to:

- EN ISO 4833-1 and EN ISO 4833-2 at (30 ± 1) °C for (72 ± 3) h,
- ISO 17410 at (6.5 ± 1) °C for 10 days,
- FDA-BAM Chapter No. 3 at (35 ± 1) , milk samples: 32 ± 1 °C for (48 ± 2) h,
- SMWW 9215 at $(35 \pm 0,5)$ °C for (48 ± 3) h,
- GB 4789.2 at (36 ± 1) °C for (48 ± 2) h.

Count the colonies and express the results as specified in the specific standard.

Storage

Store at +15 °C to +25 °C, dry and tightly closed. Do not use clumped or discolored medium. Protect from UV light (including sun light). For *in vitro* use only.

According to EN ISO 4833-2, self-prepared plates can be stored at +2 to +8 °C in the dark and protected against evaporation for up to four weeks. According to EN ISO 4833-1, self-prepared bottled medium can be stored at (5 ± 3) °C in the dark for no longer than three months.

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Microbiological Performance

The performance test complies with the current versions of EN ISO 11133, ISO 17410 and GB 4789.28.

Test method: Performance testing of solid culture media - Quantitative method for solid media (poured plate technique)					
Control strains	Incubation	Reference medium	Method of control	Expected results	Specified by
<i>Bacillus spizizenii</i> (formerly <i>Bacillus subtilis</i>) ATCC® 6633™ [WDCM 00003]	(72 ± 3) h/ (30 ± 1) °C aerobic	Tryptic soy agar (TSA)	Quantitative, pour plate technique	Recovery ≥ 70 %	EN ISO 11133: 2014
<i>Escherichia coli</i> ATCC® 25922™ [WDCM 00013]					
<i>Escherichia coli</i> ATCC® 8739™ [WDCM 00012]					
<i>Staphylococcus aureus</i> ATCC® 25923™ [WDCM 00034]					
<i>Bacillus spizizenii</i> (formerly <i>Bacillus subtilis</i>) ATCC® 6633™ [WDCM 00003]	24 h/ (35 - 37) °C aerobic	Tryptic soy agar (TSA)	Quantitative, pour plate technique	Recovery ≥ 70 %	GB 4789.28- 2024
<i>Escherichia coli</i> ATCC® 25922™ [WDCM 00013]					
<i>Staphylococcus aureus</i> ATCC® 6538™ [WDCM 00032]					
<i>Staphylococcus aureus</i> ATCC® 6538™ [WDCM 00032]	(72 ± 3) h/ (30 ± 1) °C aerobic	Tryptic soy agar (TSA)	Quantitative, pour plate technique	Recovery ≥ 70 %	Additional control strains not specified by a standard
<i>Escherichia coli</i> ATCC® 8739™ [WDCM 00012]	24 h/ (35 - 37) °C aerobic				
<i>Escherichia coli</i> ATCC® 25922™ [WDCM 00013]					

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Test method: Performance testing of solid culture media - Quantitative method for solid media (surface plate technique)

Control strains	Incubation	Reference medium	Method of control	Expected results	Specified by
<i>Pseudomonas fluorescens</i> ATCC® 13535™ [WDCM 00115]	Up to 10 days / (6.5 ± 1) °C aerobic	Tryptic soy agar (TSA)	Quantitative, surface plate technique	Recovery ≥ 70 %	ISO 17410: 2019
<i>Yersinia enterocolitica</i> subsp. <i>paleartica</i> DSM 13030 [WDCM 00216]					
<i>Lactococcus lactis</i> subsp. <i>lactis</i> ATCC® 19435™ [WDCM 00016]	(72 ± 3) h/ (30 ± 1) °C aerobic	Tryptic soy agar (TSA)	Quantitative, surface technique	Recovery ≥ 70 %	Additional control strains not specified by a standard
<i>Listeria monocytogenes</i> ATCC® 19118™					
<i>Lactobacillus acidophilus</i> ATCC® 4356™ [WDCM 00098]					

Please refer to the actual batch related Certificate of Analysis.

A recovery rate of 70 % is equivalent to a productivity rate of 0.7.

Tryptic soy agar (TSA) is another term of Tryptone soy agar (TSA) according EN ISO 11133.



Escherichia coli ATCC® 11775™
on 105463 Plate Count agar



Staphylococcus aureus ATCC® 6538™
on 105463 Plate Count agar

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Ordering Information

Product	Cat. No.	Pack size
GranuCult® prime Plate Count Agar acc. ISO 4833, ISO 17410, IFU, FDA-BAM and SMWW	1054630500	500 g
	1054635000	5 kg
NutriSelect® prime Plate Count Agar halal acc. ISO 4833, ISO 17410, and FDA-BAM	1043240500	500 g
GranuCult® prime Plate Count skimmed milk Agar acc. ISO 4833 and ISO 17410	1153380500	500 g
Skim milk powder for microbiology	1153630500	500 g

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