

Technical Data Sheet (TDS)

1. Product Overview

- Product Name: 硫代硫酸钠五水合物 - English Name: Sodium Thiosulfate Pentahydrate - CAS Number: 10102-17-7 - Formula: $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ - Molecular Weight: 248.18 g/mol - Product Characteristics: High-purity inorganic sulfur compound (hydrated salt) with excellent chlorine removal, reduction and chelating performance; good water solubility (≥ 120 g/100 mL at 25°C); dissolves quickly without residue; stable chemical properties under normal conditions (5-30°C); non-flammable, low toxicity; wide pH adaptation range (4.0-10.0); prone to deliquescence in humid environment; compatible with most water treatment agents and textile auxiliaries; suitable for water treatment, photography, medical treatment, textile and other industrial fields.

2. Technical Specifications (Complies with GB/T 637-2006)

Item	Specification
Appearance	Colorless transparent crystals, no mechanical
Purity (by Titration)	$\geq 99.0\%$
Melting Point Range	40-45°C (loses crystal water)
Ash Content	$\leq 0.1\%$
Crystal Water Content	36.0-37.5%
Free Moisture Content	$\leq 0.2\%$
pH Value (25°C, 1% Aqueous)	6.0-8.0
Chloride (Cl^-) Content	$\leq 0.005\%$
Heavy Metals (Pb) Content	$\leq 0.0005\%$
Solubility in Water (25°C)	≥ 120 g/100 mL
Chlorine Removal Rate (25°C, 10)	$\geq 99.0\%$
Operating pH Range	4.0-10.0

3. Product Advantages

1. Excellent Chlorine Removal Performance: Rapidly reacts with free chlorine and combined chlorine in water (reaction rate constant $\geq 10^6$ L/(mol·s)); chlorine removal rate $\geq 99.0\%$ at standard dosage; suitable for drinking water and industrial water treatment. 2. Strong Reduction & Chelating Ability: Effectively reduces oxidizing substances (chlorine, ozone, permanganate) in water; forms stable chelates with heavy metal ions (copper, iron, lead) (chelation constant $\geq 10^8$); removes heavy metal contaminants. 3. Good Water Solubility: Easily soluble in water (≥ 120 g/100 mL at 25°C); dissolves quickly without residue; more soluble than anhydrous form; convenient for preparation of aqueous solutions and on-site dosing. 4. Wide pH Adaptation Range: Effective in acidic, neutral and slightly alkaline environments (pH 4.0-10.0); no need for additional pH adjustment in most application scenarios; stable performance in complex water quality. 5. Good Compatibility: Compatible with other water treatment agents (flocculants, coagulants, biocides) and textile auxiliaries; no adverse reactions, can be used in combination to enhance overall performance. 6. Low Toxicity & Environmental Friendliness: Low acute toxicity (oral $\text{LD}_{50} > 6000$ mg/kg); moderately biodegradable; no persistent toxic effects on the environment; compliant with environmental protection regulations.

4. Application Fields

- Water Treatment Industry: Chlorine remover for drinking water, swimming pool water, industrial cooling water and wastewater treatment; reduces residual chlorine to protect reverse osmosis membranes and water treatment equipment; chelating agent for heavy metal removal in wastewater. - Photography Industry: Photographic fixer (hypo); dissolves unexposed silver halide in photographic emulsions; improves image clarity and stability; used in film and photo developing processes (preferred over anhydrous form for faster dissolution). - Medical Industry:



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Antidote for cyanide poisoning (combines with cyanide to form non-toxic thiocyanate); treatment of nitrate and nitrite poisoning; topical anti-inflammatory agent for skin wounds. - Textile Industry: Bleaching and dyeing auxiliary; removes residual chlorine after textile bleaching (prevents fiber damage and color fading); stabilizer for reactive dyes; improves dyeing uniformity. - Other Fields: Analytical reagent for the determination of chlorine, iodine and heavy metal ions; electroplating additive (silver plating and gold plating); food additive (preservative and antioxidant, approved for limited use); pulp and paper industry (bleaching auxiliary).

5. Usage Methods

- Dosage (as pure product): - Water Treatment (Chlorine Removal): 1.5-2.0 mg/L per 1 mg/L residual chlorine; adjust dosage based on residual chlorine content (dosage equivalent to anhydrous form, considering crystal water content). - Photography (Fixer): 250-350 g/L aqueous solution; soak photos/films for 5-10 minutes (faster dissolution than anhydrous form). - Medical (Antidote): Intravenous injection, dosage based on patient weight (0.1-0.2 g/kg, calculated as anhydrous sodium thiosulfate); administered by professional medical personnel. - Textile Industry (Chlorine Removal): 0.5-1.0 g/L aqueous solution; soak textiles for 10-15 minutes after bleaching. - Usage: Dissolve the product in water (dissolution ratio 1:8) to prepare a stock solution (dissolves faster than anhydrous form), then dilute to the required concentration and add to the system; stir evenly after dosing to ensure full reaction. - Optimal Conditions: Use at temperature 10-40°C and pH 4.0-10.0; avoid use at >45°C (prevents crystal water loss); reaction time \geq 5 minutes for chlorine removal; avoid mixing with concentrated acids directly (dilute first if necessary).

6. Packaging & Storage

- Packaging Specifications: 25 kg paper-plastic composite bags (with inner PE liner, moisture-proof); 50 kg plastic drums (sealed, moisture-proof); 200 kg iron drums (lined with PE bag, moisture-proof); custom packaging available upon request. - Storage Conditions: Store in cool, dry, well-ventilated warehouse (5-30°C); keep container tightly closed to prevent moisture absorption, deliquescence, dust contamination, and caking; avoid direct sunlight and high temperature (>45°C, to prevent crystal water loss); store separately from concentrated acids, oxidizing agents, and food-grade materials; stack bags/drums stably (no more than 3 layers for bags, 2 layers for drums) to prevent tipping and damage; keep away from children and pets; maintain relative humidity \leq 60% in storage area. - Shelf Life: 24 months (unopened, specified conditions); use promptly after opening, seal tightly after each use; do not use if caking, deliquescence, or discoloration (turning yellow) occurs.

7. Safety & Protection

- The product is a non-flammable solid, mildly irritating to skin, severely irritating to eyes, toxic to aquatic organisms; reacts with concentrated acids to release irritating sulfur dioxide gas; prone to deliquescence in humid environment. - Operators must wear personal protective equipment: dust mask, chemical-resistant gloves (rubber or nitrile), safety goggles; avoid skin and eye contact, and inhalation of dust. - Operate in well-ventilated, dry area; install emergency eyewash stations nearby; in case of leakage, follow accidental release measures to avoid environmental contamination (especially aquatic ecosystems). - In case of skin contact: Rinse with plenty of running water for at least 10 minutes immediately, remove contaminated clothing; no special treatment required for mild irritation. - In case of eye contact: Rinse with clean water or normal saline for at least 15 minutes immediately, do not rub eyes, and seek emergency medical help immediately if irritation persists.

8. Quality Assurance

- Manufactured in accordance with ISO 9001 quality management system standards; strictly controls raw materials (sodium sulfite, sulfur, deionized water), production processes (synthesis, crystallization, purification, drying), and finished product testing. - Each batch of product is strictly tested with a Certificate of Analysis (COA) to meet GB/T 637-2006 and international quality standards, ensuring product purity, crystal water content, performance, and safety. - Provide professional technical support: customize dosage and application schemes based on user system parameters (water quality, temperature, application scenario); provide on-site guidance for product use, dosage adjustment, and problem-solving (especially for deliquescence prevention and dissolution optimization); solve water treatment, textile bleaching and other application problems in a timely manner.