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Technical Data Sheet (TDS)

- Sodium Bicarbonate (Food Grade)
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1. Product Overview

- **Product Name**: Sodium Bicarbonate (Food Grade)
- **CAS Number**: 144-55-8
- **EINECS/EC Number**: 205-633-8
- **Chemical Formula**: $NaHCO_3$
- **Molecular Weight**: 84.01
- **Product Characteristics**: High-purity food-grade sodium bicarbonate (baking soda) produced by synthetic crystallization and purification; white crystalline powder, odorless, slightly alkaline taste, slightly hygroscopic and soluble in water. As a **multi-functional food additive**, it acts as a leavening agent (reacts with acids to produce CO_2 gas for food expansion), acidity regulator (adjusts food pH), antacid (neutralizes excess acid in food) and bulking agent. It is an inorganic salt with excellent stability, compatible with most common food ingredients, and is a classic additive widely used in bakery, confectionery and processed food production. FDA GRAS/EC E500(ii) certified; compliant with GB 1886.2-2021/GB 2760/FDA/EC/CAC standards, a core additive for food formulation and processing.

2. Technical Specifications (Compliant with GB 1886.2-2021 & FCC/USP)

Item	Standard Requirement
Appearance	White crystalline powder, free-flowing, no caking
Odor/Taste	Odorless, slightly alkaline, no off-taste
Assay (Sodium Bicarbonate)	≥99.0%
Loss on Drying	≤0.2%
Residue on Ignition	≤0.05%
pH Value (5% aqueous solution, 25℃)	8.0-9.5
Chloride (as Cl^-)	≤0.02%
Sulfate (as SO_4^{2-})	≤0.02%
Heavy Metals (as Pb)	≤1 ppm
Arsenic (As)	≤0.5 ppm
Iron (Fe)	≤5 ppm
Calcium (Ca)	≤0.05%
Total Alkalinity (as $NaHCO_3$)	99.0-100.5%
Water Solubility	≥90 g/L (25℃)
Total Bacterial Count	≤100 CFU/g
Yeast & Mold	≤10 CFU/g
E. coli	Negative in 1g
Salmonella	Negative in 25g
Temperature Stability	Stable at ≤50℃; decomposes at >50℃ (CO_2 release)
pH Stability	Stable in neutral/alkaline systems (pH 7.0-10.0)
Storage Stability	24 months (unopened), 6 months (after opening)

3. Product Advantages

1. **Excellent Leavening Effect**: Reacts with food-grade weak acids (citric acid, tartaric acid, lactic acid) to produce uniform CO_2 gas, making food fluffy and porous (ideal for bread, cake, pastry).
2. **Mild Acidity Regulation**: Adjusts food pH in a mild range (8.0-9.5), neutralizes excess acidic taste, improves food flavor and stability without causing harsh alkaline taste.
3. **High Purity & Low Impurity**: Assay ≥99.0%, low heavy metal and inorganic salt impurities; no adverse effect on food color, taste and texture.

4. **Good Solubility**: Soluble in water (96 g/L at 25℃), dissolves quickly in cold/hot water; uniform dispersion in food system, no precipitation or agglomeration.

4. Application Fields & Recommended Dosage

(Adjust dosage according to food type, formulation requirement and processing technology; all dosages are **w/w** based on food raw materials, comply with GMP dosage limits for all food categories.)

Application Field	Typical Products	Recommended Dosage	Core Effect
Bakery	Bread, cake, pastry, biscuit, steamed bun	0.5-2.0%	Leavening (CO_2 release), makes food fluffy porous
Confectionery	Candy, chocolate, jelly, chewing gum	0.1-0.5%	Acidity regulation, neutralizes excess acid, improves taste
Beverage	Carbonated drink, fruit juice, milk drink	0.05-0.2%	pH adjustment, antacid, improves beverage stability
Dairy	Yogurt, cheese, milk powder	0.05-0.3%	Neutralizes excess lactic acid, adjusts taste, extends shelf life
Meat & Aquatic Products	Ham, sausage, frozen meat, fish products	0.1-0.5%	pH adjustment, improves meat tenderness and water retention
Seasoning & Sauce	Soy sauce, vinegar, ketchup, salad dressing	0.05-0.2%	Acidity regulation, balances sour taste, improves flavor
Canned Food	Canned fruit/vegetable/meat, preserved food	0.1-0.4%	pH adjustment, antacid, prevents food acidification
Other Food	Instant food, nutritional powder, snack food	0.2-0.8%	Bulking, acidity regulation, improves product texture

5. Usage Methods & Formulation Guidelines

Key Tip: Sodium bicarbonate is the core leavening agent matching with food-grade weak acids; react at high temperature (>50℃) to produce CO_2 gas for food expansion; avoid mixing with strong acids and store in dry conditions.

1. **Leavening Agent Application (Bakery)**: Mix sodium bicarbonate with food-grade weak acid (citric acid/tartaric acid) at a ratio of 2:1; add to dough and knead evenly; the mixture reacts at baking/steaming temperature (>50℃) to produce uniform CO_2 gas, making food fluffy.

6. Packaging, Storage & Transportation

- **Small Packaging**: 100g/200g/500g/1kg food-grade sealed plastic bags (for home cooking, small catering and bakery use)
- **Standard Packaging**: 5kg/25kg food-grade HDPE plastic drums or paper bags with inner PE liner (for small food factories and food production)
- **Bulk Packaging**: 500kg/1000kg food-grade jumbo bags (moisture-proof film, dust-proof; for large food factories with bulk handling)
- **Custom Packaging**: Customized weight and packaging form available according to customer requirements.

7. Quality Assurance & Technical Support

1. **Production Standards**: Manufactured in a GMP/HACCP-compliant food-grade production workshop; adopts advanced synthetic crystallization and purification technology (no chemical solvents/additives); meets ISO 9001 (Quality Management) and ISO 22000 (Food Safety) standards; assay ≥99.0%, high purity and stable performance.
2. **Batch Testing**: Every batch of sodium bicarbonate is subject to **strict multi-index testing** (physical, chemical, microbiological, purity, heavy metals); a detailed Certificate of Analysis (COA) is provided with each shipment to ensure compliance with GB 1886.2-2021/FCC/USP standards.