

## Technical Data Sheet (TDS)

### 1. Product Overview

- Product Name: Polyepoxysuccinic Acid (PESA)
- English Name: Polyepoxysuccinic Acid
- CAS Number: 1528-98-7
- Formula:  $(C_4H_4O_5)_n$  (n = 50-200)
- Molecular Weight: Variable (5000-20000 g/mol)
- Product Characteristics: High-efficiency, phosphorus-free, biodegradable water treatment agent. Combines scale inhibition, corrosion resistance, and chelation properties. Effectively inhibits scale formation (calcium carbonate, calcium sulfate, calcium phosphate, magnesium hydroxide) and metal corrosion (steel, copper, aluminum). Stable over a wide pH range (2.0-11.0) and high temperature ( $\leq 150^\circ C$ ). Non-toxic, fully biodegradable ( $BOD_5 / COD > 0.7$ ), and environmentally friendly (no eutrophication risk).

### 2. Technical Specifications (Complies with GB/T 22627-2014)

Item	Specification
Appearance	Colorless to pale yellow transparent liquid
Solid Content	30.0-40.0%
pH Value (1% Aqueous Solution, 25°C)	4.0-6.0
Scale Inhibition Efficiency (CaCO <sub>3</sub> , 25°C, 24h)	≥ 90%
Scale Inhibition Efficiency (CaSO <sub>4</sub> , 25°C, 24h)	≥ 85%
Corrosion Rate (304 Stainless Steel, 25°C, 72h)	≤ 0.05 mm/a
Heavy Metals (Pb)	≤ 0.0005%
Arsenic (As)	≤ 0.0001%
Iron (Fe)	≤ 0.001%
Phosphorus Content (as PO <sub>4</sub> <sup>3-</sup> )	≤ 0.05%
Free Monomer (as Succinic Acid)	≤ 1.0%
Density (25°C)	1.10-1.18 g/cm <sup>3</sup>
Viscosity (25°C, 2% Solution)	50-300 mPa·s
Temperature Stability	Stable at $\leq 150^\circ C$ (scale inhibition efficiency $\geq 85\%$ )

### 3. Product Advantages

1. **Phosphorus-Free & Environmental Friendly:** No phosphorus content, avoids eutrophication; fully biodegradable, compliant with global environmental standards.
2. **Dual Function:** Simultaneous scale inhibition and corrosion resistance, reducing the need for multiple additives.
3. **Wide Adaptability:** Effective in high-hardness, high-alkalinity, and high-temperature water systems; pH range 2.0-11.0.
4. **Strong Chelation:** Chelates with calcium, magnesium, iron, and other metal ions, preventing scale deposition and metal corrosion.
5. **Compatibility:** Compatible with other water treatment chemicals (bactericides, algacides, zinc salts, polyacrylamide).
6. **Cost-Effective:** Low dosage (2-20 mg/L); stable performance under harsh water conditions, reducing maintenance costs.

### 4. Application Fields

- **Industrial Circulating Water:** Cooling water systems, boiler water, central air conditioning circulating water, power plant circulating water.
- **Desalination Plants:** Reverse osmosis (RO) system pretreatment, seawater desalination water treatment.



# NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.  
Email:marketing01@newayphc.com; Phone:+86-021-50350029 <https://www.newayphc.com>

- **Metallurgical & Chemical Industry:** Steel mill cooling water, chemical processing water, oilfield injection water.
- **Detergent & Cleaning:** Detergent additive (scale inhibitor, dispersant); metal surface cleaning agent.
- **Other Fields:** Municipal water treatment, wastewater reuse systems, food processing plant water treatment.

## 5. Usage Methods

- **Dosage:**
  - Industrial Circulating Water: 2-20 mg/L (adjust based on water hardness and system conditions).
  - Desalination Plants: 5-30 mg/L.
  - Detergent Additive: 0.5-5.0% (based on total formulation weight).
- **Dilution:** Dilute with water at 1:10-1:100 (product: water) before use; stir evenly to ensure uniform dispersion.
- **Addition Method:** Continuously add via metering pump to the water inlet of the system; monitor water quality (hardness, pH, corrosion rate) regularly to adjust dosage.
- **Optimal Conditions:** pH 2.0-11.0, temperature  $\leq 150^{\circ}\text{C}$ ; can be used alone or compounded with other water treatment agents (e.g., zinc chloride, PBTCA) for enhanced performance.

## 6. Packaging & Storage

- **Packaging Specifications:**
  - 25 kg HDPE plastic drums (net weight)
  - 200 kg HDPE plastic drums (net weight)
  - 1000 kg IBC totes (net weight)
  - Custom packaging available upon request.
- **Storage Conditions:**
  - Store in a cool, dry, well-ventilated warehouse ( $5-35^{\circ}\text{C}$ ); avoid direct sunlight and high temperature.
  - Keep containers tightly closed to prevent contamination and evaporation.
  - Store separately from strong oxidizing agents, concentrated acids, and bases; avoid mixing.
  - Do not freeze (protect from temperatures  $\leq 0^{\circ}\text{C}$ ).
- **Shelf Life:** 18 months (unopened, under specified conditions); 6 months after opening.
- **Transportation:**
  - Non-hazardous goods; transport by ordinary vehicles (road, rail, sea, air).
  - Avoid collision, leakage, direct sunlight, and extreme temperatures during transport.

## 7. Safety & Protection

- The product is low-toxic and mild; mild skin/eye irritation may occur in sensitive individuals.
- Wear nitrile rubber gloves and safety glasses during operation; avoid direct contact with skin and eyes.
- In case of skin contact, rinse with plenty of water for 5-10 minutes; for eye contact, rinse for 10-15 minutes and consult a doctor if irritation persists.
- Do not ingest; if swallowed, rinse mouth with water and seek medical attention if discomfort occurs.

## 8. Quality Assurance

- Manufactured in accordance with ISO 9001 quality management system and ISO 14001 environmental management system.
- Each batch is tested with a Certificate of Analysis (COA) to meet GB/T 22627-2014 and industrial standards.
- Provide technical support: dosage adjustment, water quality testing, system optimization, and compatibility testing.