

Product Name & Description

Product Name: Premium Food Grade Sodium Hyaluronate (Hyaluronic Acid / HA Powder)

Description: High-purity, food-grade Sodium Hyaluronate (Hyaluronic Acid) manufactured via advanced Streptococcus zooepidemicus microbial fermentation pathways. This high-performance active macromolecule is 100% vegan and free from animal-derived sources, eliminating any avian or mammalian biological risk vectors. Characterized by unparalleled water-binding capability and customized molecular weight distribution, it serves as a premium ingredient for inside-out beauty, anti-aging nutricosmetics, bone/joint lubrication formulas, and functional clean-label food applications.

Key Specifications & Quality Parameters

Analysis Item	Specification Standard	Test Method Reference
Appearance	White or off-white refined granules or powder	Visual / USP Standard
Odor & Taste	Odorless, neutral tasteless sensory profile	Sensory Panel
Sodium Hyaluronate Assay	≥ 95.0% (Dry basis)	Spectrophotometry / HPLC
Glucuronic Acid Content	≥ 45.0%	Colorimetric Method
Molecular Weight (MW) Options	• Low MW: 10,000 – 200,000 Daltons • Medium MW: 200,000 – 1,000,000 Daltons • High MW: 1,000,000 – 1,800,000 Daltons	Intrinsic Viscosity / GPC (Customizable)
Clarity (Transmittance)	≥ 99.0% (Completely water-clear fluid matrix)	UV-Vis (0.1% sol at 550nm)
pH (0.1% Solution at 25°C)	5.5 – 7.5	Potentiometric
Loss on Drying (Moisture)	≤ 10.0%	105°C for 3 Hours
Residue on Ignition (Ash)	≤ 20.0% (Natural sodium salt status)	Gravimetric (600°C)
Heavy Metals (as Pb)	≤ 10 ppm	Atomic Absorption (AAS)
Arsenic (As)	≤ 0.5 ppm	ICP-MS
Total Aerobic Plate Count	≤ 100 cfu/g (Strict premium grade)	USP <61>
Molds & Yeasts	≤ 50 cfu/g	USP <61>
E. Coli & Salmonella Sp.	Absent / g & Absent / 25g	USP <62> / Negative
Staphylococcus aureus	Absent / g	USP <62> / Negative

Dual-Target Functional Benefits & Action Mechanisms

- Inside-Out Skin Hydration (Nutricosmetics):** Ingested hyaluronic acid breaks down into active oligosaccharides in the gut, migrating through the bloodstream to dermal tissues. It activates endogenous HA synthesis in fibroblasts, deeply hydrating the extracellular matrix, restoring skin elasticity, and visibly smoothing fine lines from within.

- **Articular Synovial Lubrication (Joint Comfort):** Acts as the core biological component of joint synovial fluid. By increasing the visco-elastic properties of joint fluids, it suppresses bone-on-bone friction, cushions structural mechanical impacts, and down-regulates catabolic cartilage breakdown.
- **Extreme Moisture-Retaining Capacity:** Capable of locking up to 1000 times its individual molecular weight in water, preventing transepidermal water loss (TEWL) and bolstering mucous membrane health.

Application Matrix & Formulation Rheology

- **Oral Beauty Liquids & Syrups:** Outstanding transparency ($\geq 99.0\%$ Transmittance) ensures a beautifully clear liquid product matrix without cloudiness. Low MW grades provide excellent nutrient stability without altering liquid flow kinetics.
- **Solid Powder Blends & Beauty Sachets:** Medium to High MW variants offer superb thickening properties and a smooth, luxurious mouthfeel, adding a premium sensory texture to meal replacement shakes or collagen powder mixes.
- **Two-Piece Capsules & Tablets:** Consistent dry bulk density and fine particle parameters ensure precise dosing and minimal weight variation during high-speed encapsulation when blended with Collagen Peptides or Coenzyme Q10.
- **Functional Confectionery (Gummies & Jellies):** Fuses effortlessly into warm gelatin or pectin bases, creating stable beauty-from-within fruit gummies that retain active potency under typical candy manufacturing loops.

Regulatory Compliance & Dietary System Accreditations

- **Global Quality Frameworks:** Produced in deeply monitored, advanced environments operating in absolute compliance with food/supplement cGMP, ISO 9001, ISO 22000, and FSSC 22000 management networks.
- **Purity Harmony:** Aligned with specifications defined by the US Food Chemicals Codex (FCC), European Union Novel Food Standards, and China National Standards (GB).
- **100% Certified Vegan:** Cruelty-free and completely plant-based. Formally certified Halal and Kosher verified for multi-regional global market entry.

Packaging, Storage & Logistics Architecture

Packaging: Double food-grade Polyethylene (PE) inner moisture-barrier bags tightly sealed and packed inside a heavy-duty cardboard fiber drum. Standard net weight: 25 KG per drum (or 1 KG aluminum foil bags for smaller pilot trial configurations).

Storage Guidelines: ****Highly Hygroscopic Material.**** Keep drums tightly closed in original packaging. Store in a clean, cool ($< 25^{\circ}\text{C}$), and exceptionally dry warehouse space (relative humidity strictly ****below 50%****). Keep heavily protected from freezing conditions, heat sources, and intense direct sunlight.

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Disclaimer: The analytical metrics reported inside this Technical Data Sheet reflect current factory quality results. Because high-molecular-weight HA significantly alters system viscosity, formulators should carefully optimize mixing shear speeds during scale-up liquid preparation.