Safety Data Sheet (MSDS)

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

Chlorine Dioxide Aqueous Solution (ClO_2)

SECTION 1: Identification

1.1 Product Identifiers

- Product Name: Chlorine Dioxide Aqueous Solution
- Product Number: ClO2-CAS10049044-202710
- Brand: SIGALD
- CAS-No.: 10049-04-4
- Synonyms: Chlorine Oxide (IV); ClO_2 Solution; Stabilized Chlorine Dioxide
- Chemical Family: Inorganic Chlorine Oxide

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: Water disinfection (drinking water, sewage, swimming pools); surface disinfection (facilities, food contact surfaces); food preservation; wastewater treatment (deodorization, sterilization).
- Uses Advised Against: Pharmaceutical, medical injection; mixing with acids, ammonia, or reducing agents.

SECTION 2: Hazards Identification

2.1 GHS Classification: Skin corrosion/irritation (Category 1B); Eye damage (Category 1); Oxidizing liquid (Category 1); Environmental hazard (Category 1, Aquatic toxicity)2.2 GHS Label Elements

- Hazard Pictogram: (Corrosion) + ⚡ (Oxidizer) + (Aquatic hazard)
- Signal Word: DANGER
- Hazard Statements: H314 (Causes severe skin burns and eye damage); H270 (May cause or intensify fire; strong oxidizer); H400 (Very toxic to aquatic life)
- Precautionary Statements: P260, P280, P301+P330+P331, P304+P340, P305+P351+P338, P391, P501

2.3 Physical/Chemical Hazards: Strong oxidizer; reacts violently with acids (releases toxic ClO_2 gas); incompatible with ammonia, reducing agents, and organic matter; may ignite combustibles.2.4 Health Hazards: Severe skin/eye burns; inhalation of gas causes respiratory

tract irritation, coughing, and chest tightness; ingestion causes gastrointestinal burns.2.5 Environmental Hazards: Highly toxic to aquatic organisms; long-term adverse effects on aquatic ecosystems.

SECTION 3: Composition/Information on Ingredients

- Substance/Mixture: Mixture| Component | Content (w/w) | CAS-No. | Hazard Classification | |----------|---------------|---------|----------------------| | Chlorine Dioxide (ClO_2) | 0.8-1.2% | 10049-04-4 | Skin Corros. 1B; Eye Dam. 1; Oxid. Liq. 1; Aquatic Toxicity 1 | | Sodium Carbonate (Stabilizer) | 0.5-1.0% | 497-19-8 | Non-hazardous | | Deionized Water | Balance | 7732-18-5 | Non-hazardous |

SECTION 4: First Aid Measures

- Inhaled: Move to fresh air; administer oxygen if breathing is difficult; seek medical attention immediately (ClO_2 gas may cause pulmonary irritation).
- Skin Contact: Remove contaminated clothing; rinse skin with plenty of running water for ≥15 minutes; consult a doctor for burns.
- Eye Contact: Hold eyelids open; rinse with water/normal saline for ≥15 minutes; seek emergency medical help (risk of corneal damage).
- Swallowed: Do not induce vomiting; rinse mouth with water; bring this MSDS to the doctor (caustic effects risk).

SECTION 5: Firefighting Measures

- Suitable Extinguishing Media: Water spray, foam, CO_2, dry powder.
- Unsuitable Media: Do not use water jet on concentrated solutions (may splatter and spread fire).
- Special Hazards: Non-combustible but strong oxidizer; intensifies fire when in contact with organic matter; decomposes on heating to release toxic ClO_2 gas.
- Firefighter Advice: Wear SCBA and full corrosion-resistant protective clothing; cool containers with water spray; avoid inhalation of decomposition fumes.

SECTION 6: Accidental Release Measures

- Personal Precautions: Wear full PPE (chemical goggles, face shield, nitrile gloves, acid-resistant clothing, respiratory protection).
- Environmental Precautions: Prevent runoff into sewers, rivers, or groundwater; contain with sandbags; avoid aquatic contamination.
- Cleanup: Small spill - absorb with inert materials (sand, vermiculite) and neutralize with sodium thiosulfate; large spill - dike and transfer to corrosion-resistant tanks for professional treatment.

SECTION 7: Handling and Storage

- Handling: Operate in well-ventilated area; use local exhaust ventilation; avoid contact with skin/eyes; do not mix with acids, ammonia, or reducing agents.
- Storage: Cool, dark, well-ventilated warehouse (≤25℃); keep container tightly closed; avoid direct sunlight and high temperature; store separately from acids, reducing agents, and combustibles.

- Shelf Life: 6 months (unopened, specified conditions); stabilize after opening and use within 1 month.

SECTION 8: Exposure Controls/Personal Protection

- Engineering Controls: Install local exhaust ventilation; use closed transfer systems; avoid generating aerosols.
- Personal Protective Equipment (PPE):
  - Eye/Face Protection: Chemical safety goggles and face shield (EN 166/NIOSH compliant).
  - Skin Protection: Nitrile rubber gloves (0.15mm+ thickness) and acid-resistant clothing.
  - Respiratory Protection: Half-mask respirator with ClO_2/acid gas cartridges (when vapors are generated).
- Hygiene Measures: Wash hands thoroughly after work; do not eat/drink/smoke in the workplace.

SECTION 9: Physical and Chemical Properties

- Physical State: Liquid; Color: Colorless to pale yellow; Odor: Pungent, chlorine-like odor
- pH (25℃): 3.0-5.0; Density (25℃): 1.01-1.05 g/cm³; Viscosity (25℃): 10-15 mPa·s
- Boiling Point: 100-102℃; Flash Point: Not applicable (non-combustible); Solubility: Fully miscible with water
- Decomposition Temperature: >50℃ (releases ClO_2 gas); Vapor Pressure (25℃): <1.0 hPa

SECTION 10: Stability and Reactivity

- Stability: Stable under cool, dark, sealed conditions; decomposes on heating, light exposure, or contact with acids.
- Incompatibilities: Acids (HCl, H_2SO_4), ammonia, reducing agents (Fe^{2+}, sulfites), organic matter, and combustibles.
- Hazardous Decomposition Products: Chlorine dioxide gas (ClO_2), chlorine gas (Cl_2), oxygen (O_2).

SECTION 11: Toxicological Information

- Acute Toxicity: Oral (Rat, LD_{50}): 290 mg/kg (1% solution); Dermal (Rabbit, LD_{50}): >1000 mg/kg
- Skin/Eye Irritation: Severe skin burns and eye damage (GHS 1B/1).
- Respiratory Toxicity: Inhalation of ClO_2 gas causes mucosal irritation, coughing, and shortness of breath.

SECTION 12: Ecological Information

- Fish (Zebrafish, LC_{50}): 0.2 mg/L (96-hour exposure)
- Daphnia (EC_{50}): 0.1 mg/L (48-hour exposure)
- Biodegradability: Biodegradable but toxic to aquatic organisms at low concentrations.

SECTION 13: Disposal Considerations

- Product Waste: Neutralize with sodium thiosulfate to eliminate oxidizing and toxic properties; dispose via licensed hazardous waste facilities.

- Packaging Waste: Rinse thoroughly with water; dispose as hazardous waste or recycle if permitted.

SECTION 14: Transport Information

- UN Number: ADR/RID: UN 1908; IMDG: UN 1908; IATA-DGR: UN 1908
- UN Proper Shipping Name: Chlorine dioxide, aqueous solution, stabilized
- Transport Class: 5.1 (Oxidizer); Packaging Group: II; Environmental Hazards: Yes (Marine Pollutant)
- Special Precautions: Transport in cool, dark containers; avoid collision, leakage, and mixing with incompatible substances.

SECTION 15: Regulatory Information

- National Regulations (China): Complies with Hazardous Chemical Safety Management Regulation; meets GB/T 20783-2006.
- International Regulations: GHS Rev.9 (Corrosion 1B, Oxidizer 1, Aquatic Toxicity 1); REACH (EU, not in SVHC List); TSCA (US, listed).

SECTION 16: Other Information

- Revision Date: 15 OCT 2025
- Disclaimer: Based on current scientific knowledge; supplier not liable for damage caused by improper use.