



NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.
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Safety Data Sheet (MSDS)

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

Hydroxyethylidene Diphosphonic Acid (HEDP)

SECTION 1: Identification

1.1 Product Identifiers - Product Name: Hydroxyethylidene Diphosphonic Acid - Product Number: HEDP-CAS2809214-202802 - Brand: SIGALD - CAS-No.: 2809-21-4 - Synonyms: HEDP; 1-Hydroxyethylidene-1,1-diphosphonic acid; Etidronic acid - Chemical Family: Organophosphonic Acid

1.2 Details of the supplier of the safety data sheet

- Company : NEWAY SINOPHC TECH. LIMITED
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- Telephone : +86-021-50350029
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1.3 Emergency telephone

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

1.4 Uses & Restrictions - Identified Uses: Water treatment agent (corrosion and scale inhibitor); metal surface treatment (chelant and detergent); detergent additive; oilfield water treatment; textile printing and dyeing auxiliary; electroplating additive. - Uses Advised Against: Direct food contact; medical application; use in strong alkaline environments beyond product limits; mixing with strong oxidants without proper protection.

SECTION 2: Hazards Identification

2.1 GHS Classification: Skin irritation (Category 2); Eye irritation (Category 2A); Aquatic hazard (Category 2); Specific target organ toxicity (single exposure, respiratory tract irritation) (Category 3)

2.2 GHS Label Elements - Hazard Pictogram: (Irritant) + (Aquatic hazard) - Signal Word: WARNING - Hazard Statements: H315 (Causes skin irritation); H319 (Causes serious eye irritation); H335 (May cause respiratory irritation); H411 (Toxic to aquatic life with long-lasting effects) - Precautionary Statements: P261, P264, P270, P273, P280, P302+P352, P304+P340+P310, P305+P351+P338+P310, P310, P337+P313, P391, P501

2.3 Physical/Chemical Hazards: Non-combustible liquid; strongly acidic (pH 1.0-2.0); incompatible with strong bases (e.g., sodium hydroxide, potassium hydroxide), strong oxidants (e.g., hydrogen peroxide, potassium permanganate) and heavy metal salts (e.g., lead nitrate, copper sulfate); no flash point or autoignition temperature.

2.4 Health Hazards: Skin irritation (redness, itching, burns); severe eye irritation (redness, tearing, corneal damage, potential blindness); inhalation of mist/vapor may cause respiratory tract irritation (coughing, sore throat, shortness of breath); ingestion may cause gastrointestinal burns, nausea, vomiting, abdominal pain; long-term exposure may cause phosphorus poisoning (bone and tooth damage).

2.5 Environmental Hazards: Toxic to aquatic organisms (fish, daphnia, algae); persistent in water bodies; bioaccumulation in aquatic organisms (BCF 50-200); long-lasting toxic effects on aquatic ecosystems; may cause eutrophication in water bodies at high concentrations.

SECTION 3: Composition/Information on Ingredients

Substance/Mixture: Substance (main component $\geq 99.0\%$)

Component	Content (w/w)	CAS-No.	Hazard Classification
Hydroxyethylidene Diphosphonic Acid	$\geq 99.0\%$	2809-21-4	Skin Irrit. 2; Eye Irrit. 2A; Resp. Irrit. 3; Aquatic Toxicity 2
Phosphorous Acid (H_3PO_3)	$\leq 0.3\%$	13598-36-2	Skin Irrit. 2; Eye Irrit. 2A
Phosphoric Acid (H_3PO_4)	$\leq 0.5\%$	7664-38-2	Skin Irrit. 2; Eye Irrit. 2A
Water	$\leq 0.2\%$	7732-18-5	Non-hazardous

SECTION 4: First Aid Measures

- Inhaled: Remove to fresh air immediately; keep the affected person at rest in a comfortable position; if breathing is difficult, provide oxygen by a qualified person; seek medical attention immediately if irritation persists or severe symptoms occur. - Skin Contact: Remove contaminated clothing and shoes immediately; rinse skin thoroughly with plenty of running water for at least 15 minutes (pay attention to skin folds); do not use alkaline cleaners (may exacerbate burns); seek medical help if redness, blistering, or pain persists. - 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; seek emergency medical help immediately (high risk of corneal damage). - Swallowed: Do not induce vomiting (risk of esophageal burns); rinse mouth with water (do not swallow); give small amounts of water to dilute (only if the person is conscious and able to swallow); do not give alkaline substances (neutralization reaction releases heat); seek emergency medical attention with this MSDS.

SECTION 5: Firefighting Measures

- Suitable Extinguishing Media: Water spray, foam, CO_2 , dry powder, sand. - Unsuitable Media: High-pressure water jet (may splash liquid and spread contamination; may react with strong bases in the environment). - Special Hazards: Non-combustible; reacts with strong bases to release heat; no toxic fumes at normal temperature, but may release phosphorous oxides fumes when heated to decomposition ($>200^\circ C$); mist/vapor may cause irritation to firefighters' respiratory tract and eyes. - Firefighter Advice: Wear full firefighting protective equipment (including self-contained breathing apparatus, acid-resistant fire-resistant suit, and face shield); keep a safe distance; cool containers with water spray; avoid inhalation of mist/vapor; use dust suppression measures for spilled liquid.

SECTION 6: Accidental Release Measures

- Personal Precautions: Wear acid-resistant dust mask (N95 or equivalent), acid-resistant gloves (butyl rubber or fluororubber), safety goggles, and acid-resistant protective clothing; avoid



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direct contact with spilled liquid and mist; use respiratory protection in confined spaces or high -vapor concentrations. - Environmental Precautions: Prevent liquid from entering sewers, rivers, lakes, or other water bodies; use absorbent materials to block leakage (e.g., sand, vermiculite); notify local environmental authorities if contamination occurs; isolate the spilled area to avoid spread to aquatic ecosystems. - Cleanup: Small spill - absorb with inert absorbent materials (diatomaceous earth, vermiculite), place in a sealed corrosion-resistant container for disposal; large spill - dike the area with sand or soil, collect all liquid into sealed plastic or glass drums, and treat by professional hazardous waste disposal institutions; clean the area with plenty of water (neutralize with sodium bicarbonate solution first if necessary), and collect wastewater for treatment.

SECTION 7: Handling and Storage

- Handling: Operate in well-ventilated area (install local exhaust ventilation for mist control); avoid splashing and spilling; wear full acid-resistant personal protective equipment; do not mix with strong bases, strong oxidants, and heavy metal salts; use acid-resistant tools and containers; wash hands and face thoroughly with water after handling (do not use alkaline soap immediately). - Storage: Store in cool, dry, well-ventilated warehouse (5-35°C); keep container tightly closed to prevent moisture absorption, contamination, and leakage; avoid direct sunlight and high temperature (>50°C); store separately from strong bases, strong oxidants, food-grade materials, and combustible materials; stack containers stably (no more than 2 layers) to prevent tipping; label clearly with hazard warnings (acidic corrosive substance). - Shelf Life: 24 months (unopened, specified conditions); use promptly after opening, seal tightly after each use; do not use if discoloration (turning dark yellow), turbidity, or precipitation occurs. - Compatibility: Incompatible with strong bases (NaOH, KOH), strong oxidants (H₂O₂, KMnO₄), heavy metal salts (Pb(NO₃)₂, CuSO₄), and ammonia water.

SECTION 8: Exposure Controls/Personal Protection

- Engineering Controls: Install local exhaust ventilation to remove mist and vapor; maintain good general ventilation in the workplace; use acid-resistant pipelines and storage tanks; install emergency eyewash stations and safety showers (acid-resistant) nearby the workplace; set up acid leakage collection pools. - PPE: Respiratory protection: Use acid mist mask (N95/P100 with acid filter) when mist is generated or in confined spaces; Hand protection: Acid-resistant gloves (butyl rubber or fluororubber, thickness ≥ 0.6 mm); Eye/Face protection: Acid-resistant safety goggles and face shield; Body protection: Acid-resistant protective clothing and cap. - Hygiene Measures: Do not eat, drink, or smoke in the workplace; do not touch eyes, face, or mouth with contaminated hands; remove contaminated clothing and shoes immediately after contact; wash contaminated clothing separately with acid-resistant detergent before reuse; provide acid-resistant washing facilities (water, neutral soap) near the workplace.

SECTION 9: Physical and Chemical Properties

Physical State: Liquid; Color: Colorless to pale yellow; Odor: Slight pungent odor (phosphonic acid odor) pH (25°C, 1% Aqueous Solution): 1.0-2.0; Melting Point: -10°C; Boiling Point: Decomposes at >200°C Flash Point: Not applicable (non-combustible); Autoignition Temperature: Not applicable Density (25°C, liquid): 1.45-1.55 g/cm³; Solubility: Easily soluble in water (miscible in any ratio), soluble in ethanol, ethylene glycol, slightly soluble in acetone, insoluble in benzene, toluene Vapor Pressure (25°C): <0.01 hPa; Partition Coefficient (log P): -3.8 (estimated); Viscosity (25°C): 30-50 mPa·s



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SECTION 10: Stability and Reactivity

- Stability: Stable under normal storage and handling conditions; maintains corrosion inhibition and chelating performance within the shelf life; stable in acidic and neutral environments; gradual decomposition in strong alkaline environments and at temperatures >200°C. - Incompatibilities: Strong bases which may cause neutralization reaction (release heat); strong oxidants which may oxidize phosphonic acid groups; heavy metal salts which may form insoluble chelates. - Hazardous Decomposition Products: At temperatures >200°C, decomposes to release phosphorous oxides (P₂O₅), carbon dioxide (CO₂), and water vapor; contact with strong oxidants may generate toxic phosphorous oxychloride.

SECTION 11: Toxicological Information

- Acute Toxicity: Oral (Rat, LD₅₀): 4000 mg/kg; Dermal (Rabbit, LD₅₀): >2000 mg/kg; Inhalation (Rat, LC₅₀): >10 mg/m³ (4-hour exposure, mist). - Skin/Eye Irritation: Moderate skin irritation (Category 2) with potential burns; severe eye irritation (Category 2A) with high risk of corneal damage; corrosive to eye mucosa. - Respiratory Toxicity: Inhalation of mist causes respiratory tract irritation (Category 3); may lead to coughing, sore throat, and bronchitis in severe cases. - Other Toxicity: No mutagenic, carcinogenic, or teratogenic effects reported (per OECD test guidelines); long-term oral exposure may cause phosphorus poisoning (bone decalcification, tooth damage) in animals and humans.

SECTION 12: Ecological Information

- Fish (Zebrafish, LC₅₀): 10 mg/L (96-hour exposure) - Daphnia (EC₅₀): 5 mg/L (48-hour exposure) - Algae (Growth Inhibition, EC₅₀): 8 mg/L (72-hour exposure) - Biodegradability: Poorly biodegradable (BOD₅/COD < 0.1); persistent in water bodies for 45-60 days. - Environmental Fate: Resistant to hydrolysis and photodegradation; in natural water bodies, exists in dissolved state; bioaccumulates in aquatic organisms (BCF: 50-200 in fish); may cause eutrophication at high concentrations.

SECTION 13: Disposal Considerations

- Product Waste: Collect waste product in a sealed corrosion-resistant container; neutralize with sodium bicarbonate solution (slowly add to avoid heat release) before disposal; dispose of via licensed hazardous waste treatment facilities in accordance with local regulations (incineration or landfill after stabilization); do not discharge into water bodies or sewers. - Packaging Waste: Rinse packaging containers thoroughly with water (collect rinse water for treatment); neutralize the rinse water if necessary; dispose of the container as hazardous waste if contaminated, or as general solid waste if no residual product remains; recycle packaging materials only if permitted and after thorough cleaning. - Special Disposal Notes: Incineration must be conducted in professional facilities equipped with phosphorous oxides removal systems; do not landfill without prior neutralization (risk of soil and groundwater contamination); comply with local environmental protection regulations for hazardous waste disposal.

SECTION 14: Transport Information

- UN Number: ADR/RID: UN 3265; IMDG: UN 3265; IATA-DGR: UN 3265 - UN Proper Shipping Name: Corrosive liquid, acidic, organic, n.o.s. (Hydroxyethylidene Diphosphonic Acid) - Transport Class: 8 (Corrosive Substances); Packaging Group: III; Environmental Hazards: Yes (Marine Pollutant) - Special Precautions: Transport in sealed, acid-resistant packaging (HDPE drums or glass bottles); avoid collision, vibration, and impact to prevent packaging damage



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and liquid leakage; keep away from strong bases, strong oxidants, and food-grade goods during transport; store in a cool, ventilated area during transit; do not expose to sunlight or high temperature; transport by qualified hazardous chemical transport vehicles (acid-resistant); drivers and handlers must be trained and familiar with hazard characteristics and emergency handling methods.

SECTION 15: Regulatory Information

- National Regulations (China): Complies with Hazardous Chemical Safety Management Regulation; meets GB/T 26324-2010 (Hydroxyethylidene Diphosphonic Acid) and GB 5085.1-2007 (Hazardous Waste Identification Standards); compliant with water treatment agent and detergent additive use standards. - International Regulations: GHS Rev.9 (Skin Irrit. 2, Eye Irrit. 2A, Resp. Irrit. 3, Aquatic Toxicity 2); REACH (EU, registered); TSCA (US, listed); FDA (US, compliant for industrial use only).

SECTION 16: Other Information

- Revision Date: 20 FEB 2025 - Disclaimer: Based on current scientific knowledge and product testing data; 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.

A large, faded watermark of the Neway Sinophc Tech logo is centered on the page. It consists of a stylized 'N' in blue and green, with the Chinese characters '纳维盈医化科技' and the English text 'NEWAY SINOPHC TECH' below it.

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