AuSaMicS™ Life Science

TECHNICAL DATA SHEET
AS-1330
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Potato Dextrose Agar (PDA)

Universal fungal and yeast culture medium for cultivation, enumeration, and sporulation studies.

OVERVIEW

Potato Dextrose Agar (PDA) is one of the most widely used fungal culture media in microbiology. Formulated from potato infusion solids and dextrose, its low pH (5.6) selectively favours fungal and yeast growth while suppressing most bacteria. The rich carbon source provided by dextrose and the organic nitrogen from potato extract support vigorous mycelial growth, sporulation, and pigment development across a broad range of species.

AuSaMicS AS-1330 is manufactured to microbiological grade standards, supplied with full batch documentation and dispatched same-week from our Epping facility.

PRODUCT IDENTIFICATION

Product Name	Potato Dextrose Agar (PDA) Powder
Catalogue Number	AS-1330
Medium Type	Non-selective solid medium — fungal and yeast cultivation
Dissolution	39.0 g/L in distilled/purified water
Final pH (25°C)	5.6 ± 0.2
Sterilisation	Autoclave 121°C for 15 minutes (15 psi)
Prepared Medium Appearance	Pale yellow, translucent agar; firm gel consistency
Dehydrated Appearance	Cream-coloured, homogeneous, free-flowing powder
HS Tariff Code	3821.00

TECHNICAL OVERVIEW & BIOCHEMISTRY

Potato Dextrose Agar supports fungal and yeast growth through a combination of a rich nutrient matrix and selective pH. Potato infusion provides water-soluble organic compounds — including reducing sugars, amino acids, and B-group vitamins — extracted from dehydrated potato tissue. The high dextrose concentration (20 g/L) serves as the primary fermentable carbon source, supporting both aerobic and fermentative metabolic pathways. The acidic final pH (5.6 ± 0.2) inhibits bacterial growth via acid stress on bacterial cell membranes while remaining permissive for most fungi, which tolerate a broad pH range (3–8). Agar at 15 g/L provides a firm, stable solid surface not metabolised by fungi, allowing accurate colony morphology assessment, sporulation observation, and colony counting.

FORMULA — PER LITRE

Component	g/L	Function
Potato Infusion Solids	~4.0	Nitrogen and vitamin source — amino acids, B-vitamins, trace minerals; promotes secondary metabolite and pigment production
Dextrose (D-Glucose)	20.0	Primary carbon and energy source — substrate for glycolysis and the TCA cycle; drives rapid biomass and spore production
Agar	15.0	Solidifying agent — thermoreversible gel, metabolically inert to most fungi

Total: 39.0 g/L. Final pH 5.6 ± 0.2 at 25°C.

MODE OF ACTION — SELECTIVITY

The selective action of PDA relies primarily on its acidic pH (5.6). At this pH, bacterial cell membranes experience proton motive force disruption and inhibition of nutrient transport, effectively suppressing most Gram-positive and Gram-negative bacteria. Fungi and yeasts possess a more robust plasma membrane composition (ergosterol-rich) and active proton-pumping ATPases that maintain cytoplasmic pH homeostasis across a wide extracellular pH range (3–8), allowing unrestricted growth. No antibiotic selectivity is employed in the standard formulation — for heavily contaminated samples, chloramphenicol or Rose Bengal supplementation is recommended (see Preparation Notes).

PHYSICAL & CHEMICAL PROPERTIES

Parameter	Specification
Appearance (dehydrated)	Cream-coloured, homogeneous, free-flowing powder
Appearance (prepared medium)	Pale yellow, translucent agar — firm gel consistency
pH (prepared medium, 25°C)	5.6 ± 0.2
Gelling Temperature	Solidifies below 45°C; melts above 80°C
Water Activity (prepared)	~0.990–0.993
Moisture Content (powder)	≤ 6%

PREPARATION PROTOCOL

Step	Instruction
1	Suspend 39 g of AS-1330 powder per litre of distilled or deionised water.
2	Stir to homogenise. Heat gently if required to dissolve completely.
3	Sterilise by autoclaving at 121°C for 15 minutes (15 psi).
4	Cool to 47–50°C before pouring plates.
5	Dispense approximately 15–20 mL per standard Petri dish. Allow to solidify at room temperature.

Storage of prepared plates: store inverted at 2–8°C, protected from light. Use within 4 weeks of preparation. For food and environmental samples with heavy bacterial contamination, add chloramphenicol (50 mg/L) or Rose Bengal (25 mg/L) aseptically after autoclaving and cooling to 50°C.

QUALITY CONTROL — PERFORMANCE TEST ORGANISMS

Organism	ATCC Reference	Inoculum	Incubation	Expected Result
Aspergillus brasiliensis	ATCC 16404	≤100 CFU	25°C, 5 days	Good growth; black conidia
Candida albicans	ATCC 10231	≤100 CFU	25°C, 3 days	Good growth; cream colonies
Saccharomyces cerevisiae	ATCC 9763	≤100 CFU	25°C, 3 days	Good growth; white-cream colonies
Escherichia coli (inhibition check)	ATCC 25922	≤100 CFU	35°C, 48 h	Inhibited / no growth

APPLICATIONS

Application	Notes
Food safety testing	Enumeration and detection of spoilage yeasts and moulds in food and beverage products

Environmental monitoring	Fungal contamination studies in air, soil, surface swabs, and cleanroom monitoring
Plant pathology	Isolation and identification of phytopathogenic fungi from plant tissues and soil
Water microbiology	Detection of yeasts and moulds in water samples per standard methods
Sporulation studies	General fungal culture maintenance and morphological characterisation
QC laboratories	Pharmaceutical, cosmetic, and industrial QC for fungal bioburden testing

STRENGTHS & LIMITATIONS

Strengths	Universal fungal medium supporting the widest range of yeast and mould species; acidic pH naturally suppresses bacterial overgrowth without antibiotics; excellent for sporulation; simple one-step preparation; widely accepted in international standard methods (ISO, APHA, AOAC); available in bulk packaging up to 25 kg.
Limitations	Not selective between fungal species — requires further identification; high dextrose may cause pH drop in heavily inoculated cultures; bacterial suppression relies on pH alone — use Rose Bengal or chloramphenicol supplement for heavily contaminated samples; not suitable for fastidious organisms requiring specialised nutrients.

STORAGE & STABILITY

Dehydrated Powder	Store at 2–25°C, sealed, dry. Avoid moisture ingress.
Prepared Plates	Store inverted at 2–8°C, protected from light. Use within 4 weeks of preparation.

LITERATURE REFERENCES

1. Atlas, R.M. (2010). Handbook of Microbiological Media, 4th ed. CRC Press, Boca Raton. pp. 1583–1584.

2. ISO 21527-1:2008. Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds. International Organization for Standardization.

3. APHA (2015). Standard Methods for the Examination of Water and Wastewater, 23rd ed. Method 9610 (Fungi).

4. Samson, R.A. et al. (2010). Food and Indoor Fungi. CBS-KNAW Fungal Biodiversity Centre, Utrecht.