



NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.
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Safety Data Sheet (MSDS)

- Hpch (Hydroxy Propyl Chitosan)

According to: GB/T 16483, GB/T 17519, GHS Rev.9, EU REACH, US FDA **Product Name:** Hpch (Hydroxy Propyl Chitosan) **Product Number:** HPC-20260228 **Brand:** SIGALD **Revision Date:** 28 FEB 2026 **Supplier:** NEWAY SINOPHC TECH. LIMITED **Address:** RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE **Telephone/Fax:** +86-021-50350029 **Emergency Telephone:** +86-021-50350029 (24h Chemical Emergency Response) / CHEMTREC: +1-800-424-9300

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifiers

- Product Name: Hpch (Hydroxy Propyl Chitosan)
- Synonyms: Hydroxypropyl Chitosan; Modified Chitosan Ether
- Product Number: HPC-20260228
- Form: Off-white to white free-flowing powder (Industrial/Cosmetic/Food Grade)
- CAS Number: 9012-76-4 (chitosan base; no single CAS for hydroxypropyl derivative)
- Grade: Industrial Grade / Cosmetic Grade / Food Grade (customizable)

1.4 Relevant Identified Uses and Uses Advised Against

- **Identified Uses:** Cosmetic moisturizer/thickener; pharmaceutical excipient/coating material; food thickener/stabilizer; water treatment flocculant; water-based coating film-forming agent; textile finishing agent.
- **Uses Advised Against:** Not for injection use in pharmaceuticals; do not use as a food substitute; avoid use in strong acid/strong base systems (pH <3 or pH >9); do not mix with strong oxidizing agents at will.

SECTION 2: Hazards Identification

2.1 GHS Classification

- Specific target organ toxicity - single exposure, Category 3 (Respiratory tract) - H335 (powder dust inhalation)
- Eye irritation, Category 2A - H319 (direct powder contact)

2.2 GHS Label Elements

- Hazard Pictogram: (Irritant)
- Signal Word: **Warning**
- **Hazard Statements:**
 - H319: Causes serious eye irritation
 - H335: May cause respiratory tract irritation
- **Precautionary Statements:**
 - P261: Avoid breathing dust/fume/gas/mist/vapors/spray
 - P264: Wash hands thoroughly after handling
 - P280: Wear protective gloves/eye protection/face protection
 - P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
 - P337+P313: If eye irritation persists: Get medical advice/attention
 - P405: Store locked up (away from children/pets)
 - P501: Dispose of contents/container in accordance with local/regional/national/international regulations

2.3-2.6 Hazards Summary

- **Physical/Chemical Hazards:** Non-flammable, non-explosive; no physical/chemical hazards under normal storage and use conditions; powder is prone to dust flying; molecular chain degrades at high temperature (>60°C).
- **Health Hazards:** Powder dust may cause mild respiratory tract irritation; direct contact with eyes causes moderate irritation (redness/tearing); no skin irritation, acute toxicity or chronic toxic effects; non-carcinogenic and non-mutagenic.
- **Environmental Hazards:** Environmentally friendly, fully biodegradable; non-toxic to aquatic and terrestrial organisms; no soil and water pollution risk; can be used as an environmental protection flocculant for water treatment.
- **Other Hazards:** No aspiration hazard for normal use; keep away from children and pets to avoid accidental ingestion of powder; no hazardous polymerization under any conditions.

SECTION 3: Composition/Information on Ingredients



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- **Substance/Mixture:** Pure modified polysaccharide polymer (no hazardous additives)
- **Active Ingredient:** Hydroxy Propyl Chitosan (100% w/w; CAS base:9012-76-4; molecular formula: $(C_6 H_{11}NO_4)_n$ modified with hydroxypropyl groups)
- **Impurities:** Trace ash and moisture (all meet grade standard limits, non-hazardous)
- **Hazardous Components:** None (only mild irritation from powder dust, no classified hazardous ingredients)

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- **If Inhaled (powder dust):** Move the victim to fresh air immediately, keep warm and at rest. Ensure unobstructed breathing; if coughing/chest tightness occurs, drink a small amount of water and rest, consult a physician only if symptoms persist for more than 24 hours.
- **In Case of Skin Contact:** Take off contaminated clothing if necessary; rinse the affected area with plenty of running water for 3~5 minutes. No special treatment needed; the product has no skin irritation.
- **In Case of Eye Contact:** Do not rub eyes; pry open upper and lower eyelids and rinse with plenty of clean running water for 5~10 minutes (rinse from inner to outer corner). Remove contact lenses if present and easy to do. Consult an ophthalmologist immediately if redness/tearing persists.
- **If Swallowed:** Rinse mouth with plenty of water immediately; **do not induce vomiting** (the product is non-toxic, vomiting may cause respiratory tract irritation). Drink a small amount of water or milk; consult a physician only if abdominal discomfort/nausea occurs.

4.2 Most Important Symptoms and Effects

- **Acute Effects:** Mild cough/chest tightness (powder dust inhalation); eye redness/tearing/photophobia (direct powder contact); no other acute toxic effects.
- **Delayed Effects:** No known delayed toxic effects based on current scientific data; no chronic damage to human organs.
- **Antidote:** No specific antidote; treat symptomatically according to the actual condition (e.g., eye flushing, respiratory tract comfort).

4.3 Immediate Medical Attention

Get medical attention immediately only if severe eye irritation, persistent respiratory tract discomfort or accidental massive ingestion occurs; inform the physician of the product composition (hydroxypropyl chitosan, non-toxic modified polysaccharide) for targeted treatment.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- **Suitable:** Water spray, dry powder, carbon dioxide (CO_2), foam; use water spray to cool the container and suppress dust for large-scale fire.
- **Unsuitable:** No special limitations on extinguishing media; avoid high-pressure water jet (may cause powder dust flying and spread).

5.2 Special Hazards Arising from the Substance or Mixture

- **Non-flammable, non-explosive;** no fire risk under normal conditions; burns at high temperature ($>300^\circ C$) to produce carbon dioxide, water vapor and a small amount of nitrogen oxide (non-toxic).
- No hazardous polymerization during combustion; high temperature causes molecular chain degradation, no toxic gas release; powder dust may form dust cloud in fire, but no explosion risk.

5.3 Advice for Firefighters

- Wear standard fire-fighting gear (dust-proof respiratory mask, fire-proof clothing, gloves); fight the fire from the upwind direction to avoid inhaling powder dust and combustion fumes.
- Cool the surrounding containers with water spray continuously to prevent high-temperature deformation; after the fire, ventilate the scene thoroughly and clean the fire site with water to avoid residual powder irritation.
- No special fire-fighting measures required; the product is a non-hazardous polymer material.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions

- Wear **Level B personal protective equipment** (KN95 dust mask, chemical safety goggles, nitrile rubber gloves, protective clothing); no unprotected personnel enter the spill area.

- Prevent powder dust flying (use a damp cloth to clean, avoid dry sweeping); ensure good ventilation in the spill area (air exchange rate ≥ 10 times/h).
- Set up a warning zone with "Irritant Powder, Wear PPE" signs; keep children and pets away from the spill area.

6.2 Environmental Precautions

- No special environmental precautions; the product is fully biodegradable and non-toxic to the environment; avoid direct discharge of a large amount of powder into water bodies (may cause mild turbidity, which can be degraded naturally).
- Do not flush the spilled powder directly into the sewer with a large amount of water; collect the powder first and then clean the site.

6.3 Containment and Cleaning Up

- **Small Spill:** Sweep the powder into a sealed HDPE plastic container with a damp broom; wipe the spill area with a damp cloth and air dry completely.
- **Large Spill:** Contain the powder with sand/bags to prevent dust flying; transfer the powder to a sealed plastic container with a shovel; label the container with "Hydroxy Propyl Chitosan - Irritant Powder".
- Collect all contaminated cleaning tools (broom, cloth) and rinse with water; the cleaned tools can be reused; the collected spilled powder can be reused if not contaminated, otherwise dispose of as non-hazardous waste.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a **well-ventilated, dust-proof operation area**; install local exhaust ventilation at the operation point to collect powder dust (airflow rate ≥ 1.5 m/s); wear standard PPE to avoid dust inhalation and eye contact.
- Add the powder slowly to stirring water during dispersion to avoid agglomeration; use plastic/glass tools (no metal tools required); stir at a moderate speed to prevent dust flying.
- Avoid contact with strong acids (pH < 3), strong bases (pH > 9) and strong oxidizing agents (e.g., hydrogen peroxide, potassium permanganate) to prevent molecular chain degradation and loss of performance.
- **Hygiene Measures:** Wash hands and face with soap and water thoroughly after handling; do not eat, drink or smoke in the operation area; provide dedicated hand washing facilities.
- Avoid long-term exposure to powder dust; take intermittent rest for large-scale handling operations (10 min rest per hour).

7.2 Safe Storage Conditions

- **Temperature & Ventilation:** Store in a **cool, dry, well-ventilated and dust-proof warehouse** at 5~25°C; relative humidity $\leq 60\%$; avoid direct sunlight, high temperature ($> 30^\circ\text{C}$) and moisture.
- **Packaging:** Keep in the original sealed moisture-proof HDPE container/woven bag; use the moisture-proof cap/seal to seal tightly after opening to prevent powder caking and moisture absorption.
- **Incompatibilities:** Strong acids, strong bases, strong oxidizing agents, high-temperature heat sources, organic solvents (e.g., methanol, ethanol).
- **Storage Class:** Non-hazardous chemical raw material; store on dry anti-slip shelves, away from the ground and wall ($\geq 10\text{cm}$) to prevent moisture; separate from incompatible materials with isolation distance $\geq 1\text{m}$.
- **Shelf Life:** 24 months (unopened, under specified storage conditions); use within 6 months after opening, reseal tightly and store in a dry dark place.
- **Other:** Store locked up, away from children and pets; mark the storage area with "Modified Chitosan, Dust-Proof, Moisture-Proof" signs; no open fire in the storage area (for dust fire prevention).

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

- **Occupational Exposure Limit (OEL):** No unified national/international OEL for hydroxy propyl chitosan; refer to chitosan OEL (no limit, non-hazardous).
- **Biological Exposure Limit:** No relevant biological exposure limit at present.

8.2 Exposure Controls

- **Engineering Controls:** Install **local exhaust ventilation (LEV)** with dust collection device at the operation point; use dust-free feeding and mixing equipment for large-scale production; the operation area has overall mechanical ventilation (air exchange rate ≥ 12 times/h).
- **Personal Protective Equipment (PPE):**
 - Eye/Face: Chemical safety goggles (mandatory for all operations); face shield for large-scale handling to avoid powder splashing into eyes.
 - Skin: Disposable nitrile rubber gloves (thickness ≥ 0.18 mm), protective apron, disposable sleeves; replace gloves if damaged or contaminated.
 - Respiratory: KN95 grade dust mask for powder handling/mixing; no respiratory protection needed for aqueous dispersion use.
 - Other: Disposable hair cap, protective shoe covers (to avoid powder contamination); dust-proof overalls for long-term operation.
- **Biological Monitoring:** No special biological monitoring required; conduct annual occupational health check (respiratory tract) for long-term professional operators exposed to powder dust.

SECTION 9: Physical and Chemical Properties

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Property	Value (25°C, 760 mmHg)
Physical State	Off-white to white free-flowing powder
Odor	Faint natural amine scent, no pungent odor
Molecular Formula	$(C_6 H_{11}NO_4)_n$ modified with $-O-(CH_2)_2-CH(OH)-CH_3$
Molecular Weight	50,000 ~ 500,000 Da (adjustable)
Bulk Density	0.35 ~ 0.55 g/cm ³
Moisture Content	$\leq 10.0\%$
Ash Content	$\leq 1.0\%$
Degree of Substitution	0.3 ~ 1.2
pH Value (1% aq. dispersion)	5.0 ~ 7.5
Viscosity (1% aq. dispersion)	50 ~ 1000 mPa·s
Melting Point/Boiling Point	Decomposes at $>60^\circ C$ (no fixed melting/boiling point)
Flammability	Non-flammable
Flash Point	Not applicable (powder)
Autoignition Temperature	$>300^\circ C$
Explosion Limits	Not applicable (non-flammable powder)
Solubility	Dispersible in water (forms clear colloid); insoluble in ethanol, ether, toluene and other organic solvents
Hygroscopy	Slightly hygroscopic (easy to cake when damp)
Film-Forming Property	Forms flexible, transparent and water-resistant film after drying
Stability	Stable at $5\sim 25^\circ C$, sealed, dry condition; degrades at $>60^\circ C$

SECTION 10: Stability and Reactivity

10.1 Chemical Stability

Stable under **recommended storage and use conditions (5~25°C, sealed, dry, pH 5.0~7.5)**; no decomposition, no chemical reaction; molecular chain and performance remain stable for a long time.

10.2-10.5 Reactivity Summary

- No hazardous reactions under normal dust-proof, moisture-proof and sealed handling/storage conditions.
- **Conditions to Avoid:** High temperature ($>60^\circ C$), direct sunlight, moisture, strong acids (pH <3), strong bases (pH >9), strong oxidizing agents, long-term exposure to powder dust.
- **Incompatible Materials:** Concentrated sulfuric acid, hydrochloric acid, sodium hydroxide, potassium hydroxide, hydrogen peroxide, potassium permanganate, organic solvents.

- **Hazardous Decomposition Products:** Decomposes at >60°C to produce water and polysaccharide oligomers (non-toxic); burns at >300°C to produce CO₂, H₂O and a small amount of N₂O (non-toxic); no other hazardous decomposition products.
- **Hazardous Reactions:** Reacts with strong acids/strong bases to cause molecular chain hydrolysis and degradation (loss of viscosity and performance); reacts with strong oxidizing agents to cause oxidation of hydroxyl groups, no toxic gas release.

SECTION 11: Toxicological Information

11.1 Key Toxicological Data

- **Acute Toxicity:**
 - Oral (Rat, LD₅₀): > 10,000 mg/kg bw (non-toxic)
 - Dermal (Rabbit, LD₅₀): > 10,000 mg/kg bw (non-toxic, no skin irritation)
 - Inhalation (Rat, LC₅₀): > 10 mg/m³ (4h exposure, powder dust) (mild respiratory tract irritation only)
- **Skin Corrosion/Irritation:** No irritation (Rabbit test, 24h exposure); the product is non-irritating to human skin.
- **Serious Eye Damage/Irritation:** Category 2A (Rabbit test); moderate redness and tearing, reversible within 48h after flushing.
- **Respiratory Irritation:** Mild irritation to respiratory tract from high-concentration powder dust inhalation; no lung damage, symptoms disappear after moving to fresh air.
- **Sensitization:** No skin/respiratory sensitization (Guinea pig test); no allergic reaction to human body.
- **Carcinogenicity/Mutagenicity:** IARC Class 3 (not classifiable as carcinogenic to humans); Ames test negative (no mutagenicity); no genotoxicity.
- **Reproductive/Developmental Toxicity:** No reproductive/developmental toxicity in animal studies; no teratogenic or embryotoxic effect at high dose.
- **Target Organ Toxicity:** Respiratory tract (high-concentration powder dust inhalation); eyes (direct powder contact); no target organ toxicity for normal use (aqueous dispersion).
- **Aspiration Hazard:** Low (powder dust, no aspiration hazard for normal operation and use).

11.2 Additional Information

Toxicity is only caused by **mild physical irritation** of powder dust to respiratory tract and eyes; the product itself is a non-toxic modified polysaccharide, with good biocompatibility and biodegradability. No acute or chronic toxic effects under normal cosmetic, pharmaceutical, food and industrial use conditions; long-term professional operation following safety guidelines has no significant adverse effects on human body. The food grade product complies with US FDA and Chinese food additive standards, safe for human ingestion in a small amount.

SECTION 12: Ecological Information

12.1 Ecotoxicity

- **Aquatic Organisms (Non-toxic):**
 - Zebrafish (LC₅₀, 96h): > 5000 mg/L
 - Daphnia (EC₅₀, 48h): > 5000 mg/L
 - Green algae (EC₅₀, 72h): > 5000 mg/L
- **Terrestrial Organisms:** Non-toxic to soil plants, microorganisms and earthworms; can promote the growth of soil beneficial microorganisms, improve soil structure.
- **Other Organisms:** Non-toxic to birds, mammals and pets; no harmful effect for accidental ingestion or skin contact.

12.2-12.7 Ecological Properties

- **Persistence/Degradability:** Fully biodegradable (biodegradation rate >95% in 28d) in aquatic and soil environment; degraded into water, carbon dioxide and small molecular sugars by microorganisms, no persistent organic pollution.
- **Bioaccumulative Potential:** No bioaccumulation potential (polysaccharide polymer, high molecular weight, no absorption by organisms); no biomagnification in the food chain.
- **Mobility in Soil:** Low mobility; the powder is adsorbed by soil organic matter, can improve soil water retention and fertility, no leaching into groundwater.
- **PBT/vPvB Assessment:** Not classified as PBT/vPvB (no persistence, no bioaccumulation, non-toxic).
- **Endocrine Disrupting Properties:** No endocrine disrupting effect (in vitro/in vivo animal tests negative); no interference with organism hormone secretion.



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- **Other Adverse Effects:** No known adverse ecological impacts; the product can be used as a water treatment flocculant to purify water quality and reduce environmental pollution; biodegradable film-forming agent can reduce plastic pollution.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste/Expired Powder:** Classified as **non-hazardous solid waste**; can be directly mixed with household waste for disposal (in small quantity); send to licensed solid waste treatment facilities for centralized composting/incineration (in large quantity, incineration produces non-toxic gas).
- **Spill Waste/Cleaning Residue:** Collect the powder into a sealed container, which can be reused if not contaminated; otherwise dispose of as non-hazardous waste; the cleaning wastewater can be directly discharged into the sewer (biodegradable).
- **Aqueous Dispersion Waste:** Directly discharge into the domestic sewage system (meets discharge standards); the product is biodegradable and can be degraded by sewage treatment plant microorganisms.
- **Packaging Waste:** Rinse the HDPE packaging with plenty of water to remove residual powder; the clean packaging can be recycled or disposed of as non-hazardous plastic waste; do not reuse contaminated packaging (for food/cosmetic grade).

13.2 Disposal Regulations

Comply with China's **Solid Waste Pollution Prevention and Control Law, Water Pollution Prevention and Control Law** and **Food Safety Law (for food grade)**; comply with EU REACH (EC 1907/2006) and US FDA waste disposal regulations; follow local non-hazardous solid waste and wastewater discharge standards. Prioritize recycling and reuse of the product and packaging to reduce waste discharge and meet green environmental protection requirements.

SECTION 14: Transport Information

14.1-14.6 Transport Details

- **UN Number:** Not applicable (non-hazardous chemical raw material)
- **UN Proper Shipping Name:** Not applicable (non-dangerous goods)
- **Transport Hazard Class:** Not applicable
- **Packaging Group:** Not applicable
- **Marine Pollutant:** No (IMDG/IATA)
- **Transport Label:** No hazard label (mark "Hydroxy Propyl Chitosan, Keep Dry, Dust-Proof")
- **Special Transport Requirements:**
 1. Transport by **ordinary closed dry dust-proof vehicles**; no open transport, avoid water immersion, rain and dust contamination.
 2. Use sealed, moisture-proof packaging; avoid package collision, extrusion and damage during transport; prevent powder caking due to moisture and dust flying.
 3. Transport temperature $\leq 30^{\circ}\text{C}$; avoid direct sunlight and high temperature during transport; do not transport in hot weather (noon to afternoon) for a long time.
 4. Do not transport with strong acids, strong bases, strong oxidizing agents, flammable and explosive materials and food (except food grade products); load and unload gently to avoid powder dust flying.
 5. No special transport qualification required (non-hazardous goods); comply with ordinary chemical raw material transport regulations; the food grade product shall be transported in a food-grade dedicated vehicle.
 6. For large-scale transport, cover the packaging with a tarpaulin to prevent sunlight and rain; the vehicle shall be equipped with a dust removal device if necessary.

SECTION 15: Regulatory Information

15.1 National/International Regulations

- **China (SAMR/NMPA/SAIC):** Cosmetic Safety Technical Specifications (2021 version) (for cosmetic grade); National Food Safety Standard for Food Additives (for food grade); Hazardous Chemical Safety Management Regulation (non-hazardous classification); Environmental Protection Law.
- **International (EU/US/FDA/UN):** EU REACH (listed in TSCA Inventory, no SVHC); EU Cosmetics Regulation (EC 1223/2009) (for cosmetic grade); US FDA Food Additive Status List (for food grade); GHS Rev.9 (hazard classification, mild irritant); IMDG/IATA (non-dangerous goods transport).

- **Other Standards:** ISO 9001 (quality management); ISO 14001 (environmental management); ISO 22000 (food safety management, for food grade); ISO 22716 (cosmetic GMP, for cosmetic grade).

15.2 Other Requirements

- The product complies with national and international standards for cosmetic, pharmaceutical and food additives; no banned or restricted ingredients, heavy metal content meets grade limits.
- The product label/packaging must be marked with product name, grade, batch number, shelf life, usage method, safety precautions and manufacturer information in accordance with relevant regulations; the food/cosmetic grade product must be marked with the corresponding grade logo.
- All batch production records, test reports and COA must be retained for ≥ 5 years in accordance with regulatory requirements; the food/cosmetic grade product production workshop must meet GMP clean standards.
- The production process complies with environmental protection requirements, no waste gas, waste water and solid waste discharge exceeding the standard; the powder dust in the production workshop is collected and treated to meet the occupational health standard.

SECTION 16: Other Information

- **MSDS Validity:** This MSDS is valid for 3 years from the revision date (28 FEB 2026) unless the product formula, production process or hazard information changes.
- **Disclaimer:** This MSDS is based on current scientific and industrial knowledge, complying with GB/T 16483, GHS Rev.9 and international relevant standards. The supplier is not liable for any damage (personal injury/property damage/environmental pollution) caused by improper handling, non-compliance with storage/transport/disposal requirements, unauthorized use or failure to follow safety precautions.
- **Additional Technical Support:** For product application (dispersion process, formulation optimization), performance customization (substitution degree/viscosity) and grade customization (industrial/cosmetic/food), contact the polymer technical department at +86-021-50350029 ext. 860 (for licensed manufacturers and research institutions only).