

Product Name & Description

Product Name: Premium Vegan Glucosamine Hydrochloride (Glucosamine HCl)

Description: High-purity, food and pharmaceutical-grade Glucosamine Hydrochloride manufactured through advanced microbial fermentation (such as *Aspergillus niger* or corn-derived bio-conversion pathways). This premium active ingredient is 100% free from shellfish or animal-derived vectors, thoroughly eliminating any risks associated with marine allergens, heavy metal bio-accumulation, or religious diet cross-contamination. Characterized by high hydrochloride stability, superb crystalline flowability, and complete transparency in solution, it serves as the ultimate professional alternative to traditional shellfish glucosamine for global plant-based joint health markets.

Key Specifications & Quality Benchmarks

Analysis Item	Specification Standard	Test Method Reference
Appearance	White, free-flowing crystalline powder	Visual / USP Standard
Odor & Taste	Odorless, characteristic mild sweet-to-acidic taste	Sensory Panel
Assay (Purity)	98.0% – 102.0% (Dry basis)	HPLC / Titration (USP)
Identification	Positive chromatographic and chloride test reaction	IR / HPLC / USP Protocols
Specific Optical Rotation	+70.0° to +73.0°	Polarimetry (USP)
Clarity & Color of Solution	Clear, colorless, transparent matrix	10% Water Solution
pH (5% Solution at 25°C)	3.5 – 5.0	Potentiometric
Loss on Drying (Moisture)	≤ 1.0% (Excellent low-moisture profile)	105°C for 3 Hours
Residue on Ignition (Ash)	≤ 0.1% (Ultra-pure mineral clearance)	Gravimetric (600°C)
Sulfate	≤ 0.24%	USP Method
Heavy Metals (as Pb)	≤ 10 ppm	AAS / ICP-MS
Arsenic (As)	≤ 0.5 ppm	ICP-MS
Total Aerobic Plate Count	≤ 1000 cfu/g	USP <61>
Molds & Yeasts	≤ 100 cfu/g	USP <61>
E. Coli & Salmonella	Absent / g & Absent / 25g	USP <62> / Negative

Functional Features & Mechanism of Action

- **Articular Proteoglycan Precursor:** Functions as an essential immediate metabolic substrate for the rate-limiting synthesis of glycosaminoglycans (GAGs) and proteoglycans, actively maintaining the cellular structure of healthy joint cartilage.
- **High Active Glucosamine Delivery:** Glucosamine Hydrochloride (HCl) naturally delivers a significantly higher concentration of pure base glucosamine (~83%) compared to Glucosamine Sulfate (~65%), improving formulation space and dosage efficiency per unit weight.
- **Allergen-Free Peace of Mind:** Being 100% vegetable fermentation origin, it completely bypasses the risk of severe anaphylactic shellfish allergies, fulfilling the ultimate safety expectations of sensitive consumers.
- **Chondrocyte Protection:** Helps modulate inflammatory cytokines in the synovial micro-environment, down-regulating cartilage matrix breakdown and alleviating structural stiffness.

Application Matrix & Manufacturing Highlights

- **Premium Tablets & Smooth Caplets:** High crystalline purity and consistent tapped density optimize dry powder flow parameters, mitigating weight variation defects during high-speed, automated tableting operations.
- **Two-Piece Vegan Hard Capsules:** Ideal for combining with other plant-based active ingredients like MSM, Hyaluronic Acid, and Boswellia, providing excellent stability inside HPMC vegan capsule shells.
- **Instant Effervescent Mixes & Liquid Shots:** Rapidly soluble in room-temperature water with outstanding optical transparency, ensuring professional appearance in clear pre-workout and sports recovery beverage styles.
- **Clean Label Synergy:** Exceptionally low moisture content ($\leq 1.0\%$) shields sensitive companion active nutrients from degradation, extending product shelf life without synthetic stabilizing agents.

Regulatory Compliance & Dietary System Accreditations

- **Global Pharmacopoeia Harmony:** Fulfills or exceeds all dynamic chemical purity and quality criteria specified by the United States Pharmacopeia (USP), European Pharmacopoeia (EP), and the Food Chemicals Codex (FCC).
- **100% Cruelty-Free & Plant-Based:** Fully certified Vegan and Vegetarian compliant, free from any hidden animal processing aids. Formal Halal and Kosher verified for global distribution.
- **Quality Management Systems:** Processed strictly within state-of-the-art facilities running under certified dietary supplement cGMP, ISO 9001, ISO 22000, and FSSC 22000 loops.

Packaging, Logistics & Storage Architecture

Packaging: Sealed within a double layer of food-grade Polyethylene (PE) inner moisture-barrier bags, enclosed inside a heavy-duty cardboard fiber drum. Standard net weight: 25 KG per drum.

Storage Guidelines: Store in the unopened original container in a clean, cool ($< 25^{\circ}\text{C}$), and dry warehouse space ($< 60\%$ relative humidity). Keep tightly closed to prevent moisture absorption, away from heat vectors and intense direct sunlight.

BEYOND BIOPHARMA CO., LTD.

Tel: +86 21 65010906 | Cell/Whatsapp/Wechat: +86 13482884055 | Email: sales@beyondbiopharma.com

Disclaimer: The analytical metrics reported inside this Technical Data Sheet reflect current factory quality validation parameters. Individual formulators should confirm final compatibility loops when blending with high-pH minerals.