

Safety Data Sheet

BG11 Broth | Cat. No. AS-1137 | GHS 7th Edition / WHS Regulations 2023 (Australia)

Section 1 — Identification

Product Name	BG11 Broth
Catalogue No.	AS-1137
Recommended Use	Chemically defined liquid culture medium for axenic cultivation of freshwater cyanobacteria and algae. Laboratory research and environmental studies only.
Restrictions on Use	Not for diagnostic, therapeutic, food, or agricultural use
Supplier	AuSaMicS Pty Ltd ABN 56 676 640 467
Address	36/25 Trafalgar Road, Epping, VIC 3076, Australia
Telephone	+61 412 520 598
Email	support@ausamics.com
Emergency Telephone	Poisons Information Centre: 13 11 26 (24 hours, Australia-wide)

Section 2 — Hazard(s) Identification

The finished, prepared BG11 Broth (at final use dilution) is not classified as hazardous under the GHS 7th Edition — all trace metal components are present at very low concentrations (Trace Metal Mix A5 is added at only 1 mL per litre of final medium). However, the concentrated Trace Metal Mix A5 raw material, and the individual raw chemicals used to prepare it — particularly cobalt nitrate hexahydrate and boric acid — carry significant hazard classifications and require careful handling during manufacture. This section addresses both the raw materials and the finished product.



Finished Product (prepared broth)	Not classified as hazardous at final use dilution. Precautionary dust handling applies to the dehydrated/powder format.
Concentrated Trace Metal Mix A5 (raw material)	Classified as hazardous — see Section 3 for component-level classifications. Requires dedicated PPE and handling precautions during preparation (Section 8).

Section 3 — Composition / Information on Ingredients

Macronutrients (per litre of prepared medium):

Component	g/L	CAS No.	Classification
Sodium nitrate	1.5	7631-99-4	Ox. Solid 3 (raw material); not classified at use dilution
Dipotassium phosphate trihydrate	0.04	16788-57-1	Not classified
Magnesium sulfate heptahydrate	0.075	10034-99-8	Not classified
Calcium chloride dihydrate	0.036	10035-04-8	Not classified
Sodium carbonate	0.02	497-19-8	Not classified at use level
Citric acid	0.006	77-92-9	Not classified
Ammonium ferric citrate (green)	0.006	1185-57-5	Not classified
EDTA disodium salt	0.001	139-33-3	Not classified

Trace Metal Mix A5 (concentrated raw material, per litre of mix — added at 1 mL/L final medium):

Component	g/L (mix)	CAS No.	Classification (raw material)
Boric acid	2.86	10043-35-3	Repr. 2 (H361) — suspected of damaging fertility or the unborn child
Manganese chloride tetrahydrate	1.81	13446-34-9	Acute Tox. 4 (H302, H332)
Zinc sulfate heptahydrate	0.222	7446-20-0	Eye Irrit. 2, Aquatic Acute 1
Sodium molybdate dihydrate	0.39	10102-40-6	Not classified
Copper sulfate pentahydrate	0.079	7758-99-8	Acute Tox. 4, Eye Dam. 1, Aquatic Acute 1 / Chronic 1
Cobalt nitrate hexahydrate	0.0494	10026-22-9	Ox. Solid 2, Acute Tox. 4, Resp. Sens. 1, Skin Sens. 1, Muta. 2, Carc. 1B, Repr. 1B, Aquatic Acute 1 / Chronic 1 — see Section 11

Cobalt nitrate hexahydrate is included on the REACH Candidate List of Substances of Very High Concern (SVHC). Classifications shown are for the concentrated raw materials as purchased; concentrations in the final prepared BG11 Broth are diluted by a factor of approximately 1000× relative to the A5 mix.

Section 4 — First-Aid Measures

Eye Contact

Rinse immediately with plenty of water, keeping eyelids apart, for at least 15 minutes. Seek medical advice, particularly after exposure to concentrated Trace Metal Mix A5 or its raw components.

Skin Contact

Remove contaminated clothing. Wash skin with plenty of soap and water. Seek medical attention if irritation or allergic reaction occurs (cobalt and its salts are recognised skin/respiratory sensitisers).

Inhalation

Remove to fresh air and keep at rest. Seek medical attention if breathing difficulty, coughing, or allergic-type respiratory symptoms occur.

Ingestion

Do not induce vomiting. Rinse mouth with water. Seek medical advice immediately, particularly after ingestion of concentrated Trace Metal Mix A5 raw components.

Section 5 — Fire-Fighting Measures

Suitable Extinguishing Media

Water spray, carbon dioxide, dry chemical powder, foam

Specific Hazards

Sodium nitrate and cobalt nitrate hexahydrate are oxidising solids and may intensify fire. Keep away from combustible materials and reducing agents during storage of raw materials.

Section 6 — Accidental Release Measures

Personal Precautions

Use PPE as per Section 8, particularly when handling concentrated Trace Metal Mix A5 or its raw components

Environmental Precautions

Prevent entry into drains, watercourses, or soil — several trace metal components are aquatic toxicants

Containment & Clean-Up

Absorb spills with inert material and place in a suitable container for disposal. Avoid generating dust from spilled solids.

Section 7 — Handling and Storage

Handling Precautions

Handle concentrated Trace Metal Mix A5 and its raw components (particularly cobalt nitrate hexahydrate and boric acid) in a fume hood or well-ventilated area with dedicated PPE. Avoid all skin and eye contact.

Storage Conditions

Store raw materials in a cool, dry place, away from combustible materials and reducing agents (oxidiser precaution). Store prepared medium at 2–8°C, protected from light.

Section 8 — Exposure Controls / Personal Protection

Engineering Controls

Fume hood required when weighing concentrated cobalt nitrate hexahydrate and boric acid raw materials

Eye/Face Protection

Safety glasses or goggles; face shield when handling concentrated Trace Metal Mix A5 raw components

Hand Protection

Nitrile or other chemical-resistant gloves — required when handling cobalt or boron compounds due to sensitisation and reproductive toxicity potential

Body Protection	Laboratory coat; consider disposable coveralls when weighing bulk cobalt nitrate hexahydrate
Respiratory Protection	P2/P3 particulate respirator when weighing bulk cobalt nitrate hexahydrate or boric acid — cobalt is a recognised respiratory sensitiser

Section 9 — Physical and Chemical Properties

Appearance	Clear, colourless to pale green liquid (prepared medium) or dehydrated powder/premix
Final pH (prepared, after sterilisation)	7.4 – 7.6
Solubility	Fully soluble/miscible in water

Section 10 — Stability and Reactivity

Chemical Stability	Stable under recommended storage conditions
Possibility of Hazardous Reactions	Oxidising components (sodium nitrate, cobalt nitrate) may react with reducing agents or combustible materials
Conditions to Avoid	Contamination with reducing agents or combustible organic materials during raw material storage

Section 11 — Toxicological Information

Cobalt Nitrate Hexahydrate (raw material)	Carcinogenicity Category 1B (H350 — may cause cancer, by inhalation); Germ Cell Mutagenicity Category 2 (H341); Reproductive Toxicity Category 1B (H360F — may damage fertility); Respiratory Sensitiser Category 1 (H334); Skin Sensitiser Category 1 (H317). These classifications apply to the concentrated raw material; the finished, diluted BG11 Broth is not classified.
Boric Acid (raw material)	Reproductive Toxicity Category 2 (H361 — suspected of damaging fertility or the unborn child). Applies to the concentrated raw material only.
Finished Product (prepared broth)	Not classified; trace metal concentrations are far below individual component classification thresholds at final use dilution

Section 12 — Ecological Information

Ecotoxicity (raw materials)

Cobalt nitrate hexahydrate and copper sulfate are classified Aquatic Acute 1 / Aquatic Chronic 1 (very toxic to aquatic life, with long-lasting effects) in concentrated form

Finished Product

Not classified at final use dilution; however, prepared or spent culture medium should not be discharged to sewer or waterways without appropriate treatment

DO NOT discharge concentrated Trace Metal Mix A5, its raw components, or undiluted spent culture medium into sewers or waterways.

Section 13 — Disposal Considerations

Disposal Method

Dispose of raw material residues (particularly cobalt nitrate hexahydrate) as hazardous chemical waste via a licensed contractor. Spent culture medium may be autoclaved and disposed of as general laboratory waste in accordance with local regulations.

Section 14 — Transport Information

Finished Product

Not classified as dangerous goods

Cobalt Nitrate Hexahydrate (raw material)

UN1477, Nitrates, inorganic, n.o.s., Class 5.1 (Oxidiser) — dangerous goods regulations apply to bulk raw material shipment

Section 15 — Regulatory Information

Australian Regulations

Cobalt nitrate hexahydrate and boric acid raw materials are subject to WHS (Hazardous Chemicals) Regulations 2023 hazard communication requirements. Finished BG11 Broth at use dilution is not classified as hazardous.

International Status

Cobalt nitrate hexahydrate is included on the REACH Candidate List of Substances of Very High Concern (SVHC)

Section 16 — Other Information

Preparation Date

August 2025

Revision

Rev. 1.0

Key Data Sources

Supplier SDS data for cobalt(II) nitrate hexahydrate (CAS 10026-22-9) and boric acid (CAS 10043-35-3); Rippka et al. 1979 BG11 formulation reference

Disclaimer

This Safety Data Sheet has been prepared by AuSaMicS Pty Ltd in accordance with the Australian WHS (Hazardous Chemicals) Regulations 2023 and the GHS 7th Edition, drawing on supplier and manufacturer safety data available at the time of preparation. It addresses both the finished, diluted culture medium and the concentrated raw materials used in its manufacture. It is provided for laboratory and occupational safety purposes only and does not constitute a guarantee of any specific property of the product. Users must evaluate this information in the context of their own specific use and comply with all applicable local, state, and federal regulations. AuSaMicS Pty Ltd accepts no liability for loss, damage, or injury arising from use of this information or the product outside its intended application.