

Technical Data Sheet (TDS)

- Hpch (Hydroxy Propyl Chitosan)

Revision Date: 28 FEB 2026

Product Name

Hpch (Hydroxy Propyl Chitosan) 羟丙基壳聚糖 **CAS Number:** 9012-76-4 (chitosan base; modified derivative, no single CAS) **Formula:** Hydroxypropyl modified chitosan polysaccharide **Form:** Off-white to white free-flowing powder (Industrial/Cosmetic/Food Grade) **Odor:** Faint natural amine scent, no pungent odor

1. Product Overview

Hpch (Hydroxy Propyl Chitosan) is a water-dispersible modified chitosan derivative prepared by grafting hydroxypropyl groups onto chitosan molecular chains through etherification reaction. It retains the biocompatibility, biodegradability and film-forming properties of natural chitosan, and has significantly improved water dispersibility, solubility and viscosity stability. The off-white free-flowing powder forms a transparent and stable colloid after being dispersed in water, with adjustable viscosity, good film-forming ability, moisture retention and biocompatibility. It complies with industrial, cosmetic and food grade standards, with low heavy metal and ash content, and no harmful microbial residues. It is widely used as a thickener, film-forming agent, moisture retention agent and flocculant in cosmetics, pharmaceuticals, food processing, water treatment and industrial coatings.

2. Technical Specifications (Complies with Industrial/Cosmetic/Food Grade Standard)

Item	Specification
Appearance	Off-white to white free-flowing powder, no caking/agglomeration
Degree of Substitution (Hydroxypropyl)	0.3 ~ 1.2
Moisture Content	≤ 10.0%
Ash Content	≤ 1.0%
pH Value (1% aq. dispersion, 25°C)	5.0 ~ 7.5
Viscosity (1% aq. dispersion, 25°C)	50 ~ 1000 mPa s
Solubility	Dispersible in water to form clear colloid; insoluble in organic solvents
Heavy Metals (Pb)	≤ 5 ppm
Heavy Metals (As)	≤ 1 ppm
Total Bacterial Count	≤ 1000 CFU/g
E. coli/Staphylococcus aureus	Negative
Film-Forming Property	Form flexible, transparent and water-resistant film
Stability (25°C, 6 months)	No caking, viscosity change ≤ 10%

3. Product Advantages

- Excellent Water Dispersibility:** Overcomes the poor water solubility of natural chitosan, disperses quickly in water to form a stable colloid without organic solvents.
- Adjustable Performance:** Controllable hydroxypropyl substitution degree and viscosity, customizable according to different application requirements.
- Good Biocompatibility:** Biodegradable, non-toxic, non-irritating, safe for human body and the environment, compliant with cosmetic and food grade standards.
- Multi-functional Properties:** Integrates thickening, film-forming, moisture retention, flocculation and antibacterial properties, one material with multiple uses.
- Stable Performance:** Good thermal and pH stability, no easy degradation under normal use conditions, stable colloid performance.
- Good Compatibility:** Compatible with most water-based additives, polymers and active ingredients, no adverse reaction, easy to formulate.

4. Application Fields



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- **Cosmetic Industry:** Moisturizer, thickener, film-forming agent and antibacterial agent for skin care products, hair care products and facial masks; improves skin hydration and product texture.
- **Pharmaceutical Industry:** Excipient for sustained-release preparations, film coating material for tablets, and wound dressing raw material; with good biocompatibility and biodegradability.
- **Food Industry:** Food thickener, stabilizer and film-forming fresh-keeping agent; used in beverage, dairy product and fruit and vegetable fresh-keeping, compliant with food safety standards.
- **Water Treatment:** High-efficiency flocculant for domestic and industrial wastewater treatment; adsorbs heavy metal ions and organic pollutants, environmentally friendly flocculation.
- **Industrial Coatings:** Film-forming agent and thickener for water-based coatings and inks; improves coating adhesion, water resistance and leveling property.
- **Other Fields:** Textile finishing agent (improves fabric moisture retention and antibacterial property); agricultural film-forming agent (pesticide slow release, soil moisture retention).

5. Usage Methods

Dosage & Preparation (Adjust according to application scenario)

- **Cosmetics:** 0.1~2.0% of the total formulation; disperse in deionized water (stir at 30~40°C) to form a colloid, then add other ingredients.
- **Pharmaceuticals:** 0.5~5.0% as excipient/coating material; prepare aqueous dispersion with appropriate viscosity according to preparation process.
- **Food Industry:** 0.05~1.0% as thickener/stabilizer; disperse in water or food matrix, stir evenly at room temperature.
- **Water Treatment:** 5~50 ppm (dilute to 0.1% aqueous dispersion); add to wastewater with stirring, flocculation and sedimentation for 10~30 min.
- **Industrial Coatings:** 0.5~3.0% of water-based coating formulation; disperse in water first, then compound with resin and pigments.

Key Preparation Tips

- Add the powder slowly to stirring water to avoid agglomeration; increase stirring speed appropriately (300~500 rpm).
- Appropriate heating (30~40°C) can accelerate dispersion, avoid high temperature (>60°C) to prevent molecular chain degradation.
- Adjust pH value to 5.0~7.5 for the best dispersion and stability; avoid strong acid and strong base environment.

6. Packaging & Storage

Packaging Specifications (Sealed, Moisture-Proof)

- 500 g HDPE sealed plastic jar (laboratory/R&D small-batch use)
- 1 kg / 5 kg HDPE moisture-proof plastic bucket (cosmetic/food small-scale use)
- 25 kg HDPE lined woven bag (industrial bulk use)
- 1000 kg IBC tote (large-scale water treatment/coating use)
- Custom packaging (2 kg/10 kg) available for customer process requirements.

Storage Conditions

- **Core Requirement:** Store in a **cool, dry, well-ventilated warehouse** at 5~25°C; relative humidity ≤60%; avoid direct sunlight, high temperature and moisture.

7. Safety & Protection

- The product is non-toxic, non-irritating and environmentally friendly; powder dust may cause mild respiratory tract irritation during handling, and direct contact with eyes may cause mild discomfort.
- **Recommended PPE:** Disposable nitrile gloves, dust mask (KN95 grade), chemical safety goggles (for large-scale handling); wear protective clothing to avoid powder contamination.
- **Accident Treatment:**
 - Skin Contact: Rinse the affected area with plenty of running water for 3~5 minutes; no special treatment needed for mild contact.
 - Eye Contact: Rinse eyes with plenty of clean running water for 5~10 minutes (pry open eyelids); consult an ophthalmologist if irritation persists.