

## Technical Data Sheet (TDS)

### 1. Product Overview

- Product Name: Pectin (Food Grade, High Methoxyl)
- English Name: Pectin
- CAS Number: 9000-69-5 (Registry No.:180-27-0)
- Formula:  $(C_6 H_{10} O_7)_n$  (Galacturonic acid heteropolysaccharide)
- Molecular Weight:  $5 \times 10^4 - 3 \times 10^5$  Da
- Product Characteristics: Food-grade Pectin is a natural heteropolysaccharide extracted from citrus peel and apple pomace (agricultural by-products), refined by washing, extraction, purification, precipitation, drying and crushing. Divided into high methoxyl (HM) and low methoxyl (LM) types, with excellent **gelling, thickening, stabilizing and emulsifying properties**. HM pectin forms stable gel under acidic (pH2.8-4.0) and high sugar ( $\geq 50\%$ ) conditions; LM pectin gels with  $Ca^{2+}$  without high sugar. ADI unrestricted (FAO/WHO), non-toxic, tasteless, safe for all population. Fully biodegradable, environmentally friendly, the most widely used natural food gelling agent in the global food industry.

### 2. Technical Specifications (Complies with Industrial Standards)

Item	Specification
Appearance	Off-white to pale yellow free-flowing powder, no caking
Total Pectin Content	$\geq 85.0\%$
Moisture Content	$\leq 10.0\%$
Ash Content	$\leq 5.0\%$
pH Value (25°C, 1% aqueous solution)	2.8-4.0
Esterification Degree (DE)	65-75% (High Methoxyl)
Gel Strength (15°C, 6.5% sol)	$\geq 150$ g/cm <sup>2</sup>
Viscosity (25°C, 1% aq. sol)	50-200 mPa·s
Insoluble Substances in Water	$\leq 1.0\%$
Heavy Metals (Pb)	$\leq 0.5$ ppm
Heavy Metals (As)	$\leq 0.1$ ppm
Total Bacterial Count	$\leq 1000$ CFU/g
Yeast & Mold	$\leq 100$ CFU/g
E. coli / Salmonella	Negative
Water Solubility	Soluble in hot water/syrup, insoluble in cold water/organic solvents
Temperature Stability	Stable at $<120^\circ\text{C}$ (gel strength retention $\geq 90\%$ )
pH Stability	Stable at pH 2.8-4.0 (gel strength retention $\geq 95\%$ )
Sugar Compatibility	Excellent (stable gel at $\geq 50\%$ sugar content)

### 3. Product Advantages

1. **100% Natural & Eco-Friendly:** Extracted from agricultural by-products (citrus peel/apple pomace), no synthetic additives; fully biodegradable, no environmental pollution; realizes resource recycling, green and sustainable.
2. **Excellent Gelling Performance:** Forms transparent, elastic and stable gel with good flavor release; gel strength is adjustable, suitable for various gel food products (jam, jelly, candy); no syneresis, long shelf life of gel products.
3. **Dual Functional Properties:** Integrates gelling, thickening, stabilizing and emulsifying functions; one product replaces multiple food additives, reduces production cost and formula complexity, improves product quality stability.
4. **Ultra-Safe & Wide Adaptability:** FAO/WHO ADI unrestricted (no daily intake limit); safe for all population including infants, pregnant women and allergic constitution; can be used in all types of food with no dosage limit.



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- 5. **Good Compatibility:** Compatible with all common food additives (sugars, organic acids, sweeteners, preservatives, other colloids) and food raw materials; synergistic effect with carrageenan, xanthan gum, starch to improve gelling/thickening performance.
- 6. **Process Adaptability:** Stable in food processing conditions (pasteurization, boiling, cold storage); gel strength remains unchanged, no hydrolysis or degradation; easy to use, suitable for large-scale industrial production.

## 4. Application Fields

Food-grade Pectin (high methoxyl) is a classic natural food gelling agent (ADI unrestricted, no dosage limit), suitable for **all types of gel food, beverage and dairy products**, with core applications in gelling, thickening and stabilizing:

- **Jam & Jelly Industry:** Strawberry jam, blueberry jam, fruit jelly, fruit paste; as core gelling agent, forms transparent and elastic gel, improves flavor release, prevents syneresis, extends product shelf life.
- **Beverage Industry:** Fruit juice, fruit tea, yogurt beverage, milk shake; as thickener/stabilizer, improves mouthfeel, prevents pulp precipitation, enhances system stability, resists acid and heat.
- **Dairy Industry:** Yogurt, cream, cheese, dessert; as stabilizer/emulsifier, improves smoothness and creaminess, prevents whey precipitation, enhances structural stability of dairy products.
- **Candy Industry:** Gummy candy, jelly candy, fruit candy; as gelling agent, forms transparent and chewy gel, good compatibility with sugar and fruit flavors, easy to demould.
- **Bakery & Pastry Industry:** Cake filling, pastry glaze, fruit pie; as thickener/stabilizer, improves water retention and viscosity of filling, prevents glaze stratification, enhances taste.
- **Canned Food Industry:** Fruit canned, fruit syrup canned; as gelling agent/thickener, improves the consistency of syrup, prevents fruit floating/sedimentation, maintains product shape.

## 5. Usage Methods

Food Type	Recommended Dosage	Core Function
Jam/Jelly	0.5-1.5%	Gelling/thickening
Gummy Candy/Jelly Candy	1.0-2.5%	Gelling/forming
Fruit Juice/Beverage	0.1-0.5%	Thickening/stabilization
Yogurt/Cream	0.2-0.8%	Stabilization/emulsification
Cake Filling/Pastry Glaze	0.3-1.0%	Thickening/water retention
Fruit Canned/Syrup	0.2-0.6%	Thickening/suspension

## 6. Packaging & Storage

- Small Batch: 1kg/5kg/10kg – Food-grade aluminum foil vacuum bags (moisture-proof, oxygen-free) with outer carton; for small-scale production/laboratory/retail use.
- Standard Batch: 25kg – Food-grade HDPE plastic drums (sealed) with inner plastic film, or woven bags with inner aluminum foil bag; free-flowing powder, 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.
- Custom Packaging: 200g/500g food-grade small vacuum bags available upon request for household and small-batch food preparation.

## 7. Safety & Protection

- The product is food-grade, non-toxic, non-irritating; wear **FFP1 dust mask, safety goggles and nitrile rubber gloves** during bulk processing (prevent dust inhalation and powder adhesion); wear non-slip food-grade safety shoes to prevent slipping.
- Operate in a well-ventilated area with dust suppression facilities (mist spray); avoid dry sweeping of spilled powder (reduce dust dispersion); wash hands with soap and water after handling.
- Avoid direct contact of powder with eyes for sensitive individuals; rinse with plenty of water for 5-10 minutes if contact occurs; consult a doctor if irritation persists.
- No special safety measures for small-scale use; keep the product out of reach of children (only to prevent accidental ingestion of large amount of powder).