SECTION 1. IDENTIFICATION OF THE HAZARDOUS CHEMICAL SUBSTANCE AND MANUFACTURER

1.1. Name of the hazardous chemical substance	Sodium hydroxide aqueous solution 50%
1.2. Other generic names	Caustic soda 50% W/W / soda lye, 50%, aqueous solution / white caustic, 50%, aqueous solution Formula: NaOH
1.3. Recommended use and restrictions of the hazardous chemical substance or mixture	**Recommended use:** Chemical manufactures, synthetic textiles, soaps and chemical detergents, paper and cellulose, water treatment, chemical fruit peeling, aluminum, petroleum refining, purification of vegetable and mineral oils, glass, resin neutralization and regeneration. **Non-recommended uses:** No non-recommended uses have been detected, as long as the indications indicated in this safety data sheet are complied.
1.4. Manufacturer information	

INDUSTRIA QUÍMICA DEL ISTMO, S. A DE C. V.
IQUISA SANTA CLARA, S. A. DE C. V.
IQUISA NORESTE, S. A. DE C. V.

COATZACOALCOS PLANT Complejo Industrial Pajaritos S/N Entre Avenida 4 y 5 Coatzacoalcos, Ver. CP 96400	**NORESTE PLANT** Carretera Sta. Catarina - García km 5.5 Estación Puerto Durazno Lote 1 Parque Industrial García García, Nuevo León CP 66000
SANTA CLARA PLANT Km 16.5 Vía Morelos Col. Santa Clara Ecatepec, Estado de México C.P 55540	**TLAXCALA PLANT** Carretera México-Veracruz Km 128 Corredor Industrial San Cosme-Xaloztoc Tlaxcala CP 90460
HERMOSILLO PLANT Calle del Plomo No. 45 Col. Parque Industrial Hermosillo, Sonora CP 83299	**Web Site** www.cydsa.com www.iquisa.com.mx
1.5. Emergency phone number	**SETIQ:** 800 00 21400, +52 (55) 5559 4049 **COATZACOALCOS PLANT:** +52 (921) 211 3428 **SANTA CLARA PLANT:** +52 (55) 569 92460, +52 (55) 569 92483 **HERMOSILLO PLANT:** +52 (662) 251 1024, +52 (662) 251 1027 **NORESTE PLANT:** +52 (81) 8158 2679, +52 (81) 8158 2680 **TLAXCALA PLANT:** +52 (241) 418 4726

SECCIÓN 2. HAZARDS IDENTIFICATION

2.1. Classification of the hazardous chemical substance

SGA – MX Classification	
Corrosive substance for metals	**H290**
Causes severe skin burns, category 1B.	**H314**
Causes serious eye damage, category 1.	**H318**

2.2. Signaling elements, precautionary statements and hazard pictograms included

SGA-MX Pictograms

Signal Word: **DANGER**

Hazard Indications

Code	Hazard Indications
H290	Corrosive substance for metals.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage

Precautory statements

Prevention:	
P260	Do not breathe mist, vapors, spray.
P262	Avoid all contact with eyes, skin or clothing.
P264	Wash exposed skin thoroughly after handling.
P280	Wear protective gloves, protective clothing, eye protection, face protection.
Intervention:	
P302 + P352	In case of skin contact, wash with plenty of water for at least 15 minutes.
P301 + P330 + P331	In case of ingestion, rinse mouth. Do not induce vomiting.
P303 + P361 + P353	In case of contact with skin or hair, immediately remove all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338	In case of contact with the eyes: Rinse with water carefully for 15 minutes. Remove contact lenses when they are present and can be done easily. Continue with the washing and Call the doctor physician.
Storage:	
P420	Store separately from incompatible materials.

2.3. Other hazards not contributing to a classification

Not applicable.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Chemical identity of the substance	Sodium hydroxide aqueous solution 50%
3.2 Common name, synonyms of the dangerous chemical or mixture	Caustic soda 50% W/W / soda lye, 50%, aqueous solution / white caustic, 50%, aqueous solution.
3.3 CAS No., ONU no, and others	CAS No.: 1310-73-2 ONU No.: 1824
3.4 Impurities and stabilizing additives which are in turn classified and which contribute to the classification of the substance	Not applicable.

3.5 Mixtures

Not applicable.

SECITON 4. FIRST AID MEASURES

4.1. First aid description

General Advice:

Avoid exposure to the product by taking appropriate protective measures. Consult the doctor carrying the safety data sheet.

- Before any action assess, use the personal protection equipment appropriate to the corresponding risk.
- Remove the person from the exposure area and remove all contaminated clothing with appropriate personal protective equipment, if necessary under a shower with plenty of fresh, running water.
- Retrieve clothing and handle it as a hazardous waste, taking care not to contaminate clean areas.
- Keep the person calm and in a comfortable position, wrap it up and encourage for a slow and deep breathing. In all cases ensure C, A, B.
- In case of respiratory failure, provide rescue breathing with ventilation every 6 seconds ensuring elevation of the patient's chest, use barrier devices connected to an oxygen source. In all cases avoid mouth-to-mouth breathing (medical attention according to current AHA protocols)
- In case of cardiorespiratory failure initiate cardiopulmonary resuscitation with two ventilations for 30 chest compressions, always with a barrier device connected to an oxygen source. In all cases avoid mouth-to-mouth breathing (medical attention according to current AHA protocols)

Inhalation:

In the event of exposure to steam, mist, or aerosol, remove the victim from the contaminated area. Check the respiratory function and provide artificial respiration if necessary. In case of inhalation or ingestion of the substance do not apply mouth-to-mouth respiration, use a one-way valve mask or other suitable device. Get medical attention immediately.

Skin contact:

Wash the affected area with plenty of running water for at least 20 minutes. Remove contaminated clothing and accessories under running water. In case of burns, get medical attention immediately.

If available, apply Diphoterine in spray or solution to the contaminated area according to the instructions for use.

Contact with eyes:

Flush eyes with plenty of running water for at least 20 minutes. Keep eyelids open during washing. Get medical attention immediately. Do not transport the victim until after the recommended wash time has ended, unless the wash can continue during the transfer.

If available, apply Diphoterine solution to each injured eye and then Afterwash II solution to each injured eye, according to the instructions for use.

	Ingestion: Do not induce vomiting. If victim is conscious, and is not convulsing, rinse mouth and provide as much water as possible to dilute material. If the victim vomits, have them lean forward with their head down to prevent them from breathing in the vomit. Rinse their mouth and give it more water. Get medical attention immediately.
4.2. Acute or chronic most important symptoms and effects	**Inhalation:** Exposure to steam, mist, or spray causes irritation of the upper respiratory tract. The symptoms are: coughing, sore throat, and difficulty breathing. Prolonged exposure, or at high concentrations, can cause burns to the tissues of the respiratory system, pulmonary edema and death. The onset of pulmonary edema can be delayed for up to 48 h after exposure. Early symptoms of pulmonary edema include shortness of breath and chest pressure. **Skin contact:** It produces burns. The severity of the injuries depends on the exposure time and the concentration of the substance. The effects can go from irritation, with redness and pain to tissue destruction. Burns may not be immediately painful and will continue as long as the substance is not removed from the skin. **Eye contact:** It produces burns. The severity of the injuries depends on the exposure time and the concentration of the substance. The effects can go from irritation with redness and pain, conjunctivitis, to destruction of the tissue and involvement or loss of sight. **Ingestion:** It produces burns in the mouth, throat and esophagus. The severity of injuries depends on the amount and concentration of the substance. The effects can be pain, vomiting, diarrhea, loss of consciousness and even death.
4.3. Indication of the need to receive immediate medical attention and, where appropriate, special treatment	Not applicable.

SECTION 5. FIRE MEASURES

5.1. Suitable extinguishing media	The substance is not flammable. Use extinguishing media suitable for the surrounding fire.
5.2. Specific hazards of the chemical	It reacts with some metals like zinc, copper, aluminum or magnesium, forming hydrogen; an explosive gas. When heated, the substance can emit toxic and corrosive vapors.
5.3. Special measures to be followed by firefighting groups	Move containers away from fire if you can do it safely, or keep them cool by spraying them with water. Avoid contacting the substance with water as it releases heat on contact with water. Professional firefighter suit may not provide adequate personal protection and may require the use of chemical resistant protective clothing and self-contained breathing apparatus.

SECTION 6. MEASURES TO BE TAKEN IN CASE OF SPILL OR ACCIDENTAL LEAKAGE

6.1. Personal cautions, protective equipment and emergency procedure	Restrict the entry of people into the spill area. Ventilate area of spill. Avoid coming into contact with the substance. Wear chemical resistant protective clothing, gloves and boots. Wear safety glasses in conjunction with full face protection.
6.2. Environmental cautions	Prevent the substance from entering drains or water bodies
6.3. Materials and methods for the containment and cleaning of spills or leaks	Stop the leak if you can do it safely. Contain the spill using inert material dams such as clay or sand. Protect inlets to nearby drains. Dilute the substance and neutralize it using a dilute acidic solution. Absorb the remaining material with an inert material such as clay or sand and collect. Dispose of the collected material according to the applicable environmental regulations.

SECTION 7. HANDLING AND STORAGE

7.1. Safe handling cautions	Avoid coming into contact with the substance. Put on appropriate personal protective equipment. Do not eat or drink food while handling this substance. If dilution is required, slowly add the substance to the water, not vice versa, to avoid heat generation and splashing.
7.2. Conditions of safe storage, including any incompatibility	Store in a cool, dry, well-ventilated place. Keep containers tightly closed and properly identified. Store away from incompatible materials such as acids, halogenated compounds, and metals such as aluminum, brass, bronze, copper, lead, tin, zinc, and others.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Component	VLE-PPT	VLE-CT	VLE-P	IPVS
Sodium Hydroxide	Not available	2 mg/m^3	Not available	10 mg/m^3

Exposure to solutions, mists or aerosols in low concentrations such as 5% sodium hydroxide can cause irritation and / or severe burns to the skin. Severity can be reduced by promptly rinsing affected areas with large amounts of water and obtaining immediate medical attention. The Ingestion of liquid sodium hydroxide solutions can cause severe burns to the mucous membranes of the mouth, throat, esophagus, and stomach. Sodium hydroxide is an odorless material.

The following table summarizes the effects on human health, according to OSHA:

Exposure level (mg/m^3)	Effects
0.5	ERPG - 1
0.5-2	Minor respiratory irritation
1	Slight risk to the eyes
2	REL - Ceiling TLV - Ceiling
>2	May cause damage to upper respiratory tract

	5	ERPG - 2
	10	IPVS
	50	ERPG-3
	1% Aqueous solution	Eye irritation
	5% Aqueous solution	Can cause severe skin irritation and / or burns

8.2. Appropriate technical controls	Store in a well-ventilated place or maintain ventilation if there is a possibility of vapors, mists or aerosols forming. Maintain functional showers and eyewash in areas where you handle the substance.
8.3. Individual protection measures, such as personal protective equipment , PPE	**Respiratory protection:** Use a half-face respirator with NIOSH approved N95 filter cartridges when there is a risk of exposure to vapors, mists, or aerosols. In case of eye irritation, a full face mask is required. To enter areas where the concentration of the substance in the air is unknown or is at levels immediately dangerous to life and health (IPVS), it is required to use self-contained breathing apparatus. **Skin protection:** Wear chemical resistant protective clothing, gloves and boots when there is a risk of skin contact. The following materials are considered suitable: Natural rubber, neoprene, nitrile, and polyvinyl chloride (PVC). **Eye protection:** Wear safety glasses in conjunction with full face protection when there is a risk of splashing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Appearance (physical state, color, etc.)	Colorless or slightly white liquid.
9.2. Odor	Odorless.
9.3. Odor threshold	Not applicable.
9.4. Hydrogen potential, pH	14.0
9.5. Melting point	12.0 °C.
9.6. Boiling point	140 °C.
9.7. Flashpoint	Not applicable.
9.8. Evaporation rate	Not applicable.
9.9. Flammability (solid / gas)	Not applicable.
9.10. Upper / lower flammability or explosive limit	Upper limit: Not applicable. Lower limit: Not applicable..
9.11. Vapor pressure	0.2 kPa at 20 °C.
9.12. Vapor density (air = 1)	Not applicable.
9.13. Relative density	1.5
9.14. Solubility	Soluble in water.
9.15. N-octanol / water partition coefficient	Not available.
9.16. Autoignition temperature	Not applicable.
9.17. Decomposition temperature	Not applicable.
9.18. Viscosity	78.3 cP at 20°C.
9.19. Molecular weight	40.0 g/mol.
9.20. Other relevant data	Not applicable.

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity	It reacts with some metals, such as aluminum, brass, bronze, copper, lead, tin, zinc and others, forming hydrogen. It solubilizes in water releasing heat.
10.2. Chemical stability	Stable under normal conditions of use and storage.
10.3. Possibility of dangerous reactions	Sodium hydroxide reacts violently with many organic and inorganic chemicals such as strong acids, nitro aromatic compounds, nitroparaffinics, organ halogens, glycols, and organic peroxides. May produce carbon monoxide on contact with sugars such as fructose, lactose and maltose. Violently polymerizes acetaldehydes, acroleins, and acrylonitriles.
10.4. Conditions to be avoided	Reacts with some metals, such as aluminum, brass, bronze, copper, lead, tin, zinc, and others, forming hydrogen, an explosive gas. It solubilizes in water releasing heat. Reacts violently with acidic substances releasing heat, steam and causing splashes.
10.5. Incompatible materials	Halogenated acids and compounds.
10.6. Hazardous decomposition products	Under normal conditions of use and storage, there should be no decomposition into dangerous products.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information about probable income routes	**Inhalation:** Exposure to vapor, mist, or aerosol causes irritation of the upper respiratory tract. Prolonged exposure or at high concentrations can cause burns to the tissues of the respiratory system. **Skin contact:** Produces burns. **Skin contact:** Produces burns. **Ingestion:** Produces burns to the mouth, throat and esophagus.
11.2. Symptoms related to physical, chemical and toxicological characteristics	**Inhalation:** The symptoms are: cough, sore throat, and shortness of breath. Prolonged exposure, or at high concentrations, can cause burns to the tissues of the respiratory system, pulmonary edema and death. The onset of pulmonary edema can be delayed for up to 48 h after exposure. Early symptoms of pulmonary edema include shortness of breath and chest pressure. **Skin contact:** The severity of injuries depends on the time of exposure and the concentration of the substance. The effects can range from irritation, with redness and pain to tissue destruction. Burns may not be immediately painful and will continue as long as the substance is not removed from the skin. **Eye contact:** The severity of injuries depends on the time of exposure and the concentration of the substance. The effects can range from irritation with redness and pain, conjunctivitis, to destruction of the tissue and involvement or loss of sight. **Ingestion:** The severity of injuries depends on the amount and concentration of the substance. The effects can be pain, vomiting, diarrhea, loss of consciousness and even death.

11.3. Immediate and delayed effects, as well as chronic effects produced by a short or long term exposure

Repetitive contact of the substance with the skin can cause dermatitis..

11.4. Numerical measures of toxicity (such as estimates of acute toxicity)

Measurment	System	Route / Body	Dose	Effect	Reference
Skin and eye irritation		Eye/rabbit	50µg/24H	Severe	28ZPAK-,7,1972
Skin and eye irritation		Skin/Rabbit	500mg/24H	Severe	28ZPAK-,7,1972
Acute toxicity data		In Vitro/Human, liver tumor	Inhibitor concentration (50 percent removal): 0.03 mmol/L/24H	In vitro toxicity study: celular protein synthesis	TIVIEQ 3,189,1989
Acute toxicity data		In vitro/rabbit, ocular	Inhibitor concentration (50 percent removal): 0.002 g/L 10M	In vitro toxicity studies: cell viability (cell death), specified test	TIVIEQ 3,329,1989
Acute toxicity		Oral/rat	Lowest published toxic dose: 44 mg/Kg.	Gastrointestinal: ulceration, bleeding, stomach.	PYTOEY 9,515,2002
Skin and eye irritation		Eye/monkey	1%/24H	Severe	TXAPA9 6,701,1964
Skin and eye irritation		Eyes/rabbit	1%	Severe	AJOPAA 29,1363,1946
Mutation data	Cytogenetic analysis	Parenteral/garsshopper	20mg		NULSAK 9,119,1966
Mutation data	Cytogenetic analysis	Ovary/hamster	16mmol/L		MUREAV 225,55,1963
Acute toxicity data		Oral/rabbit	Lethal dose (50 percent		COREAF 257,791,1963

			death): 40mg/Kg		
Acute toxicity data		Oral/rabbit	Lowest published lethal dose: 500mg/Kg.		AEPPAE 194,587,1937
Skin and eye irritation		Eyes/rabbit	400µg	Mild	OYYAA2 26,627,1983
Skin irritation and eyes		Eye/rabbit	1mg/24H	Severe	TXAPA9 6,701,1964
Skin an eye irritation		Eye/rabbit	Mg/30S enjuague	Severe	TXCYAC 23,281,1982
Skin and eye irritation		Skin/human	2%/24H	Mild	JIDEAE 68,192,1988
Mutation data	Cytogenetic analysis	Lung/Hamster	10 mmol/L		CYTBAI 55,167,1988
Acute toxicity data		In Vitro/ Human, skin	Low inhibitor concentration: 0.6 mg/well/60M	In vitro toxicity studies: cell viability (mitocondrial reductase assays): MTT, XTT, MTS, WST Assays, etc.	TIVIEQ 27,1476,2013
Acute toxicity data		In Vitro/JDA	Low inhibitor concentration: 0.2 PPH/1M Low inhibitor	In vitro toxicity studies: other tests	TIVIEQ 25,1237,2011
Acute toxicity data		In Vitro/Rabbit, ocular	Concentration: 0.05PPH/5M	In vitro toxicity studies: cell viability (mitocondrial reductase assays): MTT,XTT,MTS,WST assays, etc.	TIVIEQ 25,1425,2011
Acute toxicity data		Oral/ human	Lowest published lethal dose: 1.57 mg/Kg	Behavioral: Anorexia (human); Nutritional and gross metabolic: increased body temperature; Skin: After topical application: Primary irritation	VCVN1* - ,37,1998

	Mutation data	Cytigenetic analysis	Lung/Hamster	10 mmol/L		CYTBAI 55,167,198 8
	Acute toxicity data		In Vitro/ Human, skin.	Low inhibitor concentration: 0.6 mg/well/60M	In vitro toxicity studies: cell viability (mitichondrial reductase assays): MTT,XTT,MTS,WST assays, etc.	TIVIEQ 27,1476,2013

11.5. Carcinogenicity	There are no known interactive effects of this substance.
11.6. When specific chemical data are not available	Not applicable
11.7. Mixtures	Not applicable
Information about the mixture or its components	Not applicable
11.9. Other information	**Mutagenicity:** No evidence of mutagenic potential. **Carcinogenicity:** Based on available data, the classification criteria are not met. **Reproductive toxicity:** Based on available data, the classification criteria are not met.

SECTION 12. ECOTOXICOLOGICAL INFORMATION

12.1. Toxicity	**General Information:** To avoid it's releasing into the environment. Discharge of the product into groundwater or the aquatic environment is not allowed. LC_{100} *Cyprinus Carpio*: 180 ppm/24 h at 25 °C. TLm mosquito fish: 125 ppm/96 h (in fresh weater). TLm Bluegill: 99 mg/L/48 hours (drinking water).
12.2. Persistence and degradability	Quickly degrades by reacting with carbon dioxide from the air.
12.3. Bioaccumulative potential	The substance has no bioaccumulation potential.
12.4. Mobility in the soil	Not available.
12.5. Other adverse effects	Not available.

SECTION 13. INFORMATION CONCERNING THE DISPOSAL OF PRODUCTS

13.1. Description of the waste and information on how to handle it safely and its disposal methods, including disposal of contaminated containers	The residues of the substance, as well as the containers of the same, should be reused if possible. If this is not possible, they must be considered hazardous waste and disposed of in accordance with the applicable legislation.

SECTION 14. INFORMATION CONCERNING TRANSPORTATION

14.1. UN number	UN 1824
14.2. Official United Nations transport designations	Sodium Hydroxide, in solution.
14.3. Class of hazards in the transport	Class: 8

14.4. Packing group, if applicable	II
14.5. Environmental risks	Not a marine pollutant.
14.6. Special precautions for the user	Not applicable.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and to the IBC Code (IBC)s	**Product name:** Sodium hydroxide solution. **Contaminant category:** Y. **Ship type:** 3

SECTION 15. REGULATORY INFORMATION

15.1. Specific provisions on safety, health and environment for the dangerous chemical substances or mixture in question	**OSHA:** This substance is considered dangerous according to the risk communication standard (29 CFR 1910.1200) **EPA:** This substance has a reporting quantity of 1,000 pounds (454 kg) under CERCLA section 103 (40 CFR 355). **NOM-054-SEMARNAT-1993:** Which establishes the procedure to determine the incompatibility between two or more residues considered as dangerous. **NOM-018-STPS-2015:** System for the identification and communication of hazards and risks from hazardous chemical substances in work centers.

SECTION 16. OTHER INFORMATION INCLUDING THOSE CONCERNING THE PREPARATION AND UPDATING OF SAFETY DATA SHEET

16.1. The information is believed to be correct, but is not exhaustive and will be used for guidance only, which is based on current knowledge of the chemical or mixture and applies to appropriate product safety precautions..

Before using the product in a new process or experiment, a full material safety and compatibility study must be carried out. Ensure proper air ventilation. Make sure that national and local regulations are followed. Although special care has been taken in preparing this document, no liability is accepted for injury or damage..

This information should be used to make an independent determination of methods to protect workers and the environment.

NFPA Risk

Health: 3
Fire: 0
Reactivity: 1
Specific: Not applicable.

16.2. Abbreviations and acronyms

ACGIH: American Conference of Governmental Hygienists
AHA: American Heart Association
°C: Celsius degrees.
C: Ceiling.
cP: Centipoise.
CAS: Chemical Abstract Service.
EPA: Environmental Protection Agency.
ERPG-1: The maximum concentration in air below which it is believed that almost all individuals could be exposed for up to one hour without experiencing more than mild transient adverse health effects or perceiving a clearly defined and objectionable odor.
ERPG-2: The maximum concentration in air below which it is believed that almost all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could affect an individual's ability to take protection measures.
ERPG-3: The maximum concentration in air below which it is believed that almost all people could be exposed for up to an hour without experiencing or developing life-threatening health effects.
g/mol: Grams per mole.
IPVS: Immediately dangerous to life and health.
kPa: kilo pascals.
LC50: Lethal Concentration, the concentration of the material in the air is expected kill 50% of a group of test animals.
LD50: Lethal dose, is expected to kill 50% of a group of test animals.
mg/m^3: milligrams per cubic meter.
NFPA: National Fire Protection Agency.
NIOSH: National Institute for Occupational Safety and Health.
OSHA: Occupational Safety and Health Administration.
REL – Ceiling: Recommended Exposure Limit - Ceiling.

	STEL: Short Term Exposure Limit **TLV:** Threshold Limit Value **TWA:** Time Weighted Average **UN:** United Nation **VLE PPT:** Exposure Limit Value, Time Weighted Average **VLE CT o P:** Exposure Limit Value, Short Time or Peak
16.3. References	**PANFLET 65 of the Chlorine Institute,** Personal protective equipment for chlor-alkali chemicals. 7th Edition. **PANFLET 87 of the Chlorine Institute,** Recommended practices for handling tank cars of sodium hydroxide and potassium hydroxide. 5th Edition. **PANFLET 88 of the Chlorine Institute,** Recommended practices for handling auto tanks of sodium hydroxide and potassium hydroxide. 5th Edition. **NOM-002/1-SCT/2009.** **NOM-004-SCT/2008.** **NOM-010-STPS-2014.** **NOM-018-STPS-2015.** **NOM-052-SEMARNAT-2005.** **NOM-053-SEMARNAT-1993.** **NOM-054-SEMARNAT-1993.** **Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Seventh Revised Edition.**