Product Name	Agar Agar — Food Grade	**CAS Number**	9002-18-0
Catalogue Number	BA-1019	**HS Code**	1302.39
Grade	Food Grade (FCC / E406)	**E Number**	E406
Form	Fine dehydrated powder	**Pack Sizes**	100 g | 500 g | 1 kg | Bulk
Biological Source	*Red algae (Rhodophyta) — primarily Gracilaria spp. and Gelidium spp.*		

1. Product Description

Agar Agar — Food Grade (BA-1019) is a high-purity hydrocolloid polysaccharide extracted from selected red algae (Gracilaria and Gelidium spp.). It forms firm, clear, thermoreversible gels that set at room temperature without refrigeration. As a plant-based, vegan-certified, and halal-compliant gelling agent, it is the primary gelatin alternative in food, beverage, pharmaceutical excipient, and technical formulation applications worldwide.

AuSaMicS BA-1019 is supplied in fine dehydrated powder form with consistent gel strength of 900–950 g/cm², clarity suitable for premium food presentation, and clean-label credentials including vegan, gluten-free, GMO-free, halal, and lactose-free status.

2. Chemical Identity

Parameter	Value
Chemical Name	Agar; Agar-Agar
CAS Number	9002-18-0
EINECS Number	232-658-1
E Number (EU)	E406
Polymer Backbone	Linear polysaccharide: alternating beta-D-galactose and 3,6-anhydro-alpha-L-galactopyranose units
Primary Components	Agarose (~70%) + Agaropectin (~30%)
Biological Source	Gracilaria spp. and Gelidium spp. (Rhodophyta red algae)
Molecular Weight	~120,000 Da (agarose fraction, variable)

3. Physicochemical Specifications

Parameter	Specification	Method
Appearance	White to off-white fine powder	Visual
Purity (agar polysaccharides)	>= 99%	HPLC / gravimetric
Gel Strength (1.5%, 20°C, Nikan method)	900–950 g/cm²	Texture analyser
Gelling Temperature	32–40°C	Cooling curve

Parameter	Specification	Method
Melting Temperature	85–95°C	Drop point
Effective pH Range	5.0 – 8.0	Functional gel testing
Loss on Drying (105°C)	<= 15%	Gravimetric (LOD)
Ash Content (550°C)	<= 5.0%	Gravimetric
Water Insoluble Matter	<= 0.5%	Gravimetric filtration
pH (1.5% solution, 25°C)	5.0 – 7.5	Potentiometric
Arsenic (As)	<= 3 ppm	ICP-OES
Lead (Pb)	<= 5 ppm	ICP-OES
Cadmium (Cd)	<= 1 ppm	ICP-OES
Mercury (Hg)	<= 1 ppm	ICP-OES
Total Plate Count	<= 5,000 CFU/g	ISO 4833
Yeast and Moulds	<= 300 CFU/g	ISO 21527
Salmonella	Absent in 25 g	ISO 6579
E. coli	Absent in 5 g	ISO 16649

4. Functional Principle

Agar is composed of two fractions: agarose (~70%), a neutral linear polysaccharide responsible for the gel-forming properties, and agaropectin (~30%), a sulphated non-gelling fraction. Upon heating in water above 85°C, agar dissolves completely. On cooling below 40°C, agarose chains associate via hydrogen bonding to form a three-dimensional double-helical network that entraps water and produces a firm, transparent, thermoreversible gel.

The hysteresis between gelling (32–40°C) and melting (85–95°C) temperatures is a critical functional property that distinguishes agar from other hydrocolloids: gels can be prepared at high temperatures (e.g. pasteurisation) and will set at room temperature without refrigeration, while remaining stable at typical consumption temperatures.

5. Typical Applications

Sector	Applications
Food & Confectionery	Jellies, puddings, desserts, fruit gels, confectionery coatings, jams, preserves
Vegan / Plant-Based	Gelatin replacement in all food applications where animal-derived gelatin is unsuitable
Beverage	Beverage clarification, filtration aids, drink gels
Dairy & Ice Cream	Stabilisation of ice cream, yoghurt, cream cheese; reduction of syneresis
Molecular Gastronomy	Hot gels, noodles, encapsulation, spherification support, edible films
Pharmaceutical Excipient	Capsule coatings, controlled-release matrix, tablet binder, suppository base
Industrial / Technical	Dental impressions, textile sizing, paper coating, cosmetic formulation

6. Usage Guidelines

Typical Use Level: 0.3–1.5% (w/v) depending on desired gel firmness.

- Disperse agar powder in cold water with stirring to wet the particles before heating.
- Heat with continuous stirring to full boiling (minimum 95°C) until completely dissolved.
- Pour or fill at 60–75°C before the gel begins to set.
- Allow to set at room temperature (25–30°C) — no refrigeration required.
- Do not acidify below pH 5.0 without increasing agar concentration — acid conditions reduce gel strength.
- For acidic products (pH < 5.0), increase agar concentration by 20–30% to compensate for reduced gel strength.
- Agar is thermoreversible — gels can be re-melted and re-set without significant loss of gel strength.

7. Storage & Shelf Life

- Store at 15–25°C in a cool, dry location away from direct sunlight.
- Protect from moisture — agar is hygroscopic; reseal container tightly after use.
- Shelf life: 24 months from date of manufacture under recommended storage conditions.
- Once dissolved and set, prepared gels should be consumed or used within the product's intended shelf life.

8. Regulatory & Compliance Information

Regulation / Standard	Status
Australia / NZ (FSANZ)	Permitted food additive (Food Standards Code, Schedule 15, E406)
EU Food Law	Approved as E406 (Agar) under EU Regulation 1333/2008
Codex Alimentarius	GSFA: Agar (INS 406) — permitted in various food categories subject to MPL
USA (FDA)	GRAS (Generally Recognised as Safe) — 21 CFR 184.1115
Halal Status	Halal — 100% plant-derived; no animal-origin ingredients
Kosher Status	Kosher-compatible — plant-derived polysaccharide
Vegan / Vegetarian	Fully vegan and vegetarian — no animal-derived ingredients
GMO Status	GMO-free — natural algal extract, no genetic modification
Gluten Status	Gluten-free — no cereal-derived ingredients
HS / AHECC Code	1302.39 — Agar-agar and other vegetable mucilages

9. Literature References

1. Armisen R, Galatas F. Agar. In: Phillips GO, Williams PA, eds. Handbook of Hydrocolloids. 2nd ed. Woodhead Publishing; 2009:82–107.
2. European Food Safety Authority (EFSA). Re-evaluation of agar (E 406) as a food additive. EFSA Journal. 2016;14(10):4505.
3. Food Standards Australia New Zealand (FSANZ). Food Standards Code — Schedule 15 (Additives permitted in all foods). FSANZ, Canberra.
4. Food Chemicals Codex (FCC), 13th Edition. Agar monograph. US Pharmacopeia; 2020.
5. Percival E. The polysaccharides of green, red and brown seaweeds. British Phycological Journal. 1979;14(2):103–117.

DISCLAIMER: This Technical Data Sheet is provided for informational purposes. AuSaMicS Pty Ltd makes no warranty, express or implied, regarding fitness for a specific purpose. Final product suitability, use levels, and regulatory compliance must be determined by the end user in accordance with FSANZ, Codex Alimentarius, and applicable national regulations. Specifications subject to change without notice.