AuSaMicS™ Life Science

TDS

TDS-AS-1188

www.ausamics.com.au

Czapek Dox Agar

Semi-Synthetic Medium for Cultivation of Fungi | Catalog No. AS-1188

1. Product Identity

Product Name	Czapek Dox Agar
Catalog Number	AS-1188
Synonyms	Czapek's Agar, CZA, Czapek-Dox Medium, Czapek Solution Agar
Medium Type	Semi-synthetic, dehydrated
Weighed Quantity	~49 g/L purified water
Final pH (25°C)	7.3 ± 0.2
Appearance (dehydrated)	White to cream, free-flowing powder
Appearance (prepared)	Light amber, clear to slightly opalescent gel

2. Overview

Czapek Dox Agar (also known as Czapek's Agar or CZA) is a semi-synthetic solid culture medium designed for the cultivation and study of fungi and selected microorganisms in laboratory environments. The medium contains sodium nitrate as the sole nitrogen source and sucrose as the sole carbon source, making it particularly suitable for organisms capable of utilising inorganic nitrogen.

Originally developed by Czapek and later refined by Dox, this formulation has become a standard medium for qualitative mycological studies, especially for the cultivation and differentiation of saprophytic fungi. Its defined composition allows clear observation of colony morphology, pigmentation, and sporulation characteristics.

3. Principle & Mode of Action

Sucrose supplies the sole carbon source while sodium nitrate supplies the sole nitrogen source; only organisms capable of nitrate assimilation and sucrose utilisation proliferate well on this medium. Dipotassium phosphate buffers the medium against pH drift during incubation, and magnesium sulfate, potassium chloride, and ferrous sulfate supply essential trace ions supporting mycelial growth and sporulation. This defined-medium logic is what makes colony growth on Czapek Dox Agar taxonomically informative for fungal identification work.

4. Typical Applications

- Cultivation of saprophytic fungi
- Growth and taxonomic differentiation of Aspergillus species (colony morphology, conidial colour, sporulation pattern)
- Reference substrate for Penicillium species characterisation
- Cultivation of soil-associated fungi and actinomycetes
- Qualitative environmental microbiology studies
- Demonstration of defined/selective media principles in teaching laboratories

5. Composition (Typical, per Litre)

Ingredient	Function
Sucrose	Sole carbon source
Sodium nitrate	Sole nitrogen source
Dipotassium phosphate	Buffering agent
Magnesium sulfate	Source of essential ions
Potassium chloride	Source of essential ions
Ferrous sulfate	Trace metal source
Agar	Solidifying agent

(Final formulation adjusted to standard Czapek-Dox specifications.)

6. Preparation

- Suspend approximately 49 g of dehydrated medium in 1 L of purified water
- Heat with agitation until completely dissolved
- Sterilise by autoclaving at 121°C for 15 minutes
- Cool to 45–50°C and pour into sterile Petri dishes

7. Quality Control (Growth Promotion Testing)

Test Organism	Inoculum	Expected Result (18–120 h, 25°C)
Aspergillus niger ATCC 16404	≤ 100 CFU	Good growth; characteristic black conidial colonies
Aspergillus flavus ATCC 9643	≤ 100 CFU	Good growth; yellow-green sporulation
Penicillium chrysogenum ATCC 10106	≤ 100 CFU	Good growth; blue-green colony surface

Test Organism	Inoculum	Expected Result (18–120 h, 25°C)
Escherichia coli ATCC 25922	≥ 10^4 CFU	No growth to markedly inhibited growth (selectivity check)

8. Storage & Stability

- Dehydrated medium: store at 15–25°C, dry, protected from moisture
- Prepared medium: store at 2–8°C and prevent dehydration
- Typical shelf life: refer to batch-specific Certificate of Analysis

9. Intended Use

For laboratory research and educational use only. Not for human, animal, diagnostic, or therapeutic use.

10. Literature / References

- Thom, C. & Church, M.B. (1926). The Aspergilli. Williams & Wilkins.
- Raper, K.B. & Thom, C. (1949). A Manual of the Penicillia. Williams & Wilkins.
- Waksman, S.A. (1961). The Actinomycetes, Vol. II. Williams & Wilkins.
- American Public Health Association (APHA). Compendium of Methods for the Microbiological Examination of Foods, current edition.