Culture Media, Salts and Vitamin Mixes

Murashige and Skoog Basal Medium with sucrose and agar

M 9274 **Plant cell culture, tested, powder** 1 L
2-8°C With the macro- and micronutrients, vitamins, sucrose and agar as described by Murashige and Skoog (1962). 10 L
Formulated to contain 42.4 grams of powder per liter of medium.
References
Murashige, T., and Skoog, F., A revised medium for rapid growth and bioassays with tobacco tissue cultures *Physiol. Plant.* **15**, 473-497 (1962)
R: 36/37/38 S: 26-36

Murashige and Skoog Basal Salt Mixture (MS)

M 5524 **Plant cell culture, tested, powder** 1 L
2-8°C With the macro- and micronutrients as 10 L
◆ described by Murashige and Skoog (1962). 50 L
Formulated to contain 4.3 grams of powder per liter of medium.
References
Murashige, T., and Skoog, F., A revised medium for rapid growth and bioassays with tobacco tissue cultures *Physiol. Plant.* **15**, 473-497 (1962)
R: 8-36/37/38 S: 17-26-36

Murashige and Skoog Basal Salts with minimal organics

M 6899 (MSMO) 1 L
2-8°C **Plant cell culture, tested, powder** 10 L
◆ With the macro- and micronutrients, and vitamins as described by Linsmaier and Skoog (1965). 50 L
Formulated to contain 4.4 grams of powder per liter of medium.
References
Linsmaier, E.M. and Skoog, F., Organic growth factor requirements of tobacco tissue cultures *Physiol. Plant.* **18**, 100-127 (1965)
R: 8-36/37/38 S: 17-26-36

Murashige and Skoog Vitamin

M 7150 **1000 ×, Plant cell culture, tested, powder** 100 mL
2-8°C Use at a concentration of one ml per liter of prepared medium to achieve the proper final concentration.
References
Murashige, T., and Skoog, F., A revised medium for rapid growth and bioassays with tobacco tissue cultures *Physiol. Plant.* **15**, 473-497 (1962)

Schenk and Hildebrandt Basal Salt Mixture

S 6765 **Plant cell culture, tested, powder** 1 L
2-8°C With the macro- and micronutrients as 10 L
◆ described by Schenk and Hildebrandt (1972).
R: 8-36/37/38 S: 17-26-36

Schenk and Hildebrandt Vitamin

S 3766 **100 ×, Plant cell culture, tested, liquid** 1 L
2-8°C Package prepares 1 L of a 100× solution.
Use at a concentration of 10 ml per liter of prepared medium to achieve the proper final concentration.

White's Basal Salt Mixture

W 0876 **Plant cell culture, tested, powder** 1 L
2-8°C With the macro- and micronutrients as described by White (1968). 10 L
R: 36/37/38 S: 26-36

Yeast extract

Y 4250 CAS No. 8013-01-2 100 g
RT **Plant cell culture, tested** 250 g
Water soluble portion of autolyzed yeast with intact B-complex vitamins. Yeast extract is a mixture of amino acids, peptides, water soluble vitamins and carbohydrates and can be used as additive for culture media. 500 g 1 kg
Spray dried, autolyzed yeast
For general bacteriological use with a variety of microorganisms.
Solubility
. . . . . 10%, remains clear after heating to 40°C.
References
Difco Manual 11th ed., Sparks, MD (1998), 572-574

Orchid Culture Media

Knudson C Modified Orchid Medium

K 4003 **Plant cell culture, tested, powder** 1 L
2-8°C With the macro- and micronutrients as described by Knudson (1946). Contains sucrose. 10 L

Phytamax™ Orchid Maintenance Medium

P 6668 **Plant cell culture, tested, powder** 1 L
2-8°C With macro- and micronutrients, sucrose, vitamins, MES, peptone and activated charcoal. 10 L
Phytamax is a trademark of Sigma-Aldrich Corporation.
R: 36/37/38 S: 26-36

Phytamax™ Orchid Maintenance Medium without Charcoal

P 0931 **Plant cell culture, tested, powder** 1 L
2-8°C With macro- and micronutrients, sucrose, vitamins, MES and peptone. Without activated charcoal. 10 L
Phytamax™ is a trademark of Sigma-Aldrich Corporation.
R: 36/37/38 S: 26-36

Phytamax™ Orchid Medium with Charcoal and Banana Powder

P 1056 **Plant cell culture, tested, powder** 1 L
2-8°C With macro- and micronutrients, sucrose, vitamins, MES, peptone, activated charcoal and banana powder. 10 L
Phytamax is a trademark of Sigma–Aldrich Corporation.
R: 36/37/38 S: 26-36

Orchid Culture Media

Phytamax™ Orchid Multiplication Medium

P 6793 2-8°C — **Plant cell culture, tested, powder** — 1 L, 10 L
With macro- and micronutrients, sucrose, vitamins, NAA, BA, MES and peptone.
Phytamax™ is a trademark of Sigma-Aldrich Corporation.
R: 36/37/38 S: 26-36

Pathogen Screening and Growth Media

Bacteria Screening Medium 523

B 1662 RT — Used to identify bacteria-free plant tissue for use in culture (Viss, et al., 1991). Recommended use at 32.15 g/L Microbiologically tested. — 250 g, 1 kg

Corn meal agar

C 1176 RT — Recommended use at 17.0 g per liter. Microbiologically tested. — 250 g, 1 kg

Czapek-Dox broth

C 1551 RT — Contains: Sucrose, sodium nitrate, dipotassium phosphate, magnesium sulfate, potassium chloride, ferrous sulfate. Recommended use at 35 g per liter. Microbiologically tested. — 250 g, 1 kg

Luria agar base, Miller

L 2025 RT — Contains: Tryptone, yeast extract, sodium chloride and agar. Recommended use at 30.5 g per liter. — 250 g, 1 kg

Luria broth base, Miller

L 1900 RT — Contains: Tryptone, yeast extract and sodium chloride. Recommended use at 15.5 g per liter. — 1 kg

Malt Extract Agar

M 6907 RT — Contains: Maltose, dextrin, glycerol, peptone and agar. Recommended use at 33.6 g per liter. Microbiologically tested. — 250 g

Malt Extract Broth

M 6409 RT — Contains: Malt extract, maltose, yeast extract and dextrose. Recommended use at 15.0 g per liter. Microbiologically tested. — 250 g

Nutrient agar 1.5%

N 4019 RT — Contains: Beef extract, peptone, sodium chloride, and agar. Recommended use at 31.0 g per liter. Microbiologically tested. — 250 g, 1 kg

Nutrient broth

N 7519 RT — With beef extract and peptone. Recommended use at 8.0 g per liter. Microbiologically tested. — 250 g, 1 kg

Oatmeal agar

O 3506 RT — Contains: Oatmeal and agar. Recommended use at 72.5 g per liter. Microbiologically tested. — 250 g, 1 kg

Potato Dextrose Agar

P 2182 RT — Contains: Infusions from potatoes, glucose and agar. Recommended use at 39.0 g per liter. Microbiologically tested. — 250 g, 1 kg

Potato Dextrose Broth

P 6685 RT — Contains infusion from potatoes plus glucose. Recommended use at 24.0 g per liter. Microbiologically tested. — 250 g, 1 kg

Protoplast Isolation and Culture

Cellulase

(1,4-(1,3:1,4)-β-D-Glucan 4-glucano-hydrolase)
CAS No. 9012-54-8
EC 3.2.1.4
References
1. Nishimura, M., et al., *Meth. Enzymol.* **148**, 27-34 (1987)
2. Graham, J.M., and Rickwood, D., *Subcellular Fractionation, A Practical Approach* , New York (1997), 256-258
R: 42 S: 22-24-36/37

C 1184 2-8°C — **Cellulase from *Aspergillus niger* powder, minimum0.3 units/mg solid** — 5000 units, 25000 units, 100000 units
Unit definition: One unit will liberate 1.0 µmole of glucose from cellulose in one hr at pH 5.0 at 37 °C (2 hr incubation time).

C 1794 2-8°C — **Cellulase from *Trichoderma viride* Plant cell culture, tested, 3-10 units/mg solid** — 5000 units, 10000 units
Unit definition: One unit will liberate 1.0 µmole of glucose from cellulose in one hour at pH 5.0 at 37 °C (2 hr incubation time).
contains lactose and glucose
Protein approx. 50% by Biuret

Driselase®

D 8037 -0°C — **from *Basidiomycetes* sp.** — 1 g, 5 g
CAS No. 85186-71-6
Plant cell culture, tested
Crude powder containing laminarinase, xylanase and cellulase.
Protein approx. 15% by Biuret

Fluorescein diacetate

F 7378 -0°C — (Di-O-acetylfluorescein; 3,6-Diacetoxyfluoran) — 5 g, 10 g, 25 g, 100 g
CAS No. 596-09-8
$C_{24}H_{16}O_7$ FW 416.4
Lipase substrate
References
Guilbault, G.G. and Kramer, D.N., *Anal. Chem.* **36**, 409 (1964)
S: 22-24/25

Plant Tissue Culture