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Approved by: General Manager

Author: Manager HSE

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Issued To: All Concerned

Title: **Material Safety Data Sheet Chlorine Gas Liquefied**

MSDS CHLORINE GAS LIQUEFIED

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AMENDMENT PAGE

Sr. No.	Date Of Amendment	Page No.	Issue Status	Description
1	23-10-2022	3	00	Global Harmonized System (GHS) Labeling incorporated.
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SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUBSTANCE: CHLORINE

TRADE NAMES/SYNONYMS:

MTG MSDS 22; CHLORINE MOLECULAR; DIATOMIC CHLORINE; DICHLORINE; MOLECULAR CHLORINE; UN 1017; Cl₂; MAT04600; RTECS FO2100000

CHEMICAL FAMILY: halogens, gas

SECTION 2: COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: CHLORINE

CAS NUMBER: 7782-50-5

PERCENTAGE: 100.0

SECTION 3: HAZARDS IDENTIFICATION

GHS (GLOBAL HARMONIZED SYSTEM) LABELING FOR LIQUID CHLORINE:



Corrosive



Oxidizing Agent



Health Hazard



Acute Toxic

NFPA RATINGS (SCALE 0-4): HEALTH=4 FIRE=0 REACTIVITY=0

EMERGENCY OVERVIEW:

COLOR: yellow or green

PHYSICAL FORM: gas

ODOR: distinct odor, irritating odor

MAJOR HEALTH HAZARDS: harmful if inhaled, respiratory tract burns, skin burns, eye burns

PHYSICAL HAZARDS: Containers may rupture or explode if exposed to heat. May ignite combustibles.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: burns, chest pain, difficulty breathing, headache, dizziness, hyperactivity, emotional disturbances, bluish skin color, lung damage, death

LONG TERM EXPOSURE: burns, skin disorders, lack of sense of smell, lung damage

SKIN CONTACT:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns



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EYE CONTACT:

SACHLO EMERGENCY CONTACT:

+966554098650

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

INGESTION:

SHORT TERM EXPOSURE: ingestion of harmful amounts is unlikely

LONG TERM EXPOSURE: ingestion of harmful amounts is unlikely

SECTION 4: FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

SECTION 5: FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials.

EXTINGUISHING MEDIA: water

Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents. Large fires: Flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. For small fires, contain and let burn. Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuation radius: 800 meters (1/2 mile).

SECTION 6: ACCIDENTAL RELEASE MEASURES

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AIR RELEASE:

Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.

SOIL RELEASE:

Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).

WATER RELEASE:

Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Absorb with activated carbon. Collect spilled material using mechanical equipment.

OCCUPATIONAL RELEASE:

Stop leak if possible without personal risk. Avoid contact with combustible materials. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Notify Local Emergency Planning Committee of SACHLO.

SECTION 7: HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Protect from physical damage. Keep separated from incompatible substances. Store outside or in a detached building.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

CHLORINE:

1 ppm (3 mg/m³) OSHA ceiling

0.5 ppm (1.5 mg/m³) OSHA TWA

1 ppm (3 mg/m³) OSHA STEL

0.5 ppm ACGIH TWA

1 ppm ACGIH STEL

0.5 ppm (1.45 mg/m³) NIOSH recommended ceiling 15 minute(s)

VENTILATION: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

5 ppm

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Any chemical cartridge respirator with cartridge(s) providing protection against this substance. Any supplied-air respirator.

10 ppm

Any supplied-air respirator operated in a continuous-flow mode.

Any powered, air-purifying respirator with cartridge(s) providing protection against this substance.

Any chemical cartridge respirator with a full face piece and cartridge(s) providing protection against this substance.

Any air-purifying respirator with a full face piece and a canister providing protection against this substance.

Any self-contained breathing apparatus with a full face piece.

Any supplied-air respirator with a full face piece.

Escape

Any air-purifying respirator with a full face piece and a canister providing protection against this substance. Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with full face piece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full face piece.



SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas

COLOR: yellow or green

ODOR: distinct odor, irritating odor

MOLECULAR WEIGHT: 70.906

MOLECULAR FORMULA: Cl₂

BOILING POINT: - (-34 °C)

FREEZING POINT: -150 F (-101 C)

VAPOR PRESSURE: 85.3 PSIG)

VAPOR DENSITY (air=1): 2.49

SPECIFIC GRAVITY: Not applicable

DENSITY IN GASEOUS STATE: 3.214g/cm³ at 0 °C

WATER SOLUBILITY: Easily Soluble in water

PH: Not applicable

VOLATILITY: Not applicable

ODOR THRESHOLD: 0.01 ppm

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EVAPORATION RATE: Not applicable

VISCOSITY: No data available

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

SOLVENT SOLUBILITY:

Soluble: alkali

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid contact with combustible materials. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.

INCOMPATIBILITIES: combustible materials, bases, metals, halogens, metal salts, reducing agents, amines, metal carbide, metal oxides, oxidizing materials, halo carbons, acids

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: chlorine

POLYMERIZATION: Will not polymerize.

SECTION 11: TOXICOLOGICAL INFORMATION

CHLORINE:

TOXICITY DATA:

293 ppm/1 hour(s) inhalation-rat LC50

CARCINOGEN STATUS: ACGIH: A4 -Not Classifiable as a Human Carcinogen

LOCAL EFFECTS:

Corrosive: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Toxic: inhalation

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: heart problems

TUMORIGENIC DATA: Available.

MUTAGENIC DATA: Available.

REPRODUCTIVE EFFECTS DATA: Available.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: 390 ug/L 96 hour(s) LC50 (Mortality) Orange throat darter (Etheostoma spectabile)

INVERTEBRATE TOXICITY: 637.5 ug/L 1 hour(s) LC50 (Mortality) Pacific oyster (Crassostrea gigas)

ALGAL TOXICITY: 50-1000 ug/L 23 hour(s) (Population) Algae, phytoplankton, algal mat (Algae)

PHYTOTOXICITY: 20 ug/L 96 day(s) (Growth) Water-milfoil (Myriophyllum spectrum)

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SECTION 13: DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

SECTION 14: TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Chlorine

ID NUMBER: UN1017

HAZARD CLASS OR DIVISION: 2.3

LABELING REQUIREMENTS: 2.3; 8

ADDITIONAL SHIPPING DESCRIPTION: Toxic-Inhalation Hazard Zone B

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Chlorine

ID NUMBER: UN1017

CLASSIFICATION: 2.3, 8



SECTION 15: REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

CHLORINE: 10 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):

CHLORINE: 100 LBS TPQ

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):

CHLORINE: 10 LBS RQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: No

FIRE: No

REACTIVE: No

SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65):

CHLORINE

OSHA PROCESS SAFETY (29CFR1910.119):

CHLORINE: 1500 LBS TQ

STATE REGULATIONS:

California Proposition 65: Not regulated.

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