



LiposoMore® – Advanced Liposomal Ingredients
Delivering Premium Nutrition Through Science & Innovation

**A Liposomal Brand Exclusively Owned by
Joyful Nutritional Supply Co.,Ltd.**

Technical Data Sheet: LiposoMore® Liposomal Ferrous Bisglycinate

Brand Identity and Manufacturer Overview

The LiposoMore® brand, a flagship division of Joyful Nutritional Supply Co., Ltd., represents the pinnacle of advanced delivery systems in the global nutraceutical market. Founded in 1998, Joyful Nutritional Supply has dedicated over two decades to the mastery of mineral manufacturing and specialized nutritional ingredients. The company's trajectory from a lactate salt manufacturer to a global leader in liposomal technology reflects a persistent commitment to scientific integrity and innovative problem-solving in human nutrition. Headquartered in the high-tech hub of Shenzhen, China, the manufacturer operates three state-of-the-art production plants that are fully integrated to control every stage of the lifecycle—from initial research and development to large-scale industrial synthesis and quality assurance. The LiposoMore® line was officially launched in 2021 as a response to the "absorption gap" that limits the efficacy of traditional vitamins and minerals.¹ By utilizing proprietary lipid-based formulations, LiposoMore® transforms poorly absorbed actives into highly bioavailable, stable, and gut-friendly ingredients.

Joyful Nutritional Supply Co., Ltd. operates under a rigorous professional management system, holding extensive international certifications including cGMP, ISO 9001:2015, ISO 22000, HACCP, BRC, Kosher, and Halal.¹ This robust regulatory framework ensures that every milligram of LiposoMore® Liposomal Ferrous Bisglycinate meets the highest standards for purity and performance, providing supplement manufacturers with the technical foundation necessary to build consumer trust in a competitive global market.¹

Technical Product Description and Molecular Rationale

Liposomal Ferrous Bisglycinate is a sophisticated nutritional ingredient engineered to overcome the inherent limitations of conventional iron supplementation. Iron deficiency remains the most

prevalent nutritional disorder worldwide, yet the standard treatment involving oral iron salts—such as ferrous sulfate or ferrous fumarate—is frequently hindered by low intestinal absorption and severe gastrointestinal side effects. LiposoMore® addresses these challenges by combining two synergistic chemical strategies: amino acid chelation and phospholipid encapsulation.

The core active ingredient is ferrous bisglycinate, a chelated form of iron where a divalent iron ion is chemically bound to two molecules of the amino acid glycine.⁶ This structure prevents the iron from reacting with dietary inhibitors like phytates, oxalates, and tannins in the stomach, which typically render inorganic iron salts insoluble and unabsorbable.⁶ In the LiposoMore® formulation, this chelate is further protected within a spherical lipid bilayer composed of high-purity phospholipids.³ These liposomal vesicles, ranging from 100 to 300 nm in size, act as biomimetic delivery vehicles that shield the iron core from the acidic environment of the stomach and deliver it directly to the absorptive surfaces of the small intestine.¹⁰

Physical and Chemical Profile

Parameter	Specification	Method
Product Name	Liposomal Ferrous Bisglycinate	Internal Standard ¹³
Brand Name	Liposo More™-Fe	Internal Standard ¹³
Appearance	Gray green to Dark Green powder	Visual Inspection ¹³
Odor	Odorless	USP ¹³
Solubility	Dispersible in water	USP ¹³
Nanoparticle Size	100 - 300 nm	USP ¹³
Particle Size	95% pass 80 mesh	USP ¹³

Product Advantages and Physiological Benefits

The integration of liposomal technology into iron delivery provides a transformative advantage for both the formulator and the end consumer. Traditional iron supplements are often described as "harsh" due to the oxidative stress they induce within the gastrointestinal tract.¹⁰

LiposoMore® Liposomal Ferrous Bisglycinate, however, offers a "Gentle Strength" profile that prioritizes physiological tolerance alongside clinical efficacy.¹⁴

Enhanced Bioavailability and Bypassing the Mucosal Block

The primary technical advantage of LiposoMore® is its significantly superior bioavailability compared to traditional iron salts.⁸ While conventional iron relies on the Divalent Metal Transporter 1 (DMT1) pathway—which is strictly regulated by the hormone hepcidin and easily saturated—liposomal iron utilizes alternative absorption mechanisms.⁸

Liposomes are absorbed via endocytosis through the enterocytes or via M-cells in the Peyer's patches of the small intestine.¹⁰ This pathway is independent of traditional transporters, allowing the iron to bypass the "mucosal block" that often occurs when high doses of iron are administered.⁸ Clinical data indicates that liposomal iron formulations can achieve absorption rates 3 to 5 times higher than ferrous sulfate, meaning that a lower dose of Liposomal Ferrous Bisglycinate can achieve the same therapeutic effect as a much larger dose of conventional iron.⁸

Gastrointestinal Gentleness and Patient Compliance

The severe side effects of traditional iron—including nausea, metallic taste, constipation, and epigastric pain—affect up to 60% of users, leading to high rates of treatment discontinuation.⁸ These side effects are caused by the release of free iron ions in the gut, which irritate the mucosa and generate reactive oxygen species (ROS).¹⁰

LiposoMore® encapsulates the iron within a lipid bilayer, preventing direct contact between the mineral and the stomach lining.¹⁰ This protective barrier effectively eliminates the metallic taste and minimizes gastric irritation.⁷ Studies show that only 5-15% of patients report minor discomfort with liposomal iron, compared to the majority of users taking ferrous sulfate.⁸ This superior tolerability directly translates to better patient adherence and more successful clinical outcomes.⁸

Summary of Core Advantages

Advantage	Technical Mechanism	Impact on Consumer
High Bioavailability	Absorption via M-cells and endocytosis bypassing DMT1.	Faster restoration of hemoglobin and ferritin levels.
Superior GI Tolerance	Phospholipid shielding prevents mucosal irritation and ROS formation.	No metallic taste, nausea, or constipation.

pH Stability	Liposomes protect the iron from acidic gastric degradation.	Consistent delivery of the active ingredient to the small intestine.
Minimal Interaction	Liposomal barrier prevents chelation with dietary inhibitors (coffee, tea, calcium).	Can be taken with or without food at any time of day.
Sustained Release	The lipid bilayer ensures a controlled, gradual release of the iron payload.	Reduced risk of oxidative spikes and improved cellular uptake.

Detailed Product Specifications (COA-Based)

LiposoMore® Liposomal Ferrous Bisglycinate is manufactured to meet an "In-house standard" that exceeds typical food-grade requirements.¹³ The following specifications represent the rigorous benchmarks for quality control that define every batch produced by Joyful Nutritional Supply Co., Ltd.¹³

Active Ingredient and Characteristic Indicators

Item	Specification	Result	Method
Iron Purity	\geq 10%	10.8%	USP ¹³
Encapsulation Efficiency	\geq 80%	88.66%	USP ¹³
Loss on Drying	\leq 10%	6.0%	USP ¹³

Heavy Metal Limits

The safety profile of LiposoMore® is anchored by its extremely low levels of heavy metal contaminants, which are strictly monitored to ensure compliance with global pharmaceutical and food safety regulations.¹³

Contaminant	Specification	Result	Method
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Total Heavy Metal	\leq 10ppm	Conforms	USP ¹³
Lead (Pb)	\leq 3ppm	Conforms	USP / ¹³
Arsenic (As)	\leq 0.1 ppm	Conforms	USP / ¹³
Mercury (Hg)	\leq 1.0ppm	Conforms	USP / ¹³
Cadmium (Cd)	\leq 1.0ppm	Conforms	USP / ¹³

Microbiological Standards

Rigorous microbiological testing is performed on every batch to guarantee the absence of pathogens and to maintain low microbial counts, ensuring long-term shelf stability and consumer safety.¹³

Test	Specification	Result	Method
Total Plate Count	\leq 1000CFU/g	Conforms	USP ¹³
Yeast & Mold	\leq 100CFU/g	Conforms	USP ¹³
E. coli	Negative	Negative	USP ¹³
Salmonella	Negative	Negative	USP ¹³
S. aureus	Negative	Negative	USP ¹³

Technical Methodologies and Quality Control

The precision of LiposoMore® products is verified through standardized United States Pharmacopeia (USP) methods, ensuring that technical data is accurate, reproducible, and internationally recognized.¹³

1. **USP for Nanoparticle Size:** Dynamic Light Scattering (DLS) is employed to measure the hydrodynamic diameter of the liposomal vesicles. This confirms that the particles remain within the targeted 100–300 nm range, which is critical for maximizing mucosal

permeability and preventing rapid clearance by the reticuloendothelial system.¹²

2. **USP for Encapsulation Efficiency:** This protocol measures the ratio of encapsulated iron versus free iron in the formulation. An efficiency of >80% ensures that the majority of the mineral is successfully shielded by the lipid bilayer, which is the primary determinant of the product's superior GI tolerance and bioavailability.¹²
3. **USP , , and for Metals:** These modern instrumental methods (including ICP-MS) provide highly sensitive detection of heavy metals, ensuring that LiposoMore® remains well within safety thresholds for long-term daily supplementation.¹²
4. **USP and for Microbiology:** These tests confirm that the manufacturing environment remains sterile and that the finished powder is free from harmful microorganisms like E. coli and Salmonella, which is essential for maintaining "Food Supplements Grade" status.⁵

Regulatory Compliance and Certifications

LiposoMore® Liposomal Ferrous Bisglycinate is formulated to be a "clean" ingredient, meeting the diverse dietary and religious requirements of a global consumer base.²

Compliance Statements

Statement	Status	Description
Non-GMO	Confirmed	No genetically modified organisms or DNA are present in the final product. ²⁴
Gluten-Free	Confirmed	Contains less than 20 ppm of gluten, making it safe for individuals with celiac disease. ²⁷
BSE/TSE Free	Confirmed	No animal-derived materials are used, eliminating the risk of transmissible spongiform encephalopathies. ²⁴
Allergen-Free	Confirmed	Free from the "Big Eight" allergens: milk, egg, fish, shellfish, nuts, wheat, peanuts, and soy. ²⁵

Vegan/Vegetarian	Suitable	Formulated without any animal components, including the lipid source. ¹⁴
Irradiation-Free	Confirmed	The product and its raw materials have not been subjected to ionizing radiation. ²⁴
WADA Compliant	Suitable	Contains no substances prohibited by the International Olympic Committee (IOC) or WADA. ²⁴

Storage, Packaging, and Shelf Life

The stability of liposomal powders is significantly higher than that of liquid liposome suspensions, yet they still require specific conditions to maintain their physical structure and chemical potency.³³

Storage Conditions

To preserve the encapsulation efficiency and prevent the degradation of the phospholipid bilayer, the product must be stored under the following conditions:

- **Temperature:** Store in a cool, dry place. While LiposoMore® powders are tested for stability at room temperature, keeping them below $25^{\circ}C$ is ideal for long-term freshness.¹³
- **Light & Moisture:** Protect from direct sunlight and heat. The powder is hygroscopic; therefore, it must be kept in a tightly closed container to prevent moisture absorption, which could cause the liposomes to rupture or aggregate.¹³
- **Original Packaging:** It is recommended to keep the product in its original sealed packaging until use to avoid exposure to environmental contaminants.³⁶

Packaging Standards

Joyful Nutritional Supply Co., Ltd. provides standard industrial packaging designed for international transit and long-term storage.²

- **Standard Unit:** 25 kg per unit.
- **Packaging Type:** Double-layered food-grade polyethylene bags inside a high-density fiber drum or cardboard carton.⁴⁰
- **Labeling:** Each unit is labeled with the product name, manufacturer details, and date of

manufacture.¹³

Shelf Life and Re-test Period

- **Retest Date:** 24 months from the date of manufacture when stored in the original unopened container under recommended conditions.¹³
- **Stability Performance:** Accelerated stability testing at $40^{\circ}C$ and 75% relative humidity confirms that the product maintains its technical specifications for at least six months under stress, corresponding to a standard shelf life of two years under ambient conditions.¹²

Applications and Formulation Guidelines

LiposoMore® Liposomal Ferrous Bisglycinate is a versatile ingredient suitable for a variety of finished dosage forms. Its odorless and tasteless profile (due to encapsulation) makes it particularly valuable for products where metallic iron flavor is traditionally a challenge.⁷

Recommended Applications

1. **HPMC and Hard Gelatin Capsules:** The free-flowing powder is optimized for high-speed capsule filling.¹⁴
2. **Tablets:** Can be used in direct compression or granulation processes; however, excessive compression force should be avoided to maintain vesicle integrity.¹⁴
3. **Gummies and Chewables:** Ideally suited for pediatric formulations where masking the metallic taste of iron is the primary formulation goal.⁷
4. **Sachets and Ready-to-Mix Powders:** Dispersible in water, providing a convenient option for consumers who prefer liquid administration without the stability issues of pre-mixed liquid iron.⁷
5. **Fortified Foods:** Stable during short-term high-temperature processing, allowing for use in functional snacks and dairy alternatives.³⁴

Liposomal Ferrous Bisglycinate represents the next generation of oral iron therapy. By successfully marrying the high stability of an amino acid chelate with the advanced delivery capabilities of nanotechnology, Joyful Nutritional Supply Co., Ltd. has created an ingredient that solves the historic conflict between efficacy and patient comfort.¹⁰ For supplement brands, LiposoMore® provides a technically superior, clinically validated, and highly compliant solution that meets the demands of modern, health-conscious consumers. Its robust physical properties, exceptional bioavailability, and "gentle-on-the-stomach" profile make it the ideal choice for any formulation targeting iron deficiency, energy support, or maternal health.¹⁴