Safety Data Sheet (MSDS)

(According to GB/T 16483 and GB/T 17519; Adapts to GHS, IMDG, IATA Standards)

Acidic Membrane Cleaner (50% w/w total organic acids)

SECTION 1: Identification

1.1 Product Identifiers - Product Name: Acidic Membrane Cleaner - Product Number: AMC-20280203 - Brand: SIGALD - Main Component CAS-No.: Citric Acid (77-92-9), Oxalic Acid (144-62-7) - Synonyms: Membrane Descaling Agent; Acidic Cleaner for RO/NF/UF Membranes - Chemical Family: Mixed Organic Acids + Non-ionic Surfactants - Concentration: 50.0% (w/w) total organic acids, 49.5% (w/w) water, 0.5% (w/w) surfactants

1.2 Details of the supplier of the safety data sheet

- Company : NEWAY SINOPHC TECH. LIMITED
- RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI)PILOT FREE TRADE ZONE.
- Telephone : +86-021-50350029
- Fax : +86-021-50350029

1.3 Emergency telephone

Emergency Phone # : +86-021-50350029
(CHEMTREC)

1.4 Uses & Restrictions - Identified Uses: Descaling and cleaning of reverse osmosis (RO), nanofiltration (NF), ultrafiltration (UF) and microfiltration (MF) membranes; removal of calcium carbonate, magnesium hydroxide, iron oxide and other inorganic scales on membrane surfaces; suitable for water treatment systems in power plants, waterworks, electronic factories and pharmaceutical plants. - Uses Advised Against: Direct contact with food, cosmetics or pharmaceuticals; use for cleaning non-membrane materials without verification; mixing with strong alkalis, oxidants or heavy metal salts; use in open, unventilated areas without protection.

SECTION 2: Hazards Identification

2.1 GHS Classification: Skin corrosion/irritation (Category 1B); Eye damage/irritation (Category 1); Specific target organ toxicity (single exposure, respiratory tract, Category 3); Aquatic hazard (Category 2)
2.2 GHS Label Elements - Hazard Pictogram: (Corrosive) + (Aquatic hazard) - Signal Word: DANGER - Hazard Statements: H314 (Causes severe skin burns and eye damage); H335 (May cause respiratory irritation); H411 (Toxic to aquatic life with long lasting effects) - Precautionary Statements: P201, P202, P260, P261, P264, P270, P271, P273, P280, P301+P330+P331, P303+P361+P353, P304+P340, P305+P351+P338, P310, P321, P363, P391, P403+P233, P405, P501

2.3 Physical/Chemical Hazards: Strong acidic liquid (pH 2.0-4.0); reacts violently with strong alkalis (e.g., sodium hydroxide, ammonia) to release heat; no flash point (water-based, non-flammable); stable under normal conditions, no decomposition at room temperature.
2.4 Health Hazards: Causes severe skin burns (redness, blistering, necrosis) and eye damage (corneal erosion, blindness); inhalation of mist/vapor may cause respiratory tract irritation (cough, sore throat, shortness of breath); oral ingestion causes burns to mouth, esophagus and stomach (nausea, vomiting, abdominal pain); long-term skin contact may cause chronic irritation.
2.5 Environmental Hazards: Toxic to aquatic organisms (fish, algae, invertebrates); moderately persistent in water bodies; low bioaccumulation potential (BCF <100); may contaminate soil and groundwater if spilled in large quantities, posing risks to terrestrial plants.

SECTION 3: Composition/Information on Ingredients

Substance/Mixture: Mixture (main components: organic acids and surfactants)

Component	Content (w/w)	CAS-No.	Hazard Classification
Citric Acid	35.0%	77-92-9	Skin Corr. 1B; Eye Dam. 1; STOT-SE 3
Oxalic Acid	15.0%	144-62-7	Skin Corr. 1B; Eye Dam. 1; STOT-SE 3; Aquatic Tox. 2
Non-ionic Surfactant	0.5%	9016-45-9 (mixture)	Skin Irrit. 2
Water	49.5%	7732-18-5	Non-hazardous

SECTION 4: First Aid Measures

- Inhaled: Remove to fresh air immediately; keep the affected person in a comfortable position, maintain airway patency; if breathing is difficult, give oxygen; seek medical help if irritation persists or symptoms worsen. - Skin Contact: Remove contaminated clothing and shoes immediately; rinse skin thoroughly with plenty of running water for at least 20 minutes (do not use hot water); do not rub the affected area; apply no ointment without medical advice; seek emergency medical help for severe burns. - Eye Contact: Hold eyelids open; rinse eyes continuously with clean water or normal saline for at least 20 minutes (flush from inner to outer corner); do not rub eyes or use eye drops; seek emergency medical help immediately (risk of corneal damage/blindness). - Swallowed: Do not induce vomiting (may cause severe burns to

esophagus); rinse mouth with water (do not swallow); do not give anything by mouth to an unconscious person; seek emergency medical help immediately, bring this MSDS.

SECTION 5: Firefighting Measures

- Suitable Extinguishing Media: Water spray, foam, CO_2, dry powder; use water to cool containers. - Unsuitable Media: None (non-flammable product). - Special Hazards: Non-flammable; reacts violently with strong alkalis to release heat; toxic mist may be generated when heated (organic acid fumes); no explosion hazard under normal fire conditions. - Firefighter Advice: Wear appropriate protective equipment (acid-resistant suit, face shield, respirator); avoid inhalation of mist/fumes; cool containers with water spray until the fire is completely extinguished; isolate the fire scene and evacuate non-essential personnel.

SECTION 6: Accidental Release Measures

- Personal Precautions: Evacuate non-essential personnel; wear PPE (acid-resistant gloves, protective clothing, goggles, respirator); ensure good ventilation at the leakage site. - Environmental Precautions: Immediately block the leakage area; prevent the liquid from entering sewers, rivers, lakes or groundwater; use absorbent materials (vermiculite, activated carbon, clay) to contain the leakage; notify local environmental authorities for large-scale leakage. - Cleanup: Small spill - absorb with absorbent materials, collect into a corrosion-resistant sealed container for disposal; large spill - dike the area, neutralize with dilute alkali (sodium bicarbonate solution) under stirring (avoid excessive heat), then collect and dispose of; clean the area with a small amount of water (collect rinse water for treatment), do not discharge directly.

SECTION 7: Handling and Storage

- Handling: Operate in a well-ventilated (local exhaust ventilation) workshop; use corrosion-resistant tools (plastic, stainless steel); avoid contact with skin, eyes and inhalation of mist; do not mix with strong alkalis, oxidants or heavy metal salts; wash hands and face thoroughly after operation (use neutral soap); avoid splashing during dosing. - Storage: Store in a cool, dry, well-ventilated warehouse (temperature 5-30℃, away from heat sources); keep container tightly closed, upright; store separately from strong alkalis (NaOH, ammonia), oxidants (H_2O_2, $KMnO_4$) and food-grade materials; no smoking in the storage area; install leakage emergency treatment equipment and neutralizing agents (sodium bicarbonate). - Shelf Life: 12 months (unopened, specified conditions); use promptly after opening, seal tightly after each use; do not use if discoloration (dark yellow) or precipitation occurs. - Compatibility: Incompatible with strong alkalis, oxidants, heavy metal salts and alkaline cleaning agents.

SECTION 8: Exposure Controls/Personal Protection

- Engineering Controls: Install local exhaust ventilation system (air change rate ≥8 times/hour); set up emergency eyewash stations and safety showers (within 10 meters of the workplace); use corrosion-resistant equipment and pipelines; install gas detection alarms (acid mist sensor). - PPE: Respiratory protection: Half-face respirator with acid mist filter (when mist is generated); Hand protection: Acid-resistant nitrile gloves (thickness ≥0.8 mm, replace every 2 hours); Eye/Face protection: Chemical safety goggles and face shield; Body protection: Acid-resistant protective clothing and boots. - Hygiene Measures: Do not eat, drink or smoke in the workplace; do not touch eyes, face or mouth with contaminated hands; change contaminated clothing immediately; wash contaminated clothing separately (neutral detergent); provide neutralizing soap and skin care products near the workplace.

SECTION 9: Physical and Chemical Properties

Physical State: Liquid; Color: Colorless to pale yellow; Odor: Mild acidic odor pH (25℃, 1% Aqueous Solution): 2.0-4.0; Boiling Point: 105-110℃ (760 mmHg); Melting Point: -5 to 0℃ Flash Point: Non-flammable; Autoignition Temperature: Not applicable; Flammability: Non-flammable Density (25℃): 1.050-1.080 g/cm³; Solubility: Miscible with water, slightly soluble in ethanol Vapor Pressure (25℃): 2.0 hPa (main component); Partition Coefficient (log P): -1.5 (estimated); Viscosity (25℃): 3.0-5.0 mPa·s

SECTION 10: Stability and Reactivity

- Stability: Stable under normal storage and handling conditions (5-30℃, sealed); no decomposition at room temperature; stable for 12 months under specified storage conditions; decomposes at >150℃ to release carbon dioxide and water. - Incompatibilities: Strong alkalis (violent reaction, releases heat); oxidants (may cause decomposition of organic acids); heavy metal salts (forms insoluble complexes); alkaline cleaning agents (neutralization reaction, loss of efficacy). - Hazardous Decomposition Products: Organic acid fumes (when heated above 150℃); non-toxic decomposition products (CO_2, H_2O) under normal conditions; toxic mist when reacting with alkalis.

SECTION 11: Toxicological Information

- Acute Toxicity: Oral (Rat, LD_{50}): 1200 mg/kg; Dermal (Rabbit, LD_{50}): 2000 mg/kg; Inhalation (Rat, LC_{50}): >5000 ppm (4-hour exposure, mist). - Skin/Eye Damage: Severe skin corrosion (Category 1B), causes blistering and necrosis; severe eye damage (Category 1), may lead to blindness. - Organ Toxicity: Single exposure may cause respiratory tract irritation; oral ingestion causes gastrointestinal tract burns; no long-term organ damage reported with proper use. - Other Toxicity: No mutagenic, carcinogenic or teratogenic effects reported; no skin sensitization reported.

SECTION 12: Ecological Information

- Fish (Zebrafish, LC_{50}): 100-200 mg/L (96-hour exposure) - Daphnia (EC_{50}): 50-100 mg/L (48-hour exposure) - Algae (Growth Inhibition, EC_{50}): 80-150 mg/L (72-hour exposure) - Biodegradability: Moderately biodegradable (BOD_5/COD = 0.3-0.5); persists in water for 30-60 days. - Environmental Fate: Highly soluble in water; hydrolyzes slowly in neutral/alkaline water; low bioaccumulation (BCF <100); leaches into groundwater if spilled on soil, but can be neutralized by soil alkalinity.

SECTION 13: Disposal Considerations

- Product Waste: Collect waste in corrosion-resistant, sealed containers; neutralize with dilute alkali (sodium bicarbonate) to pH 6-9 before disposal; dispose of via licensed hazardous waste treatment institutions; do not discharge into water bodies or sewers. - Packaging Waste: Rinse containers thoroughly with a small amount of water (collect rinse water for neutralization); dispose of as hazardous waste (corrosive); do not reuse or recycle contaminated packaging. - Special Disposal Notes: Neutralization must be carried out under stirring (avoid excessive heat); comply with local environmental protection regulations for hazardous waste disposal; do not mix with other wastes during disposal.

SECTION 14: Transport Information

- UN Number: ADR/RID: 3264; IMDG: 3264; IATA-DGR: 3264 - UN Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (contains Citric Acid, Oxalic Acid) - Transport Class: 8 (Corrosive); Packaging Group: II; Environmental Hazards: Yes (Marine Pollutant, Category 2) - Special Precautions: Transport in corrosion-resistant, sealed packaging (200 L HDPE drums or 1000 L IBC tanks); transport by specialized hazardous chemical vehicles; avoid collision, vibration and impact; keep away from strong alkalis, oxidants and food during transport; prevent rain, sunlight and high temperature; drivers and handlers must be trained and hold relevant certificates; carry this MSDS and emergency handling equipment.

SECTION 15: Regulatory Information

- National Regulations (China): Complies with Hazardous Chemical Safety Management Regulation (Hazard Class 8); meets water treatment chemical industry standards; compliant with membrane cleaning agent technical requirements for power plants and pharmaceutical plants; prohibited for food, cosmetic and pharmaceutical use without purification. - International Regulations: GHS Rev.9 (Skin Corr. 1B, Eye Dam. 1, STOT-SE 3, Aquatic Tox. 2); REACH (EU, registered); TSCA (US, listed); FDA (US, restricted use in food contact areas).

SECTION 16: Other Information

- Revision Date: 03 FEB 2025 - Disclaimer: Based on current scientific knowledge and product testing data; this product is corrosive, supplier not liable for damage caused by improper use,

storage, handling or non-compliance with regulations; the information in this MSDS is accurate to the best of our knowledge at the time of revision.