Sorbitol Product Specification Sheet

Sorbitol (D-Sorbitol) is a six-carbon sugar alcohol functional sweetener and humectant refined by hydrogenation of glucose derived from starch hydrolysis. As a food additive (sweetener, humectant, stabilizer, leavening agent), it is manufactured from corn starch through saccharification, high-pressure hydrogenation, purification, concentration, crystallization and drying. It has a sweetness level of **50%-70%** of sucrose, featuring low calorie, low GI and strong moisture retention. It meets the demands of sugar control, caries prevention, food water retention, pharmaceutical and daily chemical industries, and is widely applied in food, beverages, baking, confectionery, pharmaceuticals, oral care, cosmetics and other fields.

I. Basic Information

- Chinese Name: Sorbitol (D-Sorbitol, D-Glucitol, Hexanehexol)
- English Name: Sorbitol (D-Sorbitol, D-Glucitol)
- CAS No.: 50-70-4
- INS No.: 420 (i) (Crystalline Type), 420 (ii) (Liquid Type)
- CNS No.: 19.006 (Crystalline Type), 19.023 (Liquid Type)
- UN No.: None (Non-Dangerous Goods)
- Product Type: Food Additive (Sugar Alcohol Sweetener, Humectant, Stabilizer, Leavening Agent), Functional Moisturizing Sweetener
- Executive Standards: GB 1886.187-2016, GB 2760-2024, US FDA GRAS, EU E420, JECFA, ChP (Pharmacopoeia), FCC
- Production Process: Using corn starch as raw material, glucose is prepared via enzymatic saccharification, followed by high-pressure hydrogenation under the catalysis of nickel catalyst. The product is further processed through activated carbon decolorization, ion exchange purification, concentration, crystallization, drying and sieving to produce crystalline powder/granules/flakes, or concentrated and blended to make 70%/68%-76% sorbitol liquid.

II. Appearance & Sensory Characteristics

1. Appearance & State:

- White crystalline powder/granules/flakes (crystalline type) or colorless transparent syrupy liquid (liquid type), free of visible impurities and with good fluidity; the crystalline type is slightly hygroscopic, while the liquid type delivers outstanding moisturizing performance.

2. Odor & Taste:

- Odorless with pure, refreshing and cooling sweet taste similar to sucrose. No peculiar smell, bitter aftertaste or metallic taste, presenting a clean and cool mouthfeel.

3. Solubility:

- Highly soluble in water (1g dissolves in approximately 0.45mL of water at 25°C), slightly soluble in ethanol and acetic acid, insoluble in non-polar solvents such as chloroform and ether. Its aqueous solution is clear and transparent with endothermic dissolution, bringing a cooling taste.

4. Sweetness Property:

● Its sweetness accounts for about **50%-70%** of sucrose with a gentle sweetness curve and moderate cooling sensation. Blending with sucrose and high-intensity sweeteners (stevia, sucralose) can optimize taste and reduce production costs.

5. Calorie Value:

● ≈2.6 kcal/g (10.9 kJ/g), lower than sucrose (4.0 kcal/g). The low-calorie property suits people with fat loss and energy control needs.

6. GI Value:

● ≈9, a low glycemic index ingredient. It is slowly absorbed in the small intestine and metabolized independent of insulin, without causing a sharp rise in blood sugar, suitable for diabetic and sugar-controlled populations.

7. Stability:

● High temperature resistance (≤200°C) and acid-base resistance (pH 3.0-10.0) with stable chemical properties. It does not trigger Maillard browning reaction, adapting to harsh processing conditions such as baking, high-temperature sterilization, acidic beverage production and candy boiling.

8. Hygroscopicity & Moisturizing Capacity:

● The crystalline type has moderate hygroscopicity, and the liquid type features strong hygroscopicity. It can bidirectionally regulate water (moisture absorption/release) to balance product humidity, prevent food cracking and hardening, and extend shelf life.

III. Physical & Chemical Specifications

Item	Standard Requirements (GB 1886.187-2016)
Sorbitol Content (Dry Basis, HPLC)	Crystalline Type ≥91.0%; Liquid Type (Calculated by Solid Content) ≥91.0%
Moisture (Loss on Drying)	Crystalline Type ≤1.5%; 70% Liquid Type ≤30.0%
Reducing Sugar (Calculated as Glucose)	≤0.3%
Total Sugar (Calculated as Glucose)	≤1.0%
Specific Rotation (Dry Basis, 10% Borax Solution)	+4.0° to +7.0°
Heavy Metals (Calculated as Pb)	≤1.0 mg/kg
Total Arsenic (As)	≤0.3 mg/kg
Nickel (Ni)	≤1.0 mg/kg
Residue on Ignition (Ash Content)	≤0.1%
Chloride (Calculated as Cl^-)	≤0.005%
Sulfate (Calculated as SO_4^{2-})	≤0.01%

IV. Microbiological Specifications

● Total Aerobic Count: ≤1000 CFU/g

● Molds & Yeasts: ≤100 CFU/g

● Coliforms: ≤0.3 MPN/g (Not Detected in 3g Sample)

● Salmonella: Negative in 25g

● Staphylococcus Aureus: Negative in 25g

V. Metabolic & Physiological Properties

Digestion & Absorption:

It is slowly absorbed in the small intestine, with part directly entering the blood and most fermented by probiotics in the large intestine to produce short-chain fatty acids, gently regulating intestinal flora.

Blood Sugar Impact:

Metabolism is insulin-independent with a low glycemic index (GI≈9), exerting no significant impact on blood glucose levels and applicable for diabetics.

Oral Health Performance:

It cannot be fermented by oral cariogenic bacteria to produce acid, inhibits dental plaque formation and prevents dental caries. It is certified by FDA to claim "non-cariogenic".

Calorie Metabolism:

With a calorie of approximately 2.6 kcal/g, lower than sucrose, it causes no fat accumulation and fits low-fat and calorie-controlled diets.

Tolerance:

Well-tolerated at conventional doses; excessive intake (>50g/day) may lead to abdominal distension, flatulence and mild diarrhea, which can be relieved with intestinal adaptation.

VI. Application Areas

Confectionery & Chocolate:

Sugar-free hard candy, gummy candy, chewing gum and chocolate (caries prevention, cooling taste, moisturizing and crack resistance, anti-browning).

Baked Pastries:

Bread, cakes, mooncakes and biscuits (anti-drying moisturization, aging delay, softness maintenance and color retention).

Beverages & Dairy Products:

Sugar-free drinks, flavored beverages, dairy drinks and plant protein drinks (low GI, refreshing taste, system stabilization and flavor protection).

Functional Foods:

Sugar-controlled food, diabetic food, weight-loss meal replacement, middle-aged and elderly health food and intestinal health food (low glycemic, low calorie and mild prebiotic effect).

Oral Care Products:

Toothpaste, mouthwash and sugar-free chewing gum (prevent paste cracking via moisturization, flavor correction, caries prevention and bacterial inhibition).

Pharmaceutical Excipients:

Medicinal sweetener, flavor corrector for tablets/granules, filler, binder, laxative and injection excipient (mild and safe, taste improvement, osmotic pressure regulation and intestinal peristalsis promotion).

Cosmetics:

Face cream, lotion, facial mask and washing & care products (moisture locking, refreshing skin feel, system stability and suitability for sensitive skin).

Feed Additives:

Pet food and livestock & poultry feed (palatability improvement, moisturization and animal intestinal microecology regulation).

VII. Core Advantages

Natural Source & Clean Label:

Refined from hydrogenated corn starch without artificial synthesis. Raw materials are natural and controllable, complying with health consumption and clean label trends.

Low-Calorie & Low GI, Sugar-Control Friendly:

Lower calorie than sucrose, low glycemic response and insulin-independent metabolism, ideal for diabetics, sugar-controlled groups, weight-loss crowds and obese populations.

Powerful Moisturizing Capacity to Extend Shelf Life:

Superior bidirectional moisturizing performance locks food moisture, prevents cracking and aging, and maintains product freshness and texture stability.

Caries Prevention for Oral Health Protection:

Not utilized by cariogenic bacteria to generate acid, inhibits dental plaque growth and effectively prevents tooth decay, suitable for sugar-free oral care products and food.

Excellent Processing Stability:

High temperature resistance, acid and alkali resistance, anti-browning property, and no reaction with protein/amino acids, compatible with full-category food processing technologies.

Refreshing Taste & Wide Compatibility:

Pure sweet taste with cooling sensation and no unpleasant aftertaste. It features strong compounding ability, capable of masking the bitter taste of high-intensity sweeteners and upgrading product palatability.

Multi-Functional & Wide-Range Application:

Integrates multiple functions including sweetening, moisturizing, stabilizing, leavening and thickening, covering food, pharmaceutical, daily chemical and feed industries.

VIII. Quality Assurance

- Complete batch-by-batch COA (Certificate of Analysis) is provided, including full physical, chemical and microbiological test data with traceable quality records.
- The production system strictly complies with HACCP, ISO 22000 and FSSC 22000 food safety management standards with full-process aseptic control.
- Authoritative certifications such as Non-GMO, Halal, Kosher, FDA GRAS and EU E420 are available.
- Full-process quality traceability from raw materials to finished products ensures high batch stability, consistent and controllable quality, in line with domestic and international food and pharmaceutical grade standards.

Sorbitol Nutrition Facts

Nutrition Facts (Per 100g, Crystalline Type)

Item	Per 100g	Nutrient Reference Value Percentage (NRV%)
Energy	≤1090 kJ (260 kcal)	13%
Protein	0g	0%
Fat	0g	0%
Carbohydrates	≥91.0g	30%
— Including: Sorbitol	≥91.0g	—
Dietary Fiber	0g	0%
Sodium	0mg	0%

Labeling Specifications

1. Nutrition Facts Labeling: Strictly follow the above format in compliance with GB 28050-2025; energy is calculated at ≤10.9kJ/g with standardized NRV% calculation.
2. Warning Statement Labeling: Mark in a prominent position (font size ≥ 1/2 of product name): Excessive intake may cause abdominal distension and diarrhea; infants under 1 year old and people with sensitive intestines shall use with caution.
3. Compliance Statement Labeling: This product complies with GB 1886.187-2016 and GB 2760-2024, and can be appropriately used as food additives (sweetener, humectant, stabilizer, leavening agent) according to production requirements.
4. Product Name Labeling: Mark both Chinese **山梨醇（山梨糖醇）** and English **Sorbitol**, and clearly indicate crystalline type (powder/granule/flakes) or 70% liquid type with content specifications.
5. Claim Specifications: Permitted claims include low calorie, low glycemic, caries prevention, humectant and stabilizer; medical efficacy claims (such as blood sugar reduction, disease treatment and weight loss) are prohibited.

Key Notes

1. NRV% Calculation: In accordance with GB 28050-2025: Energy NRV=8400kJ, Carbohydrate NRV=300g; the energy coefficient of sorbitol is ≤10.9kJ/g.
2. Carbohydrate Labeling Logic: As a sugar alcohol carbohydrate, sorbitol is included in total carbohydrates. Its low glycemic property supports compliant labeling of sugar-free/low-sugar/sugar-controlled claims.
3. Metabolic Characteristics: Slow absorption in the small intestine and gentle fermentation in the large intestine with no metabolic accumulation. It delivers better tolerance than partial sugar alcohols and is safe without side effects at conventional doses.
4. Export Labeling: Supplement corresponding compliance marks for overseas markets (e.g., FDA GRAS, EU E420, JECFA, ChP Certification)