



MSDS (Material Safety Data Sheet)

SECTION 1: Identification

1.1. Identification

Product name: sodium hydroxide

Product form: flakes

CAS-No: 1310-73-2

Product HS code: 28151110

Formula: NaOH

Synonyms: anhydrous caustic soda / caustic alkali / caustic flake / caustic soda, solid / caustic white / caustic, flaked / hydrate of soda / hydroxide of soda / LEWIS red devil lye / soda lye / sodium hydrate / sodium hydroxide, pellets

1.2. Recommended use and restrictions on use

Use of the substance / mixture: Industrial use, laboratory chemicals

Restrictions on use: Not for food, drug or household use

1.3. Manufacturer

Company name: Nam Avaran Azar

Company brand name: Arax Chemi

Number 28, Ata complex, West Janbazan street, Nabovvat square, Narmak, Tehran, Iran

Email: info@araxchemi.com

Website: www.araxchemi.com

Phone number: 021-71333331, 021-35000015, 021-78528

National Emergency phone number: 115

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion / irritation, Category 1A	H314	Causes severe skin burns and eye damage.
Serious eye damage / eye irritation, Category 1	H318	Causes serious eye damage.
Hazardous to the aquatic environment, Acute Hazard, Category 3	H402	Harmful to aquatic life

Full text of H statements: see section 15

2.2. GHS Label elements, including precautionary statements

Hazard pictograms (GHS-US)



GHS05

Signal word: Danger



Hazard statements (GHS-US): H314 – Causes skin burns and eye damage.

H402 – Harmful to aquatic life

Precautionary statements (GHS-US): P260 – Do not breathe dust, vapors.

P264 – Wash exposed skin thoroughly after handling.

P273 – Avoid release to the environment.

P280 – Wear eye protection, face protection, protective clothing, protective gloves.

P301+P330+P331 – IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P303+P361+P353 – If ON SKIN (or hair): Take off immediately all contaminated clothing.

Rinse skin with water / shower.

P304+P340 – IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 – Immediately call a POISON CENTER / doctor.

P263 – Wash contaminated clothing before reuse.

P405 – Store locked up.

P501 – Dispose of contents / container to Comply with applicable regulations.

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification: None under normal condition.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition / information on ingredients

3.1. Substances

Substance type: Mono – constituent

Name	Product identifier	%	GHS – US classification
Sodium hydroxide (Main constituent)	(CAS No) 1310-73-2	98.5 ± 0.5	Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 3, H402

Full text of hazard classes and H-statements: see section 15

3.2. Mixtures

Not applicable

SECTION 4: First – aid measures

4.1. Description of first aid measures

First-aid measures general: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest:



artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in shock: on his back with legs slightly raised.

Vomiting: prevent asphyxia / aspiration pneumonia. Prevent cooling by covering the victim (nowarming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor / hospital.

First-aid measures after inhalation: Remove the victim into fresh air. Respiratory problems: consult a doctor / medical service.

First-aid measures after skin contact: Wipe off dry product from skin. Remove clothing before washing. Wash immediately with lots of water (15 minutes) / shower. Do not apply (chemical) neutralizing agents. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor / medical service. If burned surface > 10%: take victim to hospital.

First-aid measures after eye contact: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist.

First-aid measures after ingestion: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Do not give activated charcoal. Do not give chemical antidote. Immediately consult a doctor / medical service. Call Poison Information Centre. Ingestion of large quantities: immediately to hospital. Take the container / vomit to the doctor / hospital.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms / effects after inhalation: WHEN PROCESSED: Dry / sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. ON CONTINUOUS EXPOSURE / CONTACT: Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upperrespiratory tract. Possible laryngeal spasm / oedema. Risk of lung oedema.

Symptoms / effects after skin contact: Blisters. Caustic burns / corrosion of the skin. Slow-healing wounds.

Symptoms / effects after eye contact: Corrosion of the eye tissue. Permanent eye damage.

Symptoms / effects after ingestion: Dry / sore throat. Nausea. Abdominal pain. Blood in vomit. Difficulty in swallowing. Possible esophageal perforation. Burns to the gastric / intestinal mucosa. Bleeding of the gastrointestinaltract. Shock.

Chronic symptoms: ON CONTINUOUS / REPEATED EXPOSURE / CONTACT: Dry skin. Skin rash / inflammation. Possible inflammation of the respiratory tract. Gastrointestinal complaints.

4.3. immediate medical attention and special treatment, if necessary

Obtain medical assistance.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Adapt extinguishing media to the environment for surrounding fires.

5.2. Specific hazards arising from the chemical

Fire hazard: DIRECT FIRE HAZARD: Noncombustible. INDIRECT FIRE HAZARD: Reactions involving a fire hazard: see "Reactivity Hazard".

Explosion hazard: INDIRECT EXPLOSION HAZARD: Reactions with explosion hazards: see "Reactivity Hazard".



Reactivity: May be corrosive to metals. Absorbs the atmospheric CO₂. Violent to explosive reaction with (some) acids. Reacts violently with many compounds: heat release resulting in increased fire or explosion risk. Violent exothermic reaction with water (moisture): release of corrosive mist. Reacts exothermically on exposure to water (moisture) with combustible materials: risk of spontaneous ignition.

5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures fire: Exposure to fire / heat: keep upwind. Exposure to fire / heat: consider evacuation. Exposure to fire / heat: have neighborhood close doors and windows.

Firefighting instructions: Cool tanks / drums with water spray/remove them into safety. When cooling / extinguishing: no water in the substance. Take account of toxic fire-fighting water. Use water moderately and if possible, collect or contain it.

Protection during firefighting: Heat / fire exposure: compressed air / oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Absorb spillage to prevent material damage. Dike and contain spill.

6.1.1. For non-emergency personnel:

Protective equipment: Gloves. Face-shield. Corrosion-proof suit. Dust cloud production: compressed air / oxygen apparatus. Contact with moisture / water: compressed air / oxygen apparatus. Contact with moisture / water: gas-tight suit.

Emergency procedures: Mark the danger area. Prevent dust cloud formation. Corrosion-proof appliances. Keep containers closed. Avoid ingress of water in the containers. Wash contaminated clothes. On contact with moisture / water: keep upwind. On contact with moisture / water: consider evacuation. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation.

Measures in case of dust release: In case of dust production: keep upwind. Dust production: have neighborhood close doors and windows.

6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper protection. Do not breathe dust.

Emergency procedures: Stop release.

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

For containment: Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Hazardous reaction: measure explosive gas-air mixture. Reaction: dilute combustible gas / vapor with water curtain.

Methods for cleaning up: Collect the spill only if it is in a dry state. Wetted substance: cover with powdered limestone or dry sand, earth, vermiculite. Scoop solid spill into closing containers. Under controlled conditions: neutralize leftovers with dilute acid solution. Possible



violent reaction if you neutralize. Carefully collect the spill / leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer / competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

No Additional information available.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Avoid raising dust. Avoid contact of substance with water. Measure the concentration in the air regularly. Carry operations in the open / under local exhaust / ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Keep the substance free from contamination. Use corrosion-proof equipment. Thoroughly clean / dry the installation before use. Do not discharge the waste into the drain.

Hygiene measures: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse. Separate working clothes from town clothes. Launder separately.

7.2. Conditions for safe storage, including any incompatibilities

Incompatible products: combustible materials. metals. Strong acids. Strong oxidizers. Protect from moisture.

Incompatible materials: incompatible materials. Moisture. Heat sources.

Storage temperature: 20 °C

Heat and ignition sources: KEEP SUBSTANCE AWAY FROM: heat sources.

Prohibitions on mixed storage: KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. (strong) acids. metals. organic materials. Water / moisture.

Storage area: Store in a dry area. Keep container in a well-ventilated place. Keep locked up. Unauthorized persons are not admitted. Store at ambient temperature. Keep only in the original container. Meet the legal requirements.

Special rules on packaging: SPECIAL REQUIREMENTS: hermetical. watertight. corrosion-proof. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packaging in solid containers.

Packaging materials: SUITABLE MATERIAL: stainless steel. nickel. polyethylene. paper. MATERIAL TO AVOID: lead. aluminum. copper. tin. zinc. bronze. textile.

SECTION 8: Exposure controls / personal protection

8.1. control parameters

Sodium Hydroxide (1310-73-2)		
ACGIH	ACGIH Ceiling (mg/m ³)	2 mg/m ³
OSHA	OSHA PEL (TWA) (mg/m ³)	2 mg/m ³
IDLH	US IDLH (mg/m ³)	10 mg/m ³
NIOSH	NIOSH REL (ceiling) (mg/m ³)	2 mg/m ³



8.2. Appropriate engineering controls

Appropriate engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.

8.3. Individual protection measures / Personal protective equipment

Personal protective equipment: Safety glasses. Protective clothing. Gloves. Dust / aerosol mask with filter type P3.



Materials for protective clothing: GIVE GOOD RESISTANCE: natural rubber. neoprene. nitrile rubber. GIVE LESS RESISTANCE: butyl rubber. polyethylene. PVA. GIVE POORRESISTANCE: natural fibers.

Hand protection: Gloves

Eye protection: Face shield. In case of dust production: protective goggles

Skin and body protection: Corrosion-proof clothing. In case of dust production: head / neck protection

Respiratory protection: Dust production: dust mask with filter type P3. High dust production: self-contained breathing apparatus.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Solid

Appearance: Crystalline solid. Crystalline powder. Little spheres. Lumps. Needles. Scales. Flakes.

Color: White

Odor: Odorless

Odor threshold: No data available

pH: 14 (5 %)

Melting point: 323 °C

Freezing point: No data available

Boiling point: 1388 °C (1013.25 hPa)

Flash point: Not applicable

Relative evaporation rate (butylacetate=1): No data available

Flammability (solid, gas): No data available

Vapor pressure: < 0.1 hPa (20 °C)

Relative vapor density at 20 °C: No data available

Relative density: 2.13 (20 °C)



Density: 2130 kg/m³

Molecular mass: 40 g/mol

Solubility: Exothermically soluble in water. Soluble in ethanol. Soluble in methanol. Soluble in glycerol. Water: 100 g/100ml (25 °C). Ethanol: soluble.

Log pow: No data available

Auto-ignition temperature: Not applicable

Decomposition temperature: No data available

Viscosity, kinematic: 0.53 mm²/s (25 °C, 1 mol/l)

Viscosity, dynamic: 0.997 mPa.s (25 °C, Test data)

Explosive limits: No data available

Explosive properties: Not applicable

Oxidizing properties: None

9.2. Other information

Minimum ignition energy: Not applicable

Saturation concentration: 671 g/m³

VOC content: Not applicable (inorganic)

Other properties: Translucent. Hygroscopic. Substance has basic reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

May be corrosive to metals. Absorbs the atmospheric CO₂. Violent to explosive reaction with (some) acids. Reacts violently with many compounds: heat release resulting in increased fire or explosion risk. Violent exothermic reaction with water (moisture): release of corrosive mist. Reacts exothermically on exposure to water (moisture) with combustible materials: risk of spontaneous ignition.

10.2. Chemical stability

Hygroscopic. Unstable on exposure to air.

10.3. Possibility of hazardous reactions

Reacts violently with acids. Reacts violently with water.

10.4. Conditions to avoid

Moisture. Incompatible materials.

10.5. Incompatible materials

Water. Strong oxidizers. Strong acids. metals. combustible materials.



10.6. Hazardous decomposition products

Sodium oxide

SECTION 11: Toxicological information

Information on toxicological effects

Likely routes of exposure: Skin and eyes contact

Acute toxicity: Not classified

Skin corrosion / irritation: Causes severe skin burns and eye damage. pH: 14 (5 %)

Serious eye damage / irritation: Not classified

Respiratory or skin sensitization: Not classified

Germ cell mutagenicity: Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity (single exposure): Not classified

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard: Not classified

Potential adverse human health effects and symptoms: Causes severe skin burns. Causes serious eye damage.

Symptoms / effects after inhalation: WHEN PROCESSED: Dry / sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. ON CONTINUOUS EXPOSURE / CONTACT: Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upper respiratory tract. Possible laryngeal spasm / oedema. Risk of lung oedema.

Symptoms / effects after skin contact: Blisters. Caustic burns / corrosion of the skin. Slow-healing

Symptoms / effects after eye contact: Corrosion of the eye tissue. Permanent eye damage.

Symptoms / effects after ingestion: Dry / sore throat. Nausea. Abdominal pain. Blood in vomit. Difficulty in swallowing. Possible esophageal perforation. Burns to the gastric / intestinal mucosa. Bleeding of the gastrointestinal tract. Shock.

Chronic symptoms: ON CONTINUOUS / REPEATED EXPOSURE / CONTACT: Dry skin. Skin rash / inflammation. Possible inflammation of the respiratory tract. Gastrointestinal complaints

SECTION 12: Ecological information

12.1. Toxicity

Ecology – general: Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.

Ecology – air: Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology – water: Harmful to crustacea. Harmful to fishes. Groundwater pollutant. pH shift.



Sodium Hydroxide (1310-73-2)	
LC50 fish 1	45.4 mg/l (Other, 96 h, Salmo gairdneri, Static system, Fresh water, Experimental value)
LC50 Daphnia 1	40.4 mg/l (Other, 48 h, Ceriodaphnia sp., Experimental value)

12.2. Persistence and degradability

Sodium Hydroxide (1310-73-2)	
Persistence and degradability	Biodegradable: not applicable
Biochemical oxygen demand (BOD)	Not applicable (inorganic)
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

Sodium Hydroxide (1310-73-2)	
Bioaccumulative	Not bioaccumulative

12.4. Mobility in soil

Sodium Hydroxide (1310-73-2)	
Ecology – soil	No (test) data on mobility of the substance available.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

Disposal methods

Waste disposal recommendations: Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Should not be landfilled with household waste. Recycle / reuse. Dilute. Neutralize.

Additional information: Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

SECTION 14: Transport information

Department of transportation (DOT)

in accordance with DOT

transport document description: UN1823 Sodium hydroxide, solid, 8, II



UN – No. (DOT): UN1823

Proper shipping name (DOT): Sodium hydroxide, solid

Transport hazard class(es) (DOT): 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT): II - Medium Danger

Hazard labels (DOT): 8 - Corrosive



DOT Packaging Non Bulk (49 CFR 173.xxx): 212

DOT Packaging Bulk (49 CFR 173.xxx): 240

DOT Special Provisions (49 CFR 172.102):

IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2).

IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.

IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner. T3 - 2.65 178.274(d)(2) Normal 178.275(d)(2)

TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.

DOT Packaging exceptions (49 CFR 173.xxx): 154

DOT Quantity Limitations Passenger aircraft / rail (49 CFR 173.27): 15 kg

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): 50 kg

DOT Vessel Stowage Location: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

DOT Vessel Stowage Other: 52 - Stow "separated from" acids

Other information: No supplementary information available



SECTION 15: Other information

Classification of the substance or mixture

Revision date: 29/08/2022

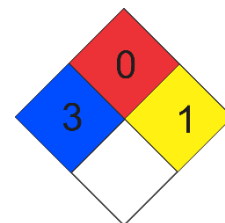
Full text of H – statements: see section 15:

H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H402	Harmful to aquatic life

NFPA health hazard: 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA life hazard: 0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity: 1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.



Hazard rating

Health: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability: 0 Minimal Hazard - Materials that will not burn

Physical: 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Personal protection: F

F - Safety glasses, Gloves, Synthetic apron, Dust respirator