SECTION 1: Identification

1.1. Identification	
Product form	Mixtures
Product name	Hydrochloric Acid, 2.0N (2.0M)
CAS-No	7647-01-0
Product code	LC15320
Formula	HCl
Synonyms	Muriatic Acid, HCl Solution, Aqueous hydrogen chloride

1.2. Recommended use and restrictions on use

Use of the substance/mixture	For laboratory and manufacturing use only.
Recommended use	Laboratory chemicals
Restrictions on use	Not for food, drug or household use

1.3. Supplier

Company name	**Aqua Chem Chemical Trading**
Address	**Al Agamy Al Bahri, Dekhela, Alexandrie, Egypte**
Tel	**+201 144 455 246**
Fax	**+201 144 455 246**
Email	**aquachem@aquachemeg.com**

1.4. Emergency telephone number

Emergency number : **+201 144 455 246**

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion/irritation Category 1B	H314	Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US)	Danger
Signal word (GHSUS)	H314 - Causes severe skin burns and eye damage
	H402 - Harmful to aquatic life
Hazard statements (GHS-US)	P260 - Do not breathe mist, vapors, spray.
	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 local, state and federal regulations If inhaled: Remove person to fresh air and keep comfortable for breathing.

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification :

None.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	Percentage	GHS-US classification
Water	(CAS-No.) 7732-18-5	50	Not classified
Hydrochloric Acid, 37% w/w	(CAS-No.) 7647-01-0	50	Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.
First-aid measures after skin contact	Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a poison center or doctor/physician.
First-aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.
First-aid measures after ingestion	Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

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

Potential Adverse human health effects and symptoms	Based on available data, the classification criteria are not met.
Symptoms/effects	Causes severe skin burns and eye damage.
Symptoms/effects after inhalation	Possible inflammation of the respiratory tract.
Symptoms/effects after skin contact	Caustic burns/corrosion of the skin.
Symptoms/effects after eye contact	Causes serious eye damage.
Symptoms/effects after ingestion	Nausea. Vomiting.
Chronic symptoms	Affection/discolouration of the teeth.

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	Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard	Not flammable.
Explosion hazard	Not applicable.
Reactivity	Thermal decomposition generates : Corrosive vapors.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	Cool tanks/drums with water spray/remove them into safety. Dilute toxic gases with water spray. 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.
Other information	Not applicable.

SECTION 6: Accidental release measures

General measures : Try to stop release. Dike and contain spill.

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	Gloves. Safety glasses. Protective clothing. Face-shield.
Emergency procedures	Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment	Equip cleanup crew with proper protection. Emergency
procedures	Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling before	Wash hands and other exposed areas with mild soap and water eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. Do not breathe mist, vapors, spray.
Hygiene measures	Wash exposed skin thoroughly after handling. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	Comply with applicable regulations.
Storage conditions	Keep only in the original container in a cool, well ventilated place away from : incompatible materials. Keep container closed when not in use.
Incompatible products	metals. cyanides. Strong bases.
Incompatible materials	Direct sunlight.
Packaging materials	Do not store in corrodable metal.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Hydrochloric Acid, 37% w/w (7647-01-0)		
ACGIH	ACGIH Ceiling (mg/m³)	2.98 mg/m³
ACGIH	ACGIH Ceiling (ppm)	2 ppm
OSHA	OSHA PEL (Ceiling) (mg/m³)	7 mg/m³
OSHA	OSHA PEL (Ceiling) (ppm)	5 ppm
IDLH	US IDLH (ppm)	50 ppm
NIOSH	NIOSH REL (ceiling) (mg/m³)	7 mg/m³
NIOSH	NIOSH REL (ceiling) (ppm)	5 ppm
ACGIH	ACGIH Ceiling (mg/m³)	2.98 mg/m³

Water (7732-18-5)

Not applicable

8.2. Appropriate engineering controls

Appropriate engineering controls: Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment: Chemical resistant apron. Face shield. Gloves. Safety glasses.

Hand protection: Wear protective gloves.

Eye protection: Chemical goggles or face shield.

Skin and body protection: Wear suitable protective clothing

Respiratory protection: Respiratory protection not required in normal conditions

Personal protective equipment symbol(s):

Other information:
Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Color	Colorless
Odor	Irritating,Pungent,Sharp
Odor threshold (ppm)	0.3ppm (causes olfactory fatigue)
pH	0.03647 wt% HCl solution
Melting point	No data available
Freezing point range	-29 to 5^{0}F (-34 to -15 ^{0}C)
Boiling point range	140 to 221 ^{0}F (60 to 105 ^{0}C)
Flash point	No data available
Relative evaporation rate (butyl acetate=1)	No data available
Flammability (solid, gas)	Nonflammable.
Vapor pressure	14.6-80 mmHg@20^{0}C
Relative vapor density at 20 °C	No data available
Relative density	1.05 – 1.18
Specific gravity / density	1 - 1.2
Molecular mass	36.46 g/mol
Solubility	Soluble in water. Soluble in ethanol. Soluble in methanol.

Log Pow	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available
Explosion limits	No data available
Explosive properties	Not applicable.
Oxidizing properties	None.

9.2. Other information

No additional information available.

10.1. Reactivity

Thermal decomposition generates : Corrosive vapors.

10.2. Chemical stability

Stable under normal conditions. Not established.

10.3. Possibility of hazardous reactions

Reacts violently with (some) bases: release of heat.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

metals. cyanides. Strong bases.

10.6. Hazardous decomposition products

Hydrogen chloride. Thermal decomposition generates : Corrosive vapors.

SECTION 11: Toxicological information

11.1.Information on toxicological effects

Acute toxicity (oral) Not classified
Acute toxicity (dermal) Not classified Acute toxicity (inhalation) Not classified

Hydrochloric Acid, 37% w/w (7647-01-0)	
LD50 oral rat	700 mg/kg
LD50 dermal rabbit	5010 mg/kg
ATE US (oral)	700 mg/kg body weight
ATE US (dermal)	5010 mg/kg body weight

Water (7732-18-5)	
LD50 oral rat	≥ 90000 mg/kg
ATE US (oral)	90000 mg/kg body weight

Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/irritation	Causes serious eye damage.
Respiratory or skin sensitization	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-single exposure	Not classified

Hydrochloric Acid, 37% w/w (7647-01-0)

STOT-single exposure	May cause respiratory irritation.
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified
Viscosity, kinematic	No data available
Likely routes of exposure	Skin and eye contact.
Potential Adverse human health effects and symptoms	Based on available data, the classification criteria are not met.
Symptoms/effects	Causes severe skin burns and eye damage.
Symptoms/effects after inhalation	Possible inflammation of the respiratory tract.
Symptoms/effects after skin contact	Caustic burns/corrosion of the skin.
Symptoms/effects after eye contact	Causes serious eye damage.
Symptoms/effects after ingestion	Nausea. Vomiting.
Chronic symptoms	Affection/discolouration of the teeth.

SECTION 12: Ecological information

12.1. Toxicity

Hydrochloric Acid, 37% w/w (7647-01-0)	
LC50 fish 1	282 mg/l (96 h, Gambusia affinis, Pure substance)
EC50 Daphnia 1	< 56 mg/l (72 h, Daphnia magna, Pure substance)

12.2. Persistence and degradability

Hydrochloric Acid, 37% w/w (7647-01-0)	
Persistence and degradability	Not established.

Hydrochloric Acid, 37% w/w (7647-01-0)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable

Hydrochloric Acid, 37% w/w (7647-01-0)	
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

Water (7732-18-5)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Hydrochloric Acid, 2.0N (2.0M)

Bioaccumulative potential Not established.

Hydrochloric Acid, 37% w/w (7647-01-0)

Log Pow 0.25 (QSAR)

Bioaccumulative potential Low potential for bioaccumulation (Log Kow < 4).

Water (7732-18-5)

Bioaccumulative potential Not established.

12.4. Mobility in soil

Hydrochloric Acid, 37% w/w (7647-01-0)	
Ecology – soil	No (test)data on mobility of the components available. May be harmful to plant growth, blooming and fruit formation.

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials: Avoid release to the environment

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description	UN1789 Hydrochloric acid, 8, II
UN-No.(DOT)	UN1789
Proper Shipping Name (DOT)	Hydrochloric acid
Transport hazard class(es) (DOT)	8 - Class 8 -Corrosive material 49 CFR 173.136
Packing group (DOT)	II - Medium Danger 8 – Corrosive

Hazard labels (DOT)	
DOT Packaging Non Bulk (49 CFR 173.xxx)	202
DOT Packaging Bulk (49 CFR 173.xxx)	242
DOT Special Provisions (49 CFR 172.102)	A3 - For combination packaging, if glass inner packaging (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packaging. A6 - For combination packaging, if plastic inner packaging are used, they must be packed in tightly closed metal receptacles before packing in outer packaging. B3 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks and DOT 57 portable tanks are not authorized. B15 - Packaging must be protected with non-metallic linings impervious to the lading or have a suitable corrosion allowance. IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. N41 - Metal construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material. T8 - 4 178.274(d)(2) Normal Prohibited TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using

the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively. TP12 - This material is considered highly corrosive to steel.

Hydrochloric Acid, 2.0N (2.0M)	
SARA Section 311/312 Hazard Classes	Health hazard - Serious eye damage or eye irritation Health hazard - Skin corrosion or Irritation

DOT Packaging Exceptions (49 CFR 173.xxx)	154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	1 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	30 L
DOT Vessel Stowage Location	C - The material must be stowed ''on deck only'' on a cargo vessel and on a passenger vessel.
Other information	No supplementary information available.

Transport by sea	
Transport document description (IMDG)	UN 1789 HYDROCHLORIC ACID, 8, II
UN-No. (IMDG)	1789
Proper Shipping Name (IMDG)	HYDROCHLORIC ACID
Class (IMDG)	8 - Corrosive substances
Packing group (IMDG)	II - substances presenting medium danger

Air transport	
Transport document description (IATA)	UN 1789 HYDROCHLORIC ACID, 8, II
UN-No. (IATA)	1789
Proper Shipping Name (IATA)	HYDROCHLORIC ACID
Class (IATA)	8 – Corrosives
Packing group (IATA)	II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Hydrochloric Acid, 37% w/w	CAS-No. 7647-01-0	7.06%

Hydrochloric Acid, 2.0N (2.0M)	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a final TSCA section 4 test rule.
RQ (Reportable quantity, section 304 of EPA's List of Lists)	5000 lb
RQ (Reportable quantity, section 304 of EPA's List of Lists)	5000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb
SARA Section 311/312 Hazard Classes	Health hazard - Acute toxicity (any route of exposure) Health hazard - Skin corrosion or Irritation Health hazard - Serious eye damage or eye irritation Health hazard - Specific target organ toxicity (single or repeated exposure)

15.2. International regulations

CANADA

Water (7732-18-5)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

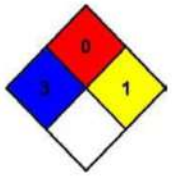
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.

SECTION 16: Other information

Revision date	**01/01/2020**
Other information	**None.**

Full text of H-phrases: see section 16:

H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H335	May cause respiratory irritation



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	C C - Safety glasses, Gloves, Synthetic apron

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