1.0 Chemical Identity

1.1	Product Name	Caustic Soda Anhydrous-Flakes
	Synonyms	Sodium Hydroxide
	Formula	NaOH
	CAS No	1310-73-2
	Product Code	LC23900
1.2	Recommended Use and Restrictions	
	Use of substance	Industrial Use
	Recommended use	Laboratory Chemicals
	Restriction on use	Not for drug or household use
1.3	Company Information	
		Name: Al Kout Industrial Projects , Kuwait **Plant:** Salt & Chlorine Plant, Shuaiba, Kuwait **Company's Post Box No.:** 10277, Shuaiba-65453, Kuwait **Tel No.:** 00-(965)-22283726 Intercom: 3726, 3725 **Fax No.:** 00-(965)- 22284043 **Company's Emergency Phone No:** 00-(965)-, 23261029, 97216020, 99794511
1.4	Emergency Telephone Number	00-(965)-, 23261029, 97216020

2.0 Hazards Identification

2.1 Classification of the Substance or Mixture

GHS US Classification

Skin corrosion / irritation	H314	Causes Skin Burns & Eye Damage
Serious eye damage / eye irritation	H318	Causes Serious Eye Damage
Hazardous to the aquatic environment	H402	Harmful to aquatic life

Full text of H statements : see section 16

2.2 GHS Label elements including precautionary statements

GHS US Labeling

Hazard Pictograms (GHS – US) :

Single Word (GHS-US) : Danger

Hazard Statements (GHS-US) : H314 – Causes Skin Burns & Eye Damage
: H402 – Harmful to aquatic life

Precautionary Statements (GHS – US) : P260 - Do not breathe mist, vapors, spray.
P264 - Wash exposed skin thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
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 or doctor/physician.
P363 - Wash contaminated clothing before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to Comply with applicable regulations

2.3 Other Hazards

No additional information available

2.4 Unknown acute toxicity (GHS US)

Not Applicable

3.0 Composition/ Information on ingredients

3.1	Substances			
Mono-constituent				
Name		**Product identifier**	**%**	**GHS-US classification**
Sodium Hydroxide (Main constituent)		(CAS-No.) 1310-73-2	100	Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 3, H402

3.2	Mixtures		
	Finished product specification	Caustic Soda Flakes	
	Chemical Analysis		
	PARAMETERS		Specification
	Caustic soda as NaOH wt.%		≥ 97.5 wet basis (≥ 99.6 dry basis)
	Carbonate as Na_2CO_3 wt % max		0.40
	Sulphate as Na_2SO_4 ppm max		200
	Iron as Fe^{+2} ppm max		10
	Chloride as NaCl ppm max		200
	Copper as Cu^{+2} ppm max		4.0
	Nickel as Ni^{+2} ppm max		5.0
	Manganese as Mn^{+2} ppm max		4.0
	Silicate as SiO_2 ppm max		20
	Water Insolubles ppm max		200

4.0 First Aid Measures

4.1 Description of first aid measures

Inhalation	If a person breathes a large amount fumes/vapors of this chemical, move the exposed person to fresh air at once. Provide emergency airway support. Give 100% humidified supplemental oxygen with artificial respiration, if needed. Transport to emergency medical facility without delay.
Skin	If this chemical contact the skin, immediately flush the contaminated skin thoroughly wi water for at least 15 minutes. If this chemical penetrates the clothing, immediately remo the clothing and flush the skin thoroughly with water. Get medical attention promptly.
Eyes	If this chemical has been swallowed and the person is conscious, give water and/or milk immediately to dilute the caustic soda no more than 8 ounces in adults and 4 ounces in children is recommended to minimize the risk of vomiting. Do not attempt to make the person vomit. Get emergency medical attention immediately
Ingestion	If this chemical contacts the eyes, immediately flush the eyes with large amounts of wate at room temperature. Hold the eyelids apart during the flushing operation. Washing must be started within 10 seconds of contact and continued for 30 minutes to prevent permanent injury. Get medical attention immediately. Ophthalmology consultation is a must

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

Symptoms/effects after inhalatio	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 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 gastrointestinal tract. 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	

5.0 Fire Fighting Measures	
5.1. Suitable (and unsuitable) extinguishing media	
Firefighting procedure/Fire Extinguishing media	Caustic Soda is not combustible. Avoid direct contact of Caustic Soda with water, as this can produce a violent exothermic reaction. Use fighting agent suitable for surrounding fire to extinguish fire. Use carbon dioxide or suitable dry chemical extinguisher. Structural fire fighter's protective clothing is recommended for fire situations only; it is not effective in spills. Wear full protective clothing and NIOSH approved self-contained respirator, with a full-face piece, in the positive pressure mode.
Special Information	Caustic Soda will react with metals such as aluminum, tin, and zinc to generate flammable and explosive hydrogen gas.
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.

6.0 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 neighbourhood 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/vapour 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	

7.0 Handling and Storage		
7.1. Precautions for safe handling		
7.1	Handling & Storage	Precautions for Safe Handling Do not get in eyes, on skin, or on clothing. Do not breathe vapors, mist, or spray. Wear proper personal protection equipment. This product may be added slowly to water or acids with dilution and constant stirring to avoid a violent exothermic reaction. Full protective clothing should be worn. Avoid contact with aluminum, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction (boiling and spattering) Do not remove or deface label or tags from the containers. Always empty and clean containers of all residues before adding product to avoid potential explosive reaction caused by product and unknown residue. Returnable containers should be shipped in accordance with supplier's recommendations. Storage Conditions, Including Any Incompatibilities: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from extremely high or low temperatures and incompatible materials. Incompatible Materials: Strong acids. Strong oxidizers. Metals.
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 packagings in solid containers.
Packaging materials	:	SUITABLE MATERIAL: stainless steel. nickel. polyethylene. paper. MATERIAL TO AVOID: lead. aluminium. copper. tin. zinc. bronze. textile.

8.0 Exposure Controls/Personal Protection

8.1. Control parameters

Sodium Hydroxide (1310-73-2)

ACGIH	ACGIH Ceiling (mg/m³)	2 mg/m³
OSHA	OSHA PEL (TWA) (mg/m³)	2 mg/m³
IDLH	US IDLH (mg/m³)	10 mg/m³
NIOSH	NIOSH REL (ceiling) (mg/m³)	2 mg/m³

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 POOR RESISTANCE: natural fibres
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

9.0 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. Scale Flakes.
Colour	:	White
Odour	:	Odourless
Odour 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 ra (butylacetate=1)	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	< 0.1 hPa (20 °C)
Relative vapour 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 methanc 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.

10.0 Stability and Reactivity

10.1. Reactivity

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

11.0 Toxicological Information

11.1. 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	:	Causes serious eye damage. pH: 14 (5 %)
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified

(Based on available data, the classification criteria are not met)

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 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 gastrointestinal tract. Shock.

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

12.0 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)
EC50 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	Biodegradability: 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 potential 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

13.0 Disposal Considerations

13.1. 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.

14.0 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.

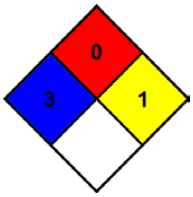
15.0 Regulatory Information	
15.1	OSHA Regulatory status: This material is considered hazardous by the OSHA Hazard Communicati Standard (29 CFR. 1910.1200) (US) CERCLA Sections 102a/103 Hazardous Substances (40 CFR 302.4) CERLA Reportable Quantity RQ: 1000 lbs (Pure NaOH)

16.0 Other Information		
16.1	Packing	HDPE Bags
16.2	Disclaimer	Although reasonable care has been taken in the preparation of th document, we extend no warranties and make no representation as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user’s intended purposes or for the

		consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s)

Full text of H-Phrases

H312	Harmful in contact with skin
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 fire 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 : H

H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.