

Technical Data Sheet (TDS)

Sodium Benzoate (Food Grade)

1. Product Overview

- Product Name: Sodium Benzoate (Food Grade)
- English Name: Sodium Benzoate
- CAS Number: 532-32-1
- Formula: C₇ H₅ O₂Na
- Molecular Weight: 144.11 g/mol
- **Product Characteristics:** Food-grade Sodium Benzoate is a white odorless crystalline powder, a classic high-efficiency and low-toxic food preservative derived from benzoic acid and sodium hydroxide. It inhibits the growth and reproduction of mold, yeast and most aerobic bacteria by interfering with the microbial cell membrane and metabolic process, with excellent antifungal and antiseptic effects (optimal at pH 2.5-4.0). Highly soluble in water, stable under normal food processing and storage conditions, FAO/WHO approved ADI 0-5 mg/kg bw, compliant with GB 2760-2021 standards. It is one of the most widely used food preservatives in the global food industry, also applicable to cosmetics, pharmaceuticals and industrial preservation.

2. Technical Specifications (Complies with GB 1886.193-2016 / FCC / FAO/WHO)

Item	Specification (Food Grade)
Appearance	White to off-white free-flowing crystalline powder/granule, odorless
Assay (C ₇ H ₅ O ₂ Na)	≥ 99.0%
Moisture Content	≤ 0.5%
pH Value (25°C, 5% aqueous solution)	7.0-8.5
Free Acid (as benzoic acid)	≤ 0.2%
Free Alkali (as Na ₂ CO ₃)	≤ 0.1%
Heavy Metals (Pb)	≤ 0.5 ppm
Arsenic (As)	≤ 0.1 ppm
Sulfate (as SO ₄)	≤ 0.01%
Chloride (as Cl)	≤ 0.01%
Iron (Fe)	≤ 0.001%
Decomposition Temperature	≥ 300°C
Water Solubility	62.6 g/100mL (20°C)
Hygroscopy	Slightly hygroscopic
Microbiological Limit	Total bacterial count ≤ 1000 CFU/g; Yeast & Mold ≤ 100 CFU/g

3. Product Advantages

1. **High Efficiency & Broad-Spectrum Antiseptic:** Inhibits mold, yeast and most aerobic bacteria; fast-acting, obvious antiseptic effect at low concentration; suitable for various acidic food systems.
2. **Low Toxicity & High Safety:** FAO/WHO approved ADI 0-5 mg/kg bw; no mutagenicity, carcinogenicity or reproductive toxicity; excreted rapidly in human body, no accumulation; meets international food safety standards.
3. **Excellent Solubility & Processability:** Highly soluble in water (62.6 g/100mL at 20°C), easy to prepare aqueous solution; stable in food processing (pasteurization, boiling, cold storage); no effect on food color, flavor and texture.
4. **Optimal Acidic Adaptability:** Most effective in pH 2.5-4.0 food systems; the most widely used preservative for high-acid food such as fruit juice, pickles and carbonated beverages.
5. **Good Compatibility:** Compatible with all common food additives (sugar, salt, starch, citric acid, potassium sorbate); synergistic effect with other preservatives to improve antiseptic effect and reduce single dosage.

6. **Eco-Friendly & Biodegradable:** Fully biodegradable in natural environment; no persistent pollution; no adverse effects on aquatic/terrestrial organisms; meets global environmental protection requirements.

4. Application Fields

Food-grade Sodium Benzoate is a classic broad-spectrum food preservative (complies with GB 2760-2021 dosage limit), suitable for **all types of acidic food and beverage** that need antifungal and antiseptic treatment; also used in cosmetics, pharmaceuticals and industry:

- **Beverage Industry:** Carbonated beverage, fruit juice, fruit vinegar, fruit wine, energy drink; antiseptic and antifungal, extend shelf life by 2-6 months.
- **Pickled Food Industry:** Pickled vegetables, pickled meat, salted fish, soy sauce, vinegar; inhibit microbial growth, prevent mildew and deterioration of pickled products.
- **Canned Food Industry:** Fruit canned, fruit jam, jelly, sauce canned; antiseptic and antifungal, maintain food quality and flavor for a long time.
- **Dairy & Dessert Industry:** Acid milk beverage, yogurt, fruit jelly, pudding; inhibit mold and yeast, extend the shelf life of acidic dairy products.
- **Confectionery & Snack Industry:** Candy, baked food, dried fruit, instant food; antifungal preservative, prevent mildew of pre-packaged snacks.
- **Other Fields:** Cosmetic lotion, cream, shampoo (low-concentration preservative); pharmaceutical excipient; industrial water treatment preservative (non-food grade).

5. Usage Methods

5.1 Recommended Dosage (Food Use, w/w, comply with GB 2760-2021, adjustable by food pH)

Food Type	Recommended Dosage	Optimal pH Range
Carbonated Beverage/Fruit Juice	0.02-0.05%	2.5-4.0
Pickled Vegetables/Soy Sauce/Vinegar	0.05-0.10%	3.0-4.5
Fruit Canned/Jam/Jelly	0.03-0.08%	2.5-4.0
Acid Milk Beverage/Yogurt	0.02-0.06%	3.5-4.5
Candy/Dried Fruit	0.04-0.09%	3.0-4.5

5.2 Standard Adding Method (Most Common for Food Production)

1. **Aqueous Solution Preparation:** Dissolve the required amount of sodium benzoate in **room temperature pure water** (ratio 1:5-1:10) and stir evenly to form a clear aqueous solution (solubility is high, easy to dissolve).
 2. **Adding Timing:** Add the aqueous solution to the food raw material during the **late stage of food processing** (cool to <60°C after boiling/pasteurization) to avoid unnecessary loss and ensure uniform mixing.
 3. **Uniform Mixing:** Stir the food system evenly after adding to ensure the preservative is uniformly distributed in the food (the key to ensuring the antiseptic effect).
6. Packaging & Storage
- **Small Batch:** 1kg/5kg/10kg – Aluminum foil vacuum bags (moisture-proof/oxygen-free) with outer carton; for small-scale food processing and retail.
 - **Standard Batch:** 25kg – Moisture-proof paper bags with plastic inner lining / sealed HDPE plastic drums; for medium/large-scale food production.
 - **Bulk Batch:** 500kg/1000kg – Food-grade FIBC bulk bags (moisture-proof PE liner, sealed valve); for large-scale industrial production and export.

7. Safety & Protection

- **Personal Protection:** Wear FFP1 dust mask, chemical protective goggles and nitrile rubber gloves during bulk handling (weighing/packaging); avoid dust inhalation and direct contact with skin/eyes.
- **Workplace Safety:** Operate in a well-ventilated area with local exhaust ventilation; do not eat, drink or smoke in the workplace; wash hands and face thoroughly with soap after handling.
- **Emergency Treatment:**
 - Skin contact: Rinse with plenty of running water for 5-10 minutes; apply mild emollient if irritation occurs.