

Safety Data Sheet (MSDS)

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

Hydrazine Hydrate (80% w/w, N₂H₄·H₂O)

SECTION 1: Identification

1.1 Product Identifiers - Product Name: Hydrazine Hydrate - Product Number: HZH-CAS10217524-202802 - Brand: SIGALD - CAS-No.: 10217-52-4 - Synonyms: Hydrazine monohydrate; Diamine monohydrate; Hydrazinium hydroxide (approx) - Chemical Family: Inorganic Amine Compound - Concentration: 80.0% (w/w) N₂H₄, 20.0% (w/w) H₂O

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: Boiler water oxygen scavenger; pharmaceutical intermediate (antitumor drugs, antibiotics); pesticide raw material (herbicides, insecticides); rocket fuel additive; electroplating brightener; reducing agent in chemical synthesis. - Uses Advised Against: Direct contact with food, cosmetics or pharmaceuticals without strict purification; use in open, unventilated areas; mixing with strong oxidants, acids or heavy metal salts; use by untrained personnel.

SECTION 2: Hazards Identification

2.1 GHS Classification: Acute toxicity (oral, Category 2); Acute toxicity (dermal, Category 2); Acute toxicity (inhalation, Category 2); Skin corrosion/irritation (Category 1B); Eye damage/irritation (Category 1); Specific target organ toxicity (single exposure, liver, kidney, respiratory tract, Category 1); Specific target organ toxicity (repeated exposure, liver, kidney, Category 1); Aquatic hazard (Category 1); Flammable liquid (Category 3)

2.2 GHS Label Elements - Hazard Pictogram: (Toxic) + (Corrosive) + (Flammable) + (Aquatic hazard) - Signal Word: DANGER - Hazard Statements: H300 (Fatal if swallowed); H310 (Fatal in contact with skin); H330 (Fatal if inhaled); H314 (Causes severe skin burns and eye damage); H370 (Causes damage to organs (liver, kidney, respiratory tract) through single exposure); H372 (Causes damage to organs (liver, kidney) through repeated exposure); H400 (Very toxic to aquatic life) - Precautionary Statements: P201, P202, P210, P220, P233, P240, P241, P242, P243, P260, P261, P264, P270, P271, P273, P280, P301+P310, P302+P350, P304+P340, P305+P351+P338, P310, P320, P330, P361+P364, P391, P403+P233, P405, P501

2.3 Physical/Chemical Hazards: Flammable liquid (flash point 72°C); decomposes at >150°C to release toxic ammonia and nitrogen gas; reacts violently with strong oxidants (e.g., hydrogen peroxide, potassium permanganate) leading to combustion or explosion; reacts with concentrated acids to release heat and toxic fumes; corrosive to most metals (especially copper, zinc, aluminum) and organic materials.

2.4 Health Hazards: Fatal if swallowed, in contact with skin or inhaled; severe skin burns (blistering, necrosis) and eye damage (corneal perforation, blindness); inhalation of

vapor/fumes causes severe respiratory tract irritation, pulmonary edema, and damage to liver/kidney; skin absorption leads to systemic toxicity (headache, dizziness, nausea, liver/kidney failure); long-term exposure causes chronic organ damage.

2.5 Environmental Hazards: Very toxic to aquatic organisms (fish, algae, invertebrates) at low concentrations; highly persistent in water bodies; high bioaccumulation potential (BCF: 1000-5000 in fish); causes long-term damage to aquatic ecosystems; may contaminate soil and groundwater, posing risks to terrestrial organisms.

SECTION 3: Composition/Information on Ingredients

Substance/Mixture: Mixture (main component: Hydrazine Hydrate 80.0%)

Component	Content (w/w)	CAS-No.	Hazard Classification
Hydrazine Hydrate (N ₂ H ₄ ·H ₂ O)	80.0%	10217-52-4	Acute Tox. 2 (oral/dermal/inhal); Skin Corr. 1B; Eye Dam. 1; STOT-SE 1; STOT-RE 1; Aquatic Tox. 1; Flam. Liq. 3
Water	20.0%	7732-18-5	Non-hazardous

SECTION 4: First Aid Measures

- Inhaled: Remove to fresh air immediately; keep the affected person in a semi-upright position, maintain airway patency; if breathing stops, perform artificial respiration (use a respirator, avoid direct contact); give oxygen if breathing is difficult; seek emergency medical help immediately. - Skin Contact: Remove contaminated clothing and shoes immediately (cut clothing if necessary); 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 immediately (even if no obvious burns are visible). - 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: Dry powder, CO₂, foam, sand; use water spray to cool containers (do not use water jet directly on the liquid). - Unsuitable Media: Water jet (may spread the fire and cause splashing of corrosive liquid). - Special Hazards: Flammable liquid (flash point 72°C, autoignition temperature 270°C); decomposes at high temperature to release toxic ammonia and nitrogen gas; reacts violently with oxidants to cause explosion; toxic and corrosive fumes are generated during combustion. - Firefighter Advice: Wear full-body protective equipment (acid-resistant suit, face shield, positive pressure self-contained breathing apparatus); fight the fire from a safe distance; cool containers with water spray until the fire is completely extinguished; avoid inhalation of smoke and fumes; isolate the fire scene and evacuate personnel.

SECTION 6: Accidental Release Measures

- Personal Precautions: Evacuate non-essential personnel; wear PPE (positive pressure respirator, nitrile gloves, protective clothing, goggles); 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, pump the liquid into sealed drums, and entrust professional institutions for harmless treatment; 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) and fire-proof workshop; use explosion-proof electrical equipment (lighting, motors); avoid contact with skin, eyes and inhalation of vapor; do not mix with oxidants, acids or heavy metal salts; use corrosion-resistant tools (glass, plastic, stainless steel); wash hands and face thoroughly after operation (use neutral soap). - Storage: Store in a cool, dry, well-ventilated warehouse (temperature 0-30°C, away from heat sources/sparks); keep container tightly closed, upright; store separately from strong oxidants (H₂O₂, KMnO₄), concentrated acids (HCl, H₂SO₄), heavy metal salts and food-grade materials; no smoking in the storage area; install fire-fighting equipment (dry powder extinguisher) and leakage emergency treatment equipment. - Shelf Life: 12 months (unopened, specified conditions); use promptly after opening, seal tightly after each use; do not use if discoloration (deep yellow/brown) or precipitation occurs. - Compatibility: Incompatible with strong oxidants, concentrated acids, heavy metal salts, halogens and organic halides.

SECTION 8: Exposure Controls/Personal Protection

- Engineering Controls: Install local exhaust ventilation system (air change rate ≥10 times/hour); set up emergency eyewash stations and safety showers (within 10 meters of the workplace); use explosion-proof electrical equipment; install gas detection alarms (hydrazine vapor sensor). - PPE: Respiratory protection: Positive pressure self-contained breathing apparatus (when vapor is generated or leaked); Hand protection: Nitrile gloves (thickness ≥0.8 mm, replace every 2 hours); Eye/Face protection: Chemical safety goggles and face shield; Body protection: Acid-resistant, flame-retardant 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: Pungent, ammonia-like odor pH (25°C, undiluted): 10.5-11.5; Boiling Point: 118-122°C (760 mmHg); Melting Point: -51.7°C Flash Point: 72°C (closed cup); Autoignition Temperature: 270°C; Flammability: Flammable liquid (Category 3) Density (25°C): 1.020-1.030 g/cm³; Solubility: Miscible with water, ethanol, methanol, insoluble in ether and benzene Vapor Pressure (25°C): 1.4 hPa; Partition Coefficient (log P): -1.3 (estimated); Viscosity (25°C): 2.5 mPa·s

SECTION 10: Stability and Reactivity

- Stability: Stable under normal storage and handling conditions (0-30°C, sealed, dry); decomposes at >150°C to ammonia and nitrogen; gradually oxidizes in air to form hydrazine oxides (toxic); stable in alkaline environment, decomposes in acidic environment. - Incompatibilities: Strong oxidants (may cause explosion/combustion); concentrated acids (violent reaction, releases heat); heavy metal salts (catalyzes decomposition); halogens (violent reaction); organic halides (forms toxic products). - Hazardous Decomposition Products: Ammonia (NH₃, toxic/irritating), nitrogen gas (N₂, non-toxic), hydrazine oxides (N₂H₄O_n, toxic) at high temperature; toxic fumes when reacting with acids.

SECTION 11: Toxicological Information

- Acute Toxicity: Oral (Rat, LD₅₀): 37 mg/kg; Dermal (Rabbit, LD₅₀): 30 mg/kg; Inhalation (Rat, LC₅₀): 57 ppm (4-hour exposure, vapor). - 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 damages liver, kidney and respiratory tract; repeated exposure causes chronic liver/kidney failure. - Other Toxicity: Mutagenic (Ames test positive); suspected carcinogen (IARC Category 2B); teratogenic in animal tests (fetal malformation); no skin sensitization reported.

SECTION 12: Ecological Information

- Fish (Zebrafish, LC₅₀): 0.5-1.0 mg/L (96-hour exposure) - Daphnia (EC₅₀): 0.1-0.3 mg/L (48-hour exposure) - Algae (Growth Inhibition, EC₅₀): 0.2-0.5 mg/L (72-hour exposure) - Biodegradability: Poorly biodegradable (BOD₅/COD <0.1); persists in water for 60-90 days. - Environmental Fate: Highly soluble in water; does not hydrolyze or photodegrade easily; high bioaccumulation in aquatic organisms (BCF: 1000-5000 in fish); leaches into groundwater if spilled on soil, causing long-term pollution.

SECTION 13: Disposal Considerations

- Product Waste: Collect waste in corrosion-resistant, sealed containers; do not mix with other wastes (especially oxidants and acids); dispose of via licensed hazardous waste treatment institutions (neutralization + incineration); do not discharge into water bodies or sewers. - Packaging Waste: Rinse containers thoroughly with a small amount of water (collect rinse water for treatment); dispose of as hazardous waste (corrosive/toxic); do not reuse or recycle contaminated packaging. - Special Disposal Notes: Neutralize with dilute acid (under strict ventilation, avoid toxic fumes) before disposal; incineration must be equipped with toxic gas absorption devices; comply with local environmental protection regulations for hazardous waste disposal.

SECTION 14: Transport Information

- UN Number: ADR/RID: 2030; IMDG: 2030; IATA-DGR: 2030 - UN Proper Shipping Name: HYDRAZINE HYDRATE, 80% - Transport Class: 6.1 (Toxic) + 3 (Flammable liquid); Packaging Group: I; Environmental Hazards: Yes (Marine Pollutant, Category 1) - Special Precautions: Transport in corrosion-resistant, explosion-proof, 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 heat sources, sparks, oxidants, acids 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



NEWAY SINOPHC TECH. LIMITED

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- National Regulations (China): Complies with Hazardous Chemical Safety Management Regulation (Hazard Class 6.1/3); meets GB/T 17874-2010 (Hydrazine Hydrate); compliant with boiler water treatment and chemical synthesis industry standards; prohibited for food, cosmetic and pharmaceutical use without purification. - International Regulations: GHS Rev.9 (Acute Tox. 2, Skin Corr. 1B, Eye Dam. 1, STOT-SE/RE 1, Aquatic Tox. 1, Flam. Liq. 3); REACH (EU, registered); TSCA (US, listed); FDA (US, restricted use).

SECTION 16: Other Information

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

