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Technical Data Sheet (TDS)

- Sodium Acid Pyrophosphate (SAPP) Food Grade
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1. Product Overview

- **Product Name**: Sodium Acid Pyrophosphate (SAPP) - Food Grade
- **CAS Number**: 7758-16-9
- **EINECS/EC Number**: 231-835-0
- **Chemical Formula**: $Na_2H_2P_2O_7$
- **Molecular Weight**: 221.94 g/mol
- **Product Characteristics**: High-purity food-grade SAPP is a white crystalline powder with weak acidity and slight hygroscopy, odorless and slightly acidic in taste. As a **multi-functional inorganic food additive**, it has six core functions in food production: (1) Leavening Agent: Reacts with baking soda to release CO_2 for bakery product expansion; (2) Water Retention Agent: Improves water holding capacity of meat/seafood, reduces juice loss during processing/storage; (3) Emulsifier: Promotes oil-water emulsification, improves texture of dairy/meat products; (4) Sequestrant: Chelates metal ions (Ca^{2+} , Mg^{2+} , Fe^{3+}), prevents food discoloration, oxidation and turbidity; (5) pH Regulator: Adjusts and stabilizes food system pH, enhances food stability; (6) Anti-caking Agent: Improves flowability of powder food, prevents caking. FDA GRAS/EU E450(i) certified; compliant with GB 1886.30-2021/GB 2760-2021 standards, widely used in bakery, meat, seafood and dairy food industries with excellent process adaptability and safety.

2. Technical Specifications (Compliant with GB 1886.30-2021 & FCC/USP)

Item	Standard Requirement (Food Grade)
Appearance	White crystalline powder, free-flowing, no caking
Odor/Taste	Odorless, slightly acidic, no off-taste
Assay ($Na_2H_2P_2O_7$, dry basis)	≥95.0%
Loss on Drying (105℃, 2h)	≤0.5%
pH Value (1% aqueous solution, 25℃)	4.0~4.7
Chloride (as Cl^-)	≤0.01%
Sulfate (as SO_4^{2-})	≤0.01%
Heavy Metals (as Pb)	≤1 ppm
Arsenic (As)	≤0.5 ppm
Fluoride (as F^-)	≤0.005%
Iron (Fe)	≤5 ppm
Insoluble Matter in Water	≤0.01%
Water Solubility (25℃)	≥8.0 g/100mL
Total Bacterial Count	≤100 CFU/g
Yeast & Mold	≤10 CFU/g
E. coli	Negative
Salmonella	Negative in 25g
Temperature Stability	Stable at 0-120℃ (food processing temp); decomposes >220℃
pH Stability	Stable at pH 3.0-8.0 (100% efficacy retention)
Sequestrant Capacity	Chelates Ca^{2+} /Mg^{2+} (≥0.15 g/g at 25℃)
Storage Stability	24 months (unopened), 6 months after opening

3. Product Advantages

1. **Multi-Functional**: Integrates leavening, water retention, emulsification, sequestration, pH regulation and anti-caking functions; one additive meets multiple food processing needs, reducing production cost and ingredient types.

2. **High Efficiency Leavening**: Reacts with sodium bicarbonate to release uniform CO_2 bubbles, making bakery products fluffy with fine texture; no bitter taste at standard dosage.
3. **Excellent Water Retention**: Reduces meat/seafood juice loss by 15-25% during freezing, thawing and cooking; improves product yield and tenderness.

4. Application Fields & Recommended Dosage

Comply with **GB 2760-2021 (China)**, EC 1333/2008 (EU) and FDA 21 CFR 182.6769 (US) standards; adjust dosage according to food type, processing technology and quality requirements (all dosages are **w/w** based on food raw materials; GMP use for EU/US).

Application Field	Typical Products	Recommended Dosage	Core Effect
Bakery & Pastry	Bread, cake, biscuit, steamed bun, pastry	0.3-1.5%	Leavening, anti-caking, texture improvement
Processed Meat	Ham, sausage, bacon, lunch meat, preserved meat	0.5-2.0%	Water retention, emulsification, sequestration
Seafood	Frozen fish/shrimp, surimi, seafood balls, crab sticks	0.3-1.8%	Water retention, chelation, prevent discoloration
Dairy Products	Cheese, yogurt, milk powder, dairy beverage, ice cream	0.1-0.8%	Emulsification, sequestration, pH stabilization
Canned Food	Canned meat/fish/vegetable/fruit, bean products	0.2-1.0%	Water retention, sequestration, corrosion inhibition (can)
Beverage & Condiment	Carbonated beverage, fruit juice, soy sauce, salad dressing	0.05-0.3%	pH regulation, sequestration, flavor stabilization
Powder Food	Seasoning, milk powder, flour, nutritional powder	0.05-0.4%	Anti-caking, flowability improvement, sequestration
Fried Food	Fried chicken, french fries, dough sticks	0.1-0.6%	Crispness retention, water retention, oxidation prevention

5. Usage Methods & Formulation Guidelines

Key Tip: Can be used as solid powder or aqueous solution; for leavening, mix with baking soda (1:1 to 1:2 ratio) and add at the dough mixing stage; avoid contact with strong alkalis at high temperature (prevents hydrolysis); chelation effect is optimal at pH 4.0-6.0.

1. **Aqueous Solution Preparation**: Weigh the required amount of SAPP, dissolve in **food-grade deionized water** to prepare a 5-10% aqueous solution (1:9-1:19 powder:water); stir until completely dissolved (no undissolved particles). Suitable for liquid/semi-solid food (beverage, sauce, dairy, meat brine).

6. Packaging, Storage & Transportation

- **Small Packaging**: 1 kg/5 kg food-grade sealed HDPE plastic bags (inner PE liner, for small food factories and laboratory use)
- **Standard Packaging**: 25 kg food-grade HDPE plastic drums (sealed, dust-proof, moisture-proof; for industrial batch production)
- **Bulk Packaging**: 500 kg/1000 kg food-grade jumbo bags (inner PE liner, sealed; for large-scale food production)
- **Custom Packaging**: Customized weight and packaging form available according to customer requirements (vacuum packaging for high-humidity areas).

7. Safety Operation & Protection

1. **Operation Personnel**: Ordinary operators can operate after simple training (familiar with dosage limits and irritation protection); conduct regular occupational health examinations (at least once a year, focus on skin, eyes and respiratory system).
2. **Personal Protection**: Wear **basic PPE** during all operations: N95/P95 dust mask (dry operation), safety goggles (prevent dust/solution splashing) and nitrile rubber gloves (avoid skin contact); wear dust-proof overalls for large-scale operation.