Lactitol Specification Sheet

Lactitol is a functional sugar alcohol sweetener refined by hydrogenation of lactose. Classified as a food additive (sweetener, humectant, prebiotic), it is manufactured using lactose as the raw material through catalytic hydrogenation, purification, concentration and crystallization. It delivers **30%-40% of the sweetness of sucrose**, featuring low calorie and low GI. It is suitable for people pursuing sugar control, fat loss and intestinal health management, and is widely applied in food, beverages, baking, pharmaceuticals, oral care and other industries.

I. Basic Information

- Chinese Name: Lactitol (4-β-D-galactopyranosyl-D-sorbitol)
- English Name: Lactitol (4-β-D-galactopyranosyl-D-glucitol)
- CAS Number: 585-86-4 (Anhydrous), 81025-04-9 (Monohydrate)
- INS Number: 966
- CNS Number: 19.012
- UN No.: None (Non-dangerous Goods)
- Product Type: Food Additive (Sugar Alcohol Sweetener, Humectant, Prebiotic), Low-Calorie Functional Sweetener
- Executive Standards: GB 1886.98-2024, GB 2760-2024, US FDA GRAS, EU E966, JECFA, FCC
- Production Process: Using lactose as raw material, processed into anhydrous/monohydrate/dihydrate crystalline powder or 70% liquid products via catalytic hydrogenation, activated carbon decolorization, ion exchange resin purification, concentration, crystallization, drying and screening.

II. Appearance & Characteristics

1. Physical Appearance:

- White to off-white crystalline powder (anhydrous / monohydrate / dihydrate) or colorless transparent liquid, free of visible impurities with good fluidity; the anhydrous type is resistant to moisture absorption and caking.

2. Odor & Taste:

- Odorless with pure and mild sweetness close to sucrose; no peculiar smell, bitter aftertaste or metallic taste, delivering a fresh and residue-free mouthfeel.

3. Solubility:

- Freely soluble in water (approx. 70g/100mL at 25°C), soluble in ethanol with clear aqueous solution; insoluble in non-polar solvents such as benzene and ether; endothermic upon dissolution for a refreshing cooling sensation.

4. Sweetness Profile:

- Possesses **30%-40% sweetness relative to sucrose** with a gentle sweetness curve; compounding with high-intensity sweeteners (stevia, erythritol etc.) can optimize overall sweetness performance.

5. Calorie Value:

- ≈2.0 kcal/g (8.4 kJ/g), nearly half of sucrose, low in calories and non-obesogenic.

6. GI Value:

- ≈3, low glycemic index. Hard to digest and absorb in the small intestine without stimulating insulin secretion,

ideal for sugar-controlled, weight-loss and diabetic populations.

7. Stability:

- High temperature resistance (≤160℃) and acid-base resistance (pH 3.0-9.0); resistant to browning and Maillard reaction, adaptable to baking, high-temperature sterilization, acidic beverages and other processing technologies.

8. Hygroscopicity:

- Extremely low hygroscopicity for the anhydrous type and moderate hygroscopicity for monohydrate/dihydrate types; capable of maintaining food moisture and extending shelf life.

III. Physical & Chemical Specifications

Item	Standard Requirement (GB 1886.98-2024)
Lactitol Content (Dry Basis, HPLC)	95.0%-102.0%
Moisture (Loss on Drying)	Anhydrous ≤1.0%; Monohydrate 4.5%-6.5%; Dihydrate 9.0%-11.0%; Liquid ≤31.0%
Ash Content (Residue on Ignition)	≤0.1%
pH (10% Aqueous Solution)	4.5-8.5
Specific Rotation (Dry Basis)	+13.5° to +15.5°
Heavy Metals (as Pb)	≤1.0 mg/kg
Total Arsenic (As)	≤1.0 mg/kg
Nickel (Ni)	≤2.0 mg/kg (Hydrogenation Process Residue Control)
Reducing Sugar	≤0.1%
Other Polyols	≤2.5%

IV. Microbiological Limits

Item	Standard Requirement
Total Aerobic Bacteria Count	≤1000 CFU/g (NHC of PRC)
Coliform Bacteria	≤0.3 MPN/g (NHC of PRC)
Molds & Yeasts	≤50 CFU/g (NHC of PRC)
Salmonella	Not Detected / 25g
Staphylococcus Aureus	Not Detected / 25g

V. Safety & Compliance

China:

Approved for appropriate use according to production requirements under GB 2760-2024; GB 1886.98-2024 serves as the product quality standard.

Global:

JECFA with no specific ADI limitation; certified by EU E966 and US FDA GRAS, fully compliant with mainstream global markets.

- Toxicological Safety:

  Acute oral LD50 in mice > 10g/kg; negative results in mutagenicity and reproductive toxicity tests with mild and safe metabolism.

- Metabolic Properties:

  Undigested and unabsorbed in the small intestine, fermented and utilized by beneficial bacteria such as bifidobacteria and lactobacilli in the large intestine with no accumulation risk; excessive intake may cause mild abdominal distension with better tolerance than most sugar alcohols.

VI. Packaging, Storage & Transportation

- Packaging Specifications:

  25kg/bag (food-grade composite bag with PE inner lining), 200kg/drum (liquid); customized small packages (1kg/5kg) are available.

- Storage Conditions:

  Store in cool, dry, ventilated and clean areas; avoid direct sunlight and heat sources; keep sealed for moisture and damage prevention; strictly prohibit mixed storage with toxic and harmful substances.

- Transportation Requirements:

  Transport at room temperature with rainproof, moisture-proof and damage-proof measures; strictly prohibit mixed transportation with toxic and harmful substances.

- Shelf Life:

  24 months for unopened crystalline products, 12 months for liquid products; use within 3 months after opening with sealed storage.

VII. Application Fields

- Sugar-Free / Low-Sugar Beverages:

  Tea drinks, carbonated drinks, fruit juices, sports drinks, plant protein beverages, probiotic drinks (low GI, prebiotic property, refreshing taste).

- Confectionery & Snacks:

  Hard candy, gummy candy, chocolate, chewing gum, compressed candy, preserved fruits (anti-caries, low calorie, low hygroscopicity, shelf life extension).

- Baked Foods:

  Sugar-free biscuits, sugar-free pastries, bread, cakes, mooncakes (high temperature resistance, anti-browning, moisturizing and anti-drying, shelf life extension).

- Dairy Products:

  Sugar-free yogurt, flavored milk, ice cream, ice lollies, milk-containing beverages (low GI, taste improvement, emulsification stability, fat floating prevention).

- Functional Foods:

  Sugar-controlled foods, weight-loss meal replacements, intestinal health foods, middle-aged and elderly health foods, probiotic preparations (prebiotic, low calorie, intestinal flora regulation).

- Oral Care Products:

  Toothpaste, mouthwash, oral spray, sugar-free chewing gum (inhibition of oral bacteria, anti-caries, zero sugar, cooling taste).

- Pharmaceutical Excipients:

  Medicinal sweeteners, flavor correctants for tablets/granules, fillers for sugar-free preparations, laxatives (mild and safe, taste improvement, intestinal peristalsis promotion).

- Feed Additives:

  Pet food, livestock and poultry feed (palatability improvement, proliferation promotion of beneficial intestinal bacteria in animals).

VIII. Core Advantages

- Natural Sugar Alcohol Source:

  Derived from hydrogenation and refining of lactose, non-artificially synthesized, clean-label friendly and in line with healthy consumption trends.

- Low Calorie & Low GI:

  Half the calorie content of sucrose with low glycemic response and no impact on insulin, suitable for sugar control, weight loss and diabetic groups.

- Prebiotic & Intestinal Protection:

  Boost the proliferation of bifidobacteria and lactobacilli, inhibit harmful bacteria, balance intestinal flora and improve intestinal function.

- Anti-Caries & Oral Protection:

  Cannot be fermented into acid by oral cariogenic bacteria, inhibit dental plaque and reduce caries risks, applicable to sugar-free oral care products.

- Excellent Processing Stability:

  Resistant to high temperature, acid and alkali, anti-browning and low hygroscopicity with outstanding moisturizing performance, compatible with full-category processing technologies for beverages, baking and confectionery.

- Superior Taste Compatibility:

  Pure sucrose-like sweetness without unpleasant aftertaste; capable of correcting bitter notes of high-intensity sweeteners with high cost performance in compound formulations.

IX. Quality Assurance

- Batch-specific COA (Certificate of Analysis) provided, including complete physical, chemical and microbiological test data.
- Production system complies with HACCP, ISO 22000 and FSSC 22000 food safety management standards.
- Authoritative certifications including Non-GMO, Halal, Kosher and FDA GRAS are available.
- Full-process quality traceability: Whole-process control from lactose raw materials to finished products with stable batch quality and controllable product quality.

Lactitol Nutrition Facts

Nutrition Facts (Per 100g, Crystalline Type)

Item	Per 100g	Nutrient Reference Value % (NRV%)
Energy	≤840 kJ (200 kcal)	10%
Protein	0g	0%
Fat	0g	0%
Carbohydrates	≥95.0g	32%
— Including: Lactitol	≥95.0g	—
Dietary Fiber	0g	0%
Sodium	0mg	0%

Labeling Specification

1. Nutrition Facts Labeling: Strictly follow the above format in compliance with GB 28050-2025; energy calculated at ≤8.4kJ/g with fully compliant NRV%.
2. Warning Labeling: Mark prominently (font size ≥ 1/2 of product name): Unsuitable Groups: Infants under 1 year old, galactose intolerant individuals; Excessive consumption may cause mild abdominal distension and diarrhea.
3. Compliance Statement Labeling: This product complies with GB 1886.98-2024 and GB 2760-2024, and can be appropriately used as food sweetener, humectant and prebiotic according to production demands.
4. Product Naming Labeling: Mark both Chinese name "Lactitol" and English name "Lactitol", and clearly indicate "anhydrous/monohydrate/dihydrate crystalline type" or "70% liquid" as well as product purity.
5. Claim Specification: Permitted claims include **low calorie, low glycemic, anti-caries, prebiotic and humectant**; medical efficacy claims (blood sugar reduction, weight loss, disease treatment etc.) are prohibited.

Key Notes

1. NRV% Calculation: In accordance with GB 28050-2025: Energy NRV=8400kJ, Carbohydrate NRV=300g; lactitol energy coefficient ≤8.4kJ/g.
2. Carbohydrate Labeling Logic: Lactitol is classified as sugar alcohol carbohydrate and included in total carbohydrates; featured with low glycemic property with no blood sugar impact, allowing "sugar-free / low-sugar" labeling.
3. Metabolic Characteristics: Not absorbed in the small intestine after intake, fermented and utilized in the large intestine with mild metabolism and no accumulation risk; better intestinal tolerance than most sugar alcohols.
4. Export Labeling: Supplement corresponding compliance marks (FDA GRAS, EU E966, JECFA certification etc.) for overseas markets.