Technical Data Sheet (TDS)

1. Product Overview

- Product Name: 酸性膜清洁剂 - English Name: Acidic Membrane Cleaner - Main Component CAS Number: Citric Acid (77-92-9), Oxalic Acid (144-62-7) - Formula: Mixed Organic Acids (Citric + Oxalic) + Non-ionic Surfactants - Molecular Weight: 80-120 g/mol (main components) - Product Characteristics: High-efficiency acidic descaling agent for membrane systems; formulated with mixed organic acids and non-ionic surfactants, strong scale removal capacity for calcium carbonate, magnesium hydroxide, iron oxide and other inorganic scales; mild to most polymeric membranes (RO/NF/UF/MF), no damage to membrane structure; good solubility, rapid scale dissolution; low foam, easy to rinse; suitable for industrial water treatment membrane cleaning, 50% concentration grade, balanced descaling effect and membrane compatibility.

2. Technical Specifications (Complies with Industry Standard)

Item	Specification
Appearance	Colorless to pale yellow transparent liquid, no
Total Organic Acids Content	≥ 50.0%
pH Value (25℃, 1% Aqueous	2.0-4.0
Density (25℃)	1.050-1.080 g/cm³
Chloride (Cl^-) Content	≤ 0.01%
Heavy Metals (Pb) Content	≤ 0.0005%
Descaling Rate ($CaCO_3$, 25℃, 2h)	≥ 95.0%
Membrane Compatibility (RO	No membrane damage, flux retention ≥95%
Operating Temperature Range	15-40℃

3. Product Advantages

1. Efficient Descaling Performance: Rapidly dissolves inorganic scales (calcium carbonate, magnesium hydroxide, iron oxide) on membrane surfaces; descaling rate ≥95% at standard dosage and temperature; restores membrane flux and separation efficiency quickly. 2. Excellent Membrane Compatibility: Mild formula, no damage to most polymeric membranes (RO/NF/UF/MF); flux retention ≥95% after cleaning, no membrane degradation or swelling; suitable for all major membrane brands. 3. Good Solubility & Low Foam: Miscible with water in any ratio, no precipitation or residue; low foam formula, easy to rinse (rinse time reduced by 30% compared to ordinary acidic cleaners); no foam accumulation in membrane systems. 4. Wide Operating Range: Effective at 15-40℃ and pH 2.0-6.0; no strict temperature control required on-site; suitable for various water quality and scale types (hard water scale, iron scale, etc.). 5. High Purity & Stable Quality: Low impurity content (heavy metals ≤0.0005%, chloride ≤0.01%); no harmful substances to membrane systems; stable performance batch-to-batch, meets strict industrial quality requirements. 6. Easy to Use: Liquid formula, convenient for on-site dosing and dilution; no need for additional additives; simple cleaning process, reducing labor costs.

4. Application Fields

- Power Plant Membrane Systems: Cleaning of RO/NF membranes in boiler feed water treatment and circulating water treatment systems; removal of scales caused by hard water, restoring membrane flux and reducing energy consumption. - Waterworks & Wastewater Treatment: Cleaning of UF/RO membranes in drinking water purification and wastewater reuse systems; removal of inorganic scales and colloidal impurities, ensuring water quality meets standards. - Electronic & Semiconductor Industry: Cleaning of high-purity water membrane systems; low impurity content, no contamination of electronic components; ensuring high-purity water quality (resistivity ≥18 MΩ·cm). - Pharmaceutical & Food Industry: Cleaning of

membrane systems in pharmaceutical water preparation and food processing; compliant with industry hygiene standards, no residual harmful substances; meeting GMP requirements. - Other Fields: Cleaning of membrane systems in chemical industry, petrochemical industry and desalination plants; suitable for both hollow fiber and spiral wound membranes.

5. Usage Methods

- Dosage (as 50% product): - Routine Cleaning: Dilute 5-10 times with deionized water (concentration 5-10% v/v); circulate cleaning for 1-2 hours at 25-35℃. - Severe Scaling: Dilute 3-5 times with deionized water (concentration 10-20% v/v); circulate cleaning for 2-4 hours at 30-40℃, with intermittent soaking (30 minutes soaking every hour). - Cleaning Flow Rate: 1-2 m/s (spiral wound membrane); 0.5-1.0 m/s (hollow fiber membrane). - Usage: 1. Flush membrane system with deionized water for 30 minutes to remove residual feed water; 2. Prepare cleaning solution by diluting the product with deionized water (add product slowly to water, stir evenly); 3. Circulate cleaning solution through membrane system, control temperature and flow rate; 4. After cleaning, flush membrane system with deionized water until effluent pH is 6-7; 5. Resume normal operation. - Optimal Conditions: Use at temperature 25-35℃ and pH 2.0-4.0; avoid cleaning at temperature >40℃ (may damage membrane); ensure cleaning solution is evenly mixed. - Precautions: Do not mix with alkaline cleaners or oxidants; wear full PPE during operation; prepare emergency eyewash and safety shower nearby; test membrane compatibility on a small scale before large-scale use; do not use for cleaning membranes sensitive to organic acids (e.g., some ceramic membranes).

6. Packaging & Storage

- Packaging Specifications: 20 L HDPE plastic drums (sealed, corrosion-resistant); 200 L HDPE plastic drums (with inner liner); 1000 L IBC tanks (corrosion-resistant, sealed); custom packaging available upon request. - Storage Conditions: Store in a cool, dry, well-ventilated warehouse (temperature 5-30℃, relative humidity ≤70%); keep container tightly closed and upright; avoid direct sunlight, heat sources (e.g., heaters, stoves) and freezing; store separately from strong alkalis, oxidants and food-grade materials; stack drums stably (no more than 2 layers) to prevent tipping and leakage; install leakage emergency treatment equipment and neutralizing agents (sodium bicarbonate).

7. Safety & Protection

- The product is a corrosive acidic liquid; causes severe skin burns and eye damage; may cause respiratory tract irritation; toxic to aquatic life with long lasting effects; reacts violently with strong alkalis to release heat. - Operators must wear full personal protective equipment: acid-resistant nitrile gloves (thickness ≥0.8 mm), chemical safety goggles, face shield, acid-resistant protective clothing and boots; wear a half-face respirator with acid mist filter when mist is generated. - Operate in a well-ventilated (local exhaust ventilation) workshop; avoid splashing during dosing and mixing; no smoking, eating or drinking in the workplace; prepare emergency eyewash stations and safety showers nearby. - In case of skin contact: Rinse with plenty of running water for at least 20 minutes immediately, remove contaminated clothing; seek emergency medical help for severe burns. - In case of eye contact: Rinse with clean water/normal saline for at least 20 minutes immediately, do not rub eyes; seek emergency medical help immediately.

8. Quality Assurance

- Manufactured in accordance with ISO 9001 quality management system standards; strictly controls raw materials (food-grade citric acid, oxalic acid), production processes (mixing, homogenization, filtration) and finished product testing; complies with water treatment chemical industry standards and membrane cleaning agent technical requirements. - Each batch of product is strictly tested with a Certificate of Analysis (COA), covering total organic acids content, pH, density, descaling rate, membrane compatibility and other key indicators; ensures product quality is stable and meets customer requirements. - Provide professional technical support: customize cleaning schemes based on membrane type, scale type and water quality; provide on-site guidance for cleaning operation, dosage control and safety protection; solve user application problems in a timely manner; provide after-sales service and technical consultation.