

28: PFENNIG'S MEDIUM I

This recipe contains strain-specific modifications for *Allochromatium humboldtianum* DSM 21881 *

Final pH: 7.1 - 7.3

Final volume: 1000 ml

Solution A	460.00	ml
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1. Prepare the following solutions (resazurin, bicarbonate and Pfennig's heterotrophic salts) and sterilize as given below.
2. Aliquot Solution A into 100 mL screw-cap bottles, filled with 46 mL each. Bubble with N₂/CO₂ and autoclave at 121°C for 15 min (as described below).

Resazurin solution	450.00	ml
Bicarbonate solution	50.00	ml
Pfennig's heterotrophic salts solution	26.00	ml

3. Add bicarbonate solution and Pfennig's heterotrophic salts to the resazurin (complete volumina, i.e. 50 mL bicarbonate solution and 26 mL Pfennig's heterotrophic salts solution). Bubble with CO₂ in an ice bath under sterile conditions.
4. Fill 50 ml of this mixture to each bottle of solution A (46 mL + 50 mL).
5. Before use, add 4 ml sulfide solution (1.5%) and 0.1 ml Vitamin B₁₂ solution to each 100 mL bottle.

Sulfide solution, 1.5%	40.00	ml/l
Vitamin B₁₂ solution	1.00	ml/l

6. Adjust the pH with filter-sterilised 1M Na₂CO₃ to 7.1-7.3.
7. If needed, aliquot into sterile, N₂ gassed screw-cap tubes under N₂ gas.
8. During the first 24 h, the iron of the medium precipitates in the form of black flocks. No other sediment should arise in the otherwise clear medium.
9. Feed the actively growing culture periodically with neutralized 3% solution of sodium sulfide (use 1 -3 mL/100 mL depending on strain and cultivation stage) to replenish sulfide and with other supplement solutions (see Ref. 3365).

Neutralized sulfide solution 3% (w/v)	10.00	ml
NaCl	30.00	g/l
Sulfide	2.00	mM
Pyruvate	3.00	mM
Acetate	2.00	mM

* With 3% NaCl. Medium should be supplemented with 0.5 to 4 mM of sulfide. Addition of pyruvate and/or acetate (3mM and 2mM final conc., respectively) enhances culture

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growth; light at 220 $\mu\text{E m}^{-2} \text{s}^{-1}$ [500 - 1000 lux]

Solution A (from medium 28)

CaCl ₂ x 2 H ₂ O	0.25	g
Yeast extract	0.25	g
Distilled water	460.00	ml

Aliquot Solution A into 100 mL screw-cap bottles, filled with 46 mL each. Bubble with N₂/CO₂ and autoclave at 121°C for 15 min.

Sulfide solution, 1.5% (from medium 28)

Na ₂ S x 9 H ₂ O	2.00	g
Distilled water	135.00	ml

Prepare in a screw-cap bottle, bubble with N₂ to replace air, close tightly and autoclave.

Bicarbonate solution (from medium 28)

NaHCO ₃	1.50	g
H ₂ O	50.00	ml

Bubble with CO₂ and filter sterilize into sterile, gas-tight, 100 ml screw-cap bottle.

Resazurin solution (from medium 28)

Resazurin (0,1%)	0.50	ml
Distilled water	450.00	ml

1. Autoclave in a cotton-stoppered Erlenmeyer flask with an outlet tube for medium, connected to a glass outlet at the bottom of the vessel and has, at the other end, a silicon rubber tube with a pinch cock and a bell for aseptic dispensing of the medium into bottles.
2. Cool to room temperature under an atmosphere of N₂/CO₂ in an ice bath.

Pfennig's heterotrophic salts solution (from medium 28)

Ammonium chloride	0.35	g
Ammonium acetate	0.25	g
Pyruvic acid sodium salt	0.25	g
Dextrose	0.25	g
MgSO ₄ x 7 H ₂ O	0.50	g
KCl	0.35	g
KH ₂ PO ₄	0.35	g
Trace element solution SL-12 B	1.00	ml

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Distilled water	25.00	ml
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Filter sterilize into sterile, gas-tight, 100 ml screw-cap bottle.

Vitamin B₁₂ solution (from medium 28)

Vitamin B ₁₂	0.01	g
Distilled water	100.00	ml

Filter sterilized

Trace element solution SL-12 B (from medium 28)

Na ₂ -EDTA	3.00	g
FeSO ₄ x 7 H ₂ O	1.10	g
CoCl ₂ x 6 H ₂ O	190.00	mg
MnCl ₂ x 2 H ₂ O	50.00	mg
ZnCl ₂	42.00	mg
NiCl ₂ x 6 H ₂ O	24.00	mg
Na ₂ MoO ₄ x 2 H ₂ O	18.00	mg
H ₃ BO ₃	300.00	mg
CuCl ₂ x 2 H ₂ O	2.00	mg
Distilled water	1000.00	ml

Adjust pH to 6.0.

Neutralized sulfide solution 3% (w/v) (from medium 28)

Na ₂ S x 9 H ₂ O	3.00	g
Distilled water	100.00	ml

The sulfide solution is prepared in a 250 ml screw-capped bottle with a butyl rubber septum and a magnetic stirrer. The solution is bubbled with nitrogen gas, closed and autoclaved for 15 min. at 121°C. After cooling to room temperature the pH is adjusted to about 7.0 by adding of sterile 2 M H₂SO₄ drop-wise with a syringe without opening the bottle.