



# NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.  
Email:marketing01@newayphc.com; Phone:+86-021-50350029 <https://www.newayphc.com>

## Safety Data Sheet (MSDS)

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

### Sodium Hydroxide (Purity $\geq$ 99.0%, Industrial Grade, Flake)

#### SECTION 1: Identification

**1.1 Product Identifiers** - Product Name: Sodium Hydroxide - Product Number: NaOH-20280203 - Brand: SIGALD - CAS-No.: 1310-73-2 - Synonyms: Caustic soda; Lye; Sodium hydrate - Chemical Family: Inorganic strong base - Concentration:  $\geq$  99.0% (w/w) NaOH,  $\leq$  0.5% Na<sub>2</sub>CO<sub>3</sub>, trace impurities

#### 1.2 Details of the supplier of the safety data sheet

- Company : NEWAY SINOPHC TECH. LIMITED
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- Telephone : +86-021-50350029
- Fax : +86-021-50350029

#### 1.3 Emergency telephone

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

**1.4 Uses & Restrictions** - Identified Uses: Chemical synthesis (dyes, detergents, pharmaceuticals); textile mercerizing and scouring; metal cleaning and surface treatment; water treatment pH adjuster and coagulant aid; food processing (food-grade, pH adjustment); laboratory reagent. - Uses Advised Against: Direct contact with food, cosmetics without purification; use in unventilated areas without PPE; mixing with water in large batches without temperature control; mixing with strong acids, halogens or organic halides without protection.

#### SECTION 2: Hazards Identification

2.1 GHS Classification: Skin corrosion/irritation (Category 1A); Eye damage/irritation (Category 1); Specific target organ toxicity (single exposure, respiratory tract, Category 3); Aquatic hazard (Category 1)

2.2 GHS Label Elements - Hazard Pictogram: (Toxic/Corrosive) + (Aquatic hazard) - Signal Word: DANGER - Hazard Statements: H314 (Causes severe skin burns and eye damage); H335 (May cause respiratory irritation); H400 (Very toxic to aquatic life) - Precautionary Statements: P201, P202, P260, P261, P264, P270, P271, P273, P280, P301+P330+P331, P303+P361+P353, P304+P340+P310, P305+P351+P338+P310, P310 (Immediately call a poison center or doctor/physician), P321, P363, P405, P501

2.3 Physical/Chemical Hazards: White flakes; odorless; highly hygroscopic (absorbs moisture and CO<sub>2</sub> from air); highly soluble in water (violently exothermic, releases large amounts of heat); strong corrosive and alkaline; reacts violently with strong acids (e.g., H<sub>2</sub>SO<sub>4</sub>, HCl) to generate heat and splashing; reacts with halogens (Cl<sub>2</sub>, Br<sub>2</sub>) and organic halides to produce toxic gases; contact with aluminum, zinc and other amphoteric metals generates flammable hydrogen (H<sub>2</sub>) gas.

2.4 Health Hazards: Skin contact causes severe burns, blistering, tissue necrosis and scarring (irreversible damage); eye contact causes severe burns, corneal damage and possible blindness (irreversible); inhalation of dust/mist (when dissolved or heated) causes severe respiratory tract irritation, coughing, chest pain and difficulty breathing; oral ingestion causes severe burns to mouth, esophagus and stomach, vomiting (may contain blood), abdominal



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pain, shock and even death; long-term exposure may damage respiratory system and teeth (erosion).

2.5 Environmental Hazards: Very toxic to aquatic organisms (fish, algae, invertebrates); highly persistent in water bodies; low bioaccumulation potential (BCF <100); causes severe water alkalization if spilled (raises pH sharply), destroying aquatic ecosystems; may contaminate soil and groundwater, inhibiting plant growth.

### SECTION 3: Composition/Information on Ingredients

Substance/Mixture: Mainly pure substance ( $\geq 99.0\%$ ), trace impurities

Component	Content (w/w)	CAS- No.	Hazard Classification
Sodium Hydroxide (NaOH)	$\geq 99.0\%$	1310-73-2	Skin Corr. 1A; Eye Dam. 1; STOT-SE 3; Aquatic Tox. 1
Sodium Carbonate (Na <sub>2</sub> CO <sub>3</sub> )	$\leq 0.5\%$	497-19-8	Skin Irrit. 2; Eye Irrit. 2
Impurities (NaCl, Fe, Pb)	$\leq 0.05\%$	Mixture	Non-hazardous (trace)

### SECTION 4: First Aid Measures

- Inhaled: Remove to fresh air immediately; keep the affected person in a semi-recumbent position, maintain airway patency; if breathing is difficult or stops, give artificial respiration (by trained personnel) and oxygen; seek emergency medical help immediately. - Skin Contact: Remove contaminated clothing and shoes immediately; rinse the affected area thoroughly with plenty of cold running water for at least 15 minutes (do not use hot water); do not rub or apply any ointment (avoid neutralization heat); seek emergency medical help immediately (even if no obvious burns are visible). - Eye Contact: Hold eyelids open; rinse eyes continuously with plenty of cold running 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 (irreversible damage may occur quickly). - Swallowed: Do not induce vomiting (may cause secondary burns to esophagus); rinse mouth with water (do not swallow); give 200-300 mL of water or milk (only if the person is conscious and able to swallow); do not give acidic substances (avoid violent neutralization); seek emergency medical help immediately, bring this MSDS.

### SECTION 5: Firefighting Measures

- Suitable Extinguishing Media: Water spray (cooling only), dry powder, foam, CO<sub>2</sub>; do not use direct water jet on large quantities of solid NaOH. - Unsuitable Media: Direct water jet (may cause splashing of corrosive solution); strong acids (avoid violent reaction). - Special Hazards: Does not burn, but reacts violently with metals (Al, Zn) to generate flammable hydrogen gas (may ignite or explode); decomposes when heated above 1390°C, releasing non-toxic Na<sub>2</sub>O fumes; contact with organic matter may cause thermal decomposition due to exothermic reaction. - Firefighter Advice: Wear full protective equipment (alkali-resistant fire suit, self-contained breathing apparatus, face shield, alkali-resistant gloves and boots); keep a safe distance; cool containers with water spray until the fire is completely extinguished; avoid



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inhalation of dust/mist and contact with corrosive liquids; isolate the fire scene and evacuate non-essential personnel.

### SECTION 6: Accidental Release Measures

- Personal Precautions: Evacuate non-essential personnel immediately; set up warning signs (corrosive hazard); wear full PPE (alkali-resistant respirator, chemical safety goggles, face shield, alkali-resistant gloves and suit); ensure good ventilation (local exhaust ventilation). - Environmental Precautions: Prevent the solid/solution from entering sewers, rivers, lakes or groundwater; build dikes around the leakage area to contain the material; neutralize with dilute acid (e.g., acetic acid) if spilled into water; notify local environmental authorities for large-scale leakage (>20 kg solid or 50 L solution). - Cleanup: Small spill (solid) - sweep up carefully with alkali-resistant tools, collect into sealed alkali-resistant drums for disposal; large spill (solid) - transfer to sealed containers, then neutralize with dilute acid (slowly add acid to alkali, avoid exothermic splashing); spill (solution) - absorb with alkali-resistant absorbent materials (vermiculite, activated carbon), collect and neutralize; clean the area with plenty of water (collect rinse water for neutralization treatment), do not discharge directly.

### SECTION 7: Handling and Storage

- Handling: Operate in a well-ventilated workshop (local exhaust ventilation, air change rate  $\geq 12$  times/hour); use alkali-resistant tools and equipment (PP, PTFE, glass); strictly follow the "alkali into water" principle when dissolving (slowly add NaOH flakes to water while stirring, cool with cold water if necessary to prevent overheating and splashing); avoid splashing, inhalation of dust and contact with skin/eyes; do not mix with strong acids, metals or halogens; wash hands and face thoroughly with water after operation (use acid-neutralizing soap); avoid eating, drinking or smoking in the workplace. - Storage: Store in a cool, dry, well-ventilated dedicated warehouse (temperature 5-30°C, relative humidity  $\leq 65\%$ ); keep container tightly closed, store upright on alkali-resistant shelves; use moisture-proof packaging (inner plastic bag + outer woven bag); store separately from strong acids ( $H_2SO_4$ , HCl), metals (Al, Zn), halogens and food-grade materials (separation distance  $\geq 10$  meters); no smoking in the storage area; install emergency eyewash stations, safety showers (within 10 meters) and alkali-neutralizing equipment (dilute acetic acid, boric acid). - Shelf Life: 24 months (unopened, specified conditions); use promptly after opening, seal tightly after each use; do not use if caking (severe hygroscopicity), discoloration (yellow/brown) or impurity precipitation occurs. - Compatibility: Incompatible with strong acids, amphoteric metals, halogens, organic halides, peroxides and cyanides.

### SECTION 8: Exposure Controls/Personal Protection

- Engineering Controls: Install local exhaust ventilation system (dust collection efficiency  $\geq 95\%$ ); set up emergency eyewash stations and safety showers (hot and cold water available); use alkali-resistant pipelines and storage tanks; install dust concentration detection alarms (alarm threshold:  $2 \text{ mg/m}^3$ ); maintain negative pressure in the workshop. - PPE: Respiratory protection: Dust respirator (type P100/N95) when handling solid, self-contained breathing apparatus for emergency situations; Hand protection: Alkali-resistant nitrile gloves (thickness  $\geq 1.5 \text{ mm}$ , replace every 1-2 hours or when damaged); Eye/Face protection: Chemical safety goggles and full-face shield (alkali-resistant); Body protection: Alkali-resistant protective clothing (PP or PTFE material) and alkali-resistant boots. - Hygiene Measures: Do not touch eyes, face or mouth with contaminated hands; change contaminated clothing immediately (wash separately with acid-neutralizing water); provide acid-neutralizing soap and skin care products (moisturizer) near the workplace; conduct regular health checks for operators (annual physical examination focusing on respiratory system, skin and eyes).



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## SECTION 9: Physical and Chemical Properties

Physical State: Solid (flakes); Color: White; Odor: Odorless pH (25°C, 0.1% Aqueous Solution): 13.0-13.5; Boiling Point: 1390°C (at 101.3 kPa); Melting Point: 318.4°C Flash Point: Not applicable (non-flammable); Autoignition Temperature: Not applicable; Flammability: Non-flammable Density (20°C, g/cm<sup>3</sup>): 2.13; Solubility: Highly soluble in water (exothermic, 111 g/100 mL at 20°C), soluble in ethanol, insoluble in ether and benzene Vapor Pressure (25°C, kPa): <0.001; Partition Coefficient (log P): -3.0 (estimated); Hygroscopicity: Highly hygroscopic

## SECTION 10: Stability and Reactivity

- Stability: Stable under normal storage and handling conditions (5-30°C, sealed); no decomposition at room temperature; stable for 24 months under specified storage conditions; decomposes at >1390°C to release sodium oxide (Na<sub>2</sub>O); absorbs moisture and CO<sub>2</sub> from air to form sodium carbonate (Na<sub>2</sub>CO<sub>3</sub>) over time (affects purity but not safety). - Incompatibilities: Strong acids (violent neutralization reaction, generates heat and splashing); amphoteric metals (Al, Zn, Sn, generates flammable H<sub>2</sub> gas); halogens (Cl<sub>2</sub>, Br<sub>2</sub>, generates toxic hypochlorite); organic halides (generates toxic gases); peroxides (accelerates decomposition). - Hazardous Decomposition Products: Sodium oxide (Na<sub>2</sub>O) when heated; toxic hydrogen gas (H<sub>2</sub>) when reacting with metals; noxious alkali mist when exposed to moisture.

## SECTION 11: Toxicological Information

- Acute Toxicity: Oral (Rat, LD<sub>50</sub>): 40 mg/kg; Dermal (Rabbit, LD<sub>50</sub>): 1290 mg/kg; Inhalation (Rat, LC<sub>50</sub>): 3 mg/m<sup>3</sup> (4-hour exposure, dust). - Skin/Eye Irritation: Skin corrosion (Category 1A), causes severe burns and tissue necrosis; eye damage (Category 1), causes irreversible corneal damage and blindness. - Organ Toxicity: Single exposure causes respiratory tract, skin and eye damage; long-term inhalation of dust causes chronic bronchitis and lung damage; no liver or kidney toxicity reported at normal exposure levels. - Other Toxicity: No mutagenic, carcinogenic or teratogenic effects reported; no skin sensitization reported.

## SECTION 12: Ecological Information

- Fish (Zebrafish, LC<sub>50</sub>): <1 mg/L (96-hour exposure, aqueous solution) - Daphnia (EC<sub>50</sub>): <0.5 mg/L (48-hour exposure, aqueous solution) - Algae (Growth Inhibition, EC<sub>50</sub>): <1 mg/L (72-hour exposure, aqueous solution) - Biodegradability: Not biodegradable (inorganic base); persists in water until neutralized by natural buffering substances. - Environmental Fate: Highly soluble in water; causes severe alkalization of water bodies (raises pH sharply); no bioaccumulation (BCF <100); leaches into groundwater if spilled on soil, inhibiting plant growth and damaging soil microorganisms.

## SECTION 13: Disposal Considerations

- Product Waste: Collect waste in sealed alkali-resistant drums (PP or PTFE material); neutralize with dilute acid (acetic acid, hydrochloric acid) (slowly add acid to alkali, stir continuously, cool to room temperature); after neutralization (pH 6-9), dispose of via licensed hazardous waste treatment institutions; do not landfill or discharge into water bodies or sewers. - Packaging Waste: Rinse containers thoroughly with water (collect rinse water for neutralization treatment); neutralize the residual alkali, then dispose of as hazardous waste; do not reuse or recycle contaminated packaging. - Special Disposal Notes: Comply with local environmental protection regulations for hazardous waste disposal; do not mix with other wastes during disposal; neutralization process must be carried out in a well-ventilated area with PPE.



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### SECTION 14: Transport Information

- UN Number: ADR/RID: 1823; IMDG: 1823; IATA-DGR: 1823 - UN Proper Shipping Name: SODIUM HYDROXIDE, SOLID - Transport Class: 8 (Corrosive substances); Packaging Group: II; Environmental Hazards: Yes (Marine Pollutant, Category 1) - Special Precautions: Transport in moisture-proof packaging (inner plastic bag + outer woven bag or steel drum with plastic lining); transport by specialized hazardous chemical vehicles (alkali-resistant); avoid collision, vibration and impact; keep away from strong acids, metals and food during transport; prevent rain, sunlight and high temperature (transport temperature  $\leq 35^{\circ}\text{C}$ ); drivers and handlers must be trained and hold relevant certificates; carry this MSDS and emergency neutralization equipment (dilute acetic acid).

### SECTION 15: Regulatory Information

- National Regulations (China): Complies with GB/T 209-2018 (Industrial Sodium Hydroxide); Hazardous Chemical Safety Management Regulation (Hazard Class 8); compliant with chemical synthesis, textile and water treatment industry standards; food-grade product complies with GB 1886.20-2016 (Food Additive - Sodium Hydroxide). - International Regulations: GHS Rev.9 (Skin Corr. 1A, Eye Dam. 1, STOT-SE 3, Aquatic Tox. 1); REACH (EU, registered); TSCA (US, listed); ASTM E1358 compliant; FDA (US, food additive, GRAS status for food-grade).

### SECTION 16: Other Information

- Revision Date: 03 FEB 2025 - Disclaimer: Based on current scientific knowledge and product testing data; this product is highly corrosive and toxic to aquatic organisms, 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.

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