Spirulina Powder Product Specification Sheet

Spirulina Powder is a natural microalgae product derived from *Arthrospira platensis* or *Arthrospira maxima*. It is finely processed through large-scale cultivation, harvesting, cleaning, drying and pulverization. Rich in complete protein, phycocyanin, chlorophyll, β-carotene, γ-linolenic acid, multiple vitamins and minerals, it is classified as a **high-protein, high-nutrition alkaline food raw material**. With functions of nutritional fortification, natural coloring, immune regulation and antioxidation, it is widely applied in health food, functional food, beverages, bakery products, feed, aquaculture and daily chemical industries.

Ⅰ. Basic Information

- Chinese Name: Spirulina Powder (Edible Spirulina Powder, Spirulina Extract, *Arthrospira Platensis* Powder)
- English Name: Spirulina Powder, Arthrospira Powder, Spirulina Extract
- CAS No.: 724424-92-4
- INS No.: None
- CNS No.: 04.004 (Food Additive / Natural Colorant, Nutrient Fortifier)
- UN No.: None (Non-dangerous Goods)
- Product Type: Food Raw Material, Nutrient Fortifier, Natural Pigment, Functional Ingredient, Medicinal and Edible Homologous Algae Product
- Executive Standards: GB/T 16919-2022 *General Quality Principles for Edible Spirulina Powder* (National Standard Information Public Service Platform), GB 2760-2024, GB 19643, GB 2762, US FDA GRAS (GRN 286), EU EFSA, JECFA, FCC 11
- Production Process:

  Adopt fresh algae bodies of artificially large-scale cultivated *Arthrospira platensis* / *Arthrospira maxima* as raw materials, processed via harvesting → filtration and washing → dehydration → low-temperature spray drying (≤65℃) → pulverization → sieving → sterilization → packaging. The whole production is carried out in a clean environment, with **phycocyanin retention rate ≥90%** and complete nutritional activity retained.

Ⅱ. Appearance Characteristics

1. Appearance Properties:

Dark green to blue-green uniform powder, loose and delicate with good fluidity; no agglomeration, mildew or visible impurities to the naked eye.

2. Odor & Taste:

Has the unique algal fragrance of spirulina; no rancidity, burnt smell, fishy odor or peculiar smell.

3. Solubility:

Dispersible in water to form a uniform blue-green suspension; slightly soluble in ethanol, insoluble in organic solvents such as grease and acetone.

4. Particle Size Characteristics:

Conventional specifications: 80 mesh / 100 mesh / 120 mesh / 200 mesh (100% passing sieve); ultrafine powder up to 300–400 mesh with better dispersibility.

5. pH Characteristics:

pH value of 1% aqueous solution: 6.0–8.0, weakly alkaline, compatible with most food systems.

6. Stability:

Acid and alkali resistant (pH 4–11), heat resistant (short-term stability ≤120℃), light resistant (better stored away from light); stable in dry state, easy to fade when aqueous solution is stored for a long time.

7. Hygroscopicity:

Low hygroscopicity, not easy to agglomerate under sealed and dry conditions; easy to absorb moisture in high humidity environment and needs sealed storage.

8. Bulk Density:

0.4–0.6 g/mL, meeting food processing and packaging requirements.

III. Physical and Chemical Indicators (Food Grade, Dry Basis)

- Protein (Dry Basis): ≥55% (Regular), ≥60% (Grade I), ≥65% (Premium Grade), ≥70% (High Purity)
- Phycocyanin: ≥10% (Regular), ≥15% (High Content), ≥18% (High Purity)
- Chlorophyll a: ≥2500 mg/kg
- β-Carotene: ≥500 mg/kg
- γ-Linolenic Acid (GLA): ≥0.5%
- Moisture: ≤7.0%
- Ash Content: ≤8.0%
- pH (1% Aqueous Solution): 6.0–8.0
- Particle Size: 80/100/120/200 Mesh (100% Passing Sieve)
- Heavy Metals (Calculated as Pb): ≤0.5 mg/kg
- Total Arsenic (Calculated as As): ≤0.3 mg/kg
- Mercury (Hg): ≤0.02 mg/kg
- Cadmium (Cd): ≤0.2 mg/kg
- Pesticide Residues: BHC and DDT both ≤0.05 mg/kg

IV. Microbiological Indicators

- Total Plate Count: ≤1×10^4 CFU/g
- Molds and Yeasts: ≤300 CFU/g
- Coliforms: ≤30 MPN/100g
- Salmonella: Not Detected / 25g
- Shigella: Not Detected / 25g
- Staphylococcus Aureus: Not Detected / 25g

V. Application Fields

Health Food

• Tablets, Capsules, Powder Preparations, Oral Liquids, Nutrition Packs, Protein Powder

Functional Food

• Meal Replacement Powder, Solid Beverages, Compressed Candy, Energy Bars, Bakery Products, Flour Products, Dairy Products

Beverages

• Protein Beverages, Fruit and Vegetable Juices, Sports Drinks, Nutritional Water, Solid Beverages (Natural Coloring + Nutritional Fortification)

Feed / Aquaculture

• Aquatic Seedling Cultivation, Ornamental Fish, Livestock and Poultry, Pet Food (Natural Coloring, Growth Promotion, Immunity Enhancement)

Daily Chemicals

• Facial Masks, Skin Care Products, Hair Care Products (Antioxidation, Moisturizing, Skin Repairing)

VI. Product Advantages

Ultra-high Plant Protein:

Contains all 9 essential amino acids with high absorption rate, comparable to high-quality animal protein; the preferred choice for vegetarians and fitness enthusiasts.

Natural Phycocyanin:

Powerful antioxidant, anti-inflammatory and immune regulatory effects, with natural blue pigment function simultaneously.

Full-spectrum Nutrient Density:

One-stop nutritional fortification integrating protein, vitamins, minerals, chlorophyll, carotenoids and GLA.

Alkaline Food Property:

pH 6–8, helping maintain the acid-base balance in the human body.

Safe, Natural and Additive-free:

Non-GMO, non-irradiated, no artificial pigments, no preservatives, no flavors, clean label compliant.

High Stability & Wide Compatibility:

Processing resistant, acid and alkali resistant, suitable for full scenarios including bakery, beverages, tablet pressing, capsules and solid beverages.

International Authoritative Certification:

Compliant with Chinese National Standards, FDA GRAS, EU Standards and JECFA, globally acceptable.

Full Coverage of Multiple Fields:

Covering food, health products, beverages, bakery, feed, aquaculture, pet food and daily chemicals.

Ⅶ. Quality Assurance

Full Batch Inspection:

Each batch is attached with a COA quality report covering full items of sensory, physical and chemical properties, protein, phycocyanin, microorganisms and heavy metals.

System Certification:

Production complies with HACCP, ISO 22000, FSSC 22000 and GMP with full-process clean management and control.

Authoritative Qualifications:

Available to provide Organic Certification (EU/USDA/China), Non-GMO Certificate, Halal, Kosher, FDA GRAS and GB/T 16919-2022 certificates.

Raw Material Traceability:

Sourced from standardized cultivation bases with pure algae strains, qualified water quality (GB 5749) and stable batch quality.

Third-party Testing:

Support re-inspection by authoritative institutions such as SGS, CTI and PONY.

Customized Specifications:

Customizable options including 55%/60%/65%/70% protein content, 10%/15%/18% phycocyanin content and 80–400 mesh particle size.

Ⅷ. Packaging, Storage and Transportation

Packaging Specifications

• Inner Packaging: Food-grade aluminum foil bag / PE bag, vacuum nitrogen-filled
• Outer Packaging: 25kg / fiber drum (Φ38×50cm), 1kg/5kg/10kg aluminum foil bag
• Customization: 250g/500g/1kg small packages, neutral export packaging

Storage Conditions

• Store in cool, dry, dark and sealed environment; temperature ≤25℃, humidity ≤60%
• Strictly prohibit mixed storage with toxic, harmful and peculiar-smelling articles

Transportation

• Moisture-proof, sun-proof, rain-proof and extrusion-proof
• No mixed transportation with toxic and harmful articles

Shelf Life

• Unopened: 24 months
• After Opening: Use up within 3 months

Nutritional Composition Table of Spirulina Powder

1. Nutritional Composition Table

Basic Nutrition (Per 100g, Dry Basis)

Item	Per 100g	NRV%
Energy	≈290–360 kcal	15–18%
Protein	55–70 g	110–140%
Fat	4–7 g	7–12%
— Unsaturated Fatty Acids	3.5–6 g	—
Carbohydrates	12–18 g	4–6%
Dietary Fiber	2–5 g	8–20%
Sodium	≤1000 mg	≤50%

Active Ingredients

- Phycocyanin: 10–18 g
- Chlorophyll a: 2500–4000 mg
- β-Carotene: 500–1000 mg
- γ-Linolenic Acid (GLA): 0.5–1.5 g
- Spirulina Polysaccharide: 3–8 g

Vitamins

- Vitamin B_1: 1–3 mg
- Vitamin B_2: 3–10 mg
- Vitamin B_{12}: 10–30 μg
- Vitamin E: 20–50 mg
- Total Vitamin A (β-Carotene): 3000–6000 μg RAE

Minerals

- Calcium: 800–1500 mg
- Iron: 200–600 mg
- Magnesium: 200–400 mg
- Potassium: 1000–2000 mg
- Zinc: 3–8 mg
- Selenium: 0.1–0.3 mg

2. Labeling Specification

Mandatory Labeling Items

1. Product Name: Spirulina Powder (Specify protein/phycocyanin specification and particle size)
2. Executive Standard: GB/T 16919-2022

3. Ingredients: Spirulina Powder (No other additives)
4. Nutritional Composition Table: Label in accordance with GB 28050-2025 as specified above
5. Production Date, Batch Number, Shelf Life and Storage Conditions
6. Manufacturer / Distributor Information, SC Production License Number

Compliant Claims

• High Protein, Complete Plant Protein, High Phycocyanin, Natural Nutrition, Alkaline Food, Antioxidation, Immune Regulation,

• Natural Pigment, Clean Label, Non-GMO, Additive-free

Prohibited Claims

• Medical efficacy claims (disease treatment, hypoglycemic, hypotensive, weight loss, anti-inflammation, etc.), absolute terms (highest, best, No.1)