

## Phycology and Ecotoxicity Products

### Bold Modified Basal Freshwater Nutrient Solution

**B 5282** 50 ×, Plant cell culture, tested, liquid 500 mL  
 [2-8°C] With the major salts and trace elements as described by Nichols (1973). Modified with trace elements as requested for ASTM TOXICITY TESTS E1193 and E1295 conducted with *Daphnia* species.  
 Use at 20 ml/L  
 sterile-filtered  
 R: 20/21/22-36/37/38 S: 23-26-36

### Guillard's (F/2) Marine Enrichment Basal Salt Mixture

**G 1775** Plant cell culture, tested, powder 10 L  
 [2-8°C] With the macro- and micronutrients as described by Guillard (1975).  
 ◆ R: 8-23/24/25-36/37/38-40 S: 17-22-36/37/39-45

### Guillard's (F/2) Marine Water Enrichment Solution

◆ Use at 20 ml/L of seawater.

**G 0154** Guillard's (F/2) Marine Water 500 mL  
 Enrichment Solution  
 [20°C] DRY ICE 50 ×, Plant cell culture, tested, liquid  
 Without silicate. With the major nutrients, trace metals and vitamins as described by Guillard (1975).  
 sterile-filtered

**G 9903** Guillard's (F/2) Marine Water 500 mL  
 Enrichment Solution  
 [20°C] DRY ICE 50 ×, Plant cell culture, tested, liquid  
 With the major nutrients, trace metals and vitamins as described by Guillard (1975).  
 sterile-filtered

### Keller, et al., (K) Marine Enrichment Basal Salt Mixture

**K 1630** Plant cell culture, tested, powder 10 L  
 [2-8°C] Without silicate. With the macro- and micronutrients as described by Keller, et al. (1987).

### Sea salts

**S 9883** An artificial salt mixture closely resembling 500 g  
 [RT] the composition of the dissolved salts of 1 kg  
 ocean water.  
 Usually used at approx. 40 g/L for culturing marine bacteria.  
 R: 36/37/38 S: 26-36

### Seawater

**S 9148** Untreated, Plant cell culture, tested 1 L  
 [RT] Natural, collected from Gulf Stream in the Gulf of Mexico.  
 sterile-filtered  
 Salinity ≥ 32 ppt

## Gelling Agents

### Agar

(Agar-agar; Gum agar)  
 CAS No. 9002-18-0  
 $(C_{12}H_{18}O_9)_x$

<b>A 1296</b> Microbiologically, tested, Plant cell culture, tested, powder	100 g
[RT]	500 g
General purpose agar.	1 kg
Typical working concentration: 6-12 g/L.	5 kg
	10 kg
	25 kg
<b>A 7921</b> Plant cell culture, tested, powder	100 g
[RT]	500 g
Purified for research and protoplast culture.	1 kg
Typical working concentration: 6-12 g/L.	2.5 kg
	5 kg
<b>A 4550</b> Type A, Plant cell culture, tested	500 g
[RT]	1 kg
	5 kg
<b>A 9799</b> High gel strength, Plant cell culture, tested	500 g
[RT]	1 kg
<b>A 6686</b> Bacteriological, Microbiologically, tested, Plant cell culture, tested, flakes	100 g
[RT]	500 g
A purified agar from which the naturally occurring pigments, salts and miscellaneous matter has been reduced to a minimum.	1 kg
<b>A 4675</b> Type E, Plant cell culture, tested	500 g
[RT]	1 kg
<b>A 8678</b> Plant cell culture, tested	100 g
[RT]	500 g
Washed	1 kg
<b>A 4800</b> Type M, Plant cell culture, tested	500 g
[RT]	1 kg

### Agargel™

**A 3301** Plant cell culture, tested, powder 500 g  
 [RT] A proprietary blend of agar and Phytigel™. 1 kg  
 Typical working concentration: 3.5-5.0 g/L. 5 kg  
 Phytigel is a trademark of Sigma-Aldrich Co.

### Agarose

**A 6560** CAS No. 9012-36-6 5 g  
 [RT] Type VII, Low gelling temperature, Plant cell culture, tested 25 g  
 100 g  
 A low gelling temperature derivative with unique gelling properties. Gels form at <30 °C, remelt at temperatures in excess of 65 °C. Gels exhibit excellent clarity and are useful for the preparation of media containing heat-labile materials.

Typical working concentration: 6-12 g/L.

The following is a list of properties associated with our agaroses:

**Sulfate content** - used as an indicator of purity, since sulfate is the major ionic group present.

**Gel strength** - the force that must be applied to a gel to cause it to fracture.

**Gel point** - the temperature at which an aqueous agarose solution forms a gel as it cools. Agarose solutions exhibit hysteresis in the liquid-to-gel transition - that is, their gel point is not the same as their melting temperature.

**Electroendosmosis (EEO)** - a movement of liquid through the gel. Anionic groups in an agarose gel are affixed to the matrix and cannot move, but dissociable counter cations can migrate toward the cathode in the matrix, giving rise to EEO. Since

## Gelling Agents

electrophoretic movement of biopolymers is usually toward the anode, EEO can disrupt separations because of internal convection.

### Alginate sodium salt

**A 0682** from brown algae 100 g  
**RT** (Sodium alginate)  
 CAS No. 9005-38-3  
**Low viscosity, Plant cell culture, tested, powder**  
 A straight-chain, hydrophilic, colloidal, polyuronic acid composed primarily of anhydro-β-D-mannuronic acid residues with 1→4 linkage.  
 Viscosity. . . . . approx.250 cP (2% solution, 25 °C) (lit.)  
**References**  
 1. Adaoha Mbanaso, E.N. and Roscoe, D.H., Alginate: an alternative to agar in plant protoplast culture *Plant Sci. Lett.* **25**, 61-66 (1982)  
 2. Draget, K.I., et al., Regeneration, cultivation and differentiation of plant protoplasts immobilized in Ca-alginate beads. *J. Plant Physiol.* **132**, 552-556 (1988)  
 3. Larkin, P.J., et al., Nurse culture of low numbers of *Medicago* and *Nicotiana* protoplasts using calcium alginate beads *Plant Sci.* **58**, 203-210 (1988)  
 S: 22-24/25

### ι-Carrageenan

**C 3799** (Irish moss; Gelatin, vegetable) 1 g  
**RT** CAS No. 9062-07-1 25 g  
**Eucheuma spinosa, Type V**  
 Prepared from a single species to produce essentially pure iota carrageenan. Forms flexible and compliant gels.

### Gelrite gellan gum

**G 1910** (Agar substitute gelling agent) 250 g  
**RT** CAS No. 71010-52-1 1 kg  
 Natural gelling agent used to produce clear media for microbiological and other applications. 5 kg

### Phytigel™

**P 8169** (Agar substitute gelling agent; Gellan gum) 100 g  
**RT** CAS No. 71010-52-1 250 g  
**Plant cell culture, tested, powder** 500 g  
 An agar substitute produced from a bacterial fermentation composed of glucuronic acid, 1 kg  
 rhamnose and glucose. It produces a clear, 5 kg  
 colorless, high strength gel which aids in detection of microbial contamination.  
 Typical working concentration: 1.5-2.5 g/L in plant tissue culture media; up to 10 g/L in microbiological media. Phytigel™ requires the presence of cations (especially divalent) for gelling to occur. Concentrations of calcium and magnesium contained in most plant tissue culture media are typically sufficient for gelation. Low-salt media formulations, especially those used in microbiological applications, may require supplementation with additional calcium or magnesium salts (e.g., CaCl<sub>2</sub> or MgSO<sub>4</sub>) or higher concentrations of Phytigel™.  
 To prevent clumping, add slowly to rapidly stirring medium prior to heating.  
 Phytigel is a trademark of Sigma-Aldrich Co.

### Transfergel™

**T 5660** Plant cell culture, tested 500 g  
**RT** Hydroxyethylcellulose carrier gel for the transfer of somatic embryos and other in vitro propagules from in vitro stages to the soil. Also used for seed drilling of pregerminated seed.

## Antibiotics and Antimycotics

### Antibiotics

#### Antibiotic Antimycotic Solution, stabilized (100×)

**A 5955** suspension, cell culture, tested 20 mL  
**-0°C** Mode of Action: Penicillin acts by inhibiting 100 mL  
 bacterial cell-wall synthesis. Streptomycin  
 DRY ICE inhibits prokaryote protein synthesis by preventing the transition from initiation complex to chain-elongating ribosome and causes miscoding. Amphotericin B interferes with fungal membrane permeability by forming channels in the membranes and causing small molecules to leak out.  
 Antimicrobial spectrum: Gram-negative bacteria, Gram-positive bacteria, fungi and yeasts.  
 Solubilized in a proprietary citrate buffer. Formulated to contain 10,000 units/ml penicillin G, 10 mg/ml streptomycin sulfate and 25 μg/ml amphotericin B.  
 Recommended for use in cell culture applications at 10 mL/L. sterile-filtered  
 Endotoxin. . . . . tested  
 Color. . . . . yellow  
**References**  
 1. Perlman, D., Jakoby, W. and Pastan I.H., Use of antibiotics in cell culture media, in *Meth. Enzymol.* New York, NY **113**, 112 (1979)  
 2. Reynolds, J.E.F., ed., *Martindale: The Extra Pharmacopoeia* 31th ed., Great Britain (1996), 181  
 3. Alberts, B, et al., *Basic Genetic Mechanisms Mol. Biol. Cell.* 3rd ed., (New York, NY (1994), 240  
 4. Dawson, R.M.C., et al., *Data for Biochemical Research* 3rd ed., New York (1986), 297  
 5. Reynolds, J.E.F., ed., *Martindale: The Extra Pharmacopoeia* 31th ed., Great Britain (1996), 400  
 6. *Sigma data*  
 R: 42 S: 23-26-36/39-45

#### Carbenicillin disodium salt

**C 3416** (α-Carboxybenzylpenicillin disodium salt) 250 mg  
**2-8°C** CAS No. 4800-94-6 1 g  
 C<sub>17</sub>H<sub>16</sub>N<sub>2</sub>Na<sub>2</sub>O<sub>6</sub>S FW 422.4 5 g  
**Plant cell culture, tested, powder** 10 g  
 Carboxypenicillin antibiotic that inhibits bacterial cell-wall synthesis (peptidoglycan cross-linking) by inactivating transpeptidases on the inner surface of the bacterial cell membrane. Analog to ampicillin.  
 Antimicrobial spectrum: Gram-positive and Gram-negative bacteria, *Pseudomonas*.  
 Recommended for antibacterial use in cell culture media at 100 ug/ml. Stable at 37 °C for 3 days.  
 Hygroscopic powder  
**Solubility**  
 water. . . . . .50 mg/mL  
 Color. . . . . white to off-white  
**Solubility**  
 water. . soluble, solutions are stable 24 hr at room temp, 72 hr at 2-8°C.  
 alcohol. . . . . .soluble  
 R: 42/43 S: 22-36/37-45