Material Safety Data Sheet

Chlorine Liq (RXSOL-31-3034-210)

1. Product and Company Identifaction

Product Name	:	RXSOL-31-3034-210
Product Type	:	Chlorine Liquid

Material Identity
Product Name: SODIUM HYPOCHLORITE N
General or Generic ID: SALTS
Company Details:

RX MARINE INTERNATIONAL
105, A wing , BSEL , TECH PARK.
VASHI ,NEW BOMBAY 400703 INDIA

Stock Point : Mumbai, Kandla, Chennai, Visakhapatnam, Kolkata, Fujairah UAE, Muscat Oman

Phone	:	91 22 27815541 / 42 / 43
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Email	:	mail@rxmarine.com

2. Composition / informationon ingredients

Chemical Name	CAS #	% BY WEIGHT
Liquid Carrier - Formulatory	Proprietory	85.0- 88.0
Chlorine Liq	7681-52-9	12.0- 15.0

3. Hazards Identification

Eye	Can cause permanent eye injury. Symptoms include stinging, tearing, redness, and swelling of eyes. Can injure the cornea and cause blindness.
Skin	Can cause permanent skin damage. Symptoms may include redness, burning, and swelling of skin, burns, and other skin damage. Additional symptoms of skin contact may include: skin blistering, hair loss, Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.
Swallowing	Swallowing this material may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury.
Inhalation	It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing this material may be harmful or fatal. Symptoms may include severe irritation and burns to the nose, throat, and respiratory tract.
Symptoms of Exposure	Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea) cough, tight feeling in the chest, difficult breathing, lung edema (fluid buildup in the lung tissue), lung damage, shock, coma, and death.

Target Organ Effects	This material (or a component) has been shown to lower activity of certain immune system cells in experimental animals. The significance of this effect with respect to human health is uncertain.
Developmental Information	There are no data available for assessing risk to the fetus from maternal exposure to this material.
Cancer Information	Based on the available information , this material cannot be classified with regard to carcinogenicity. This material is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the OccupationalSafety and Health Administration.
Other Health Effects	When combined with an acid or ammonia, sodium hypochlorite may produce chlorine or chloramine gas, respectively. Inhalation of these gases results in coughing, choking, difficult breathing, and other symptoms of respiratory tract irritation. Fluid may collect in the lung tissue following a severe gas exposure.
Primary Route(s) of Entry	Inhalation, Skin contact, Eye contact.

Inhalation	Chlorine is irritating to the nose, throat, and lungs. Symptoms include:coughing, shortness of breath, chest pain, nausea, vomiting, and dizziness. Pulmonary edema (swelling) and chemical pneumonia can develop hours after exposure. High concentrations may cause unconsciousness and death.
Skin Contact / Absorption	High concentrations can cause severe irritation and tissue destruction.Symptoms include: burning and prickling sensations, reddening, and blisters. Direct contact with liquid causes severe local irritation, blistering and burns.
Eye Contact	A severe irritant of the eyes. Symptoms include: stinging and burning sensation with excessive tear production. Direct contact with liquid may cause burns, permanent damage, and possibly blindness.
Ingestion.	Not a likely route of exposure as chlorine is a gas at room temperature.Liquid may cause pain, burning, thirst, abdominal cramps, nausea, and vomiting. Irritation and swelling of the throat causes difficulty breathing.
Exposure Limits.	ACGIH/TLV-TWA: 0.5ppm ACGIH/TLV-STEL: 1.0ppm

4. First Aid Measures

Eyes	If material gets into the eyes, immediately flush eyes gently with water for at least 15 minutes while holding eyelids apart. If symptoms develop as a result of vapor exposure, immediately move individual away from exposure and into fresh air before flushing as recommended above. Seek immediate medical attention.
Skin	Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. Seek immediate medical attention. Wash clothing before reuse and discard contaminated shoes.
Swallowing	Seek immediate medical attention. Do not induce vomiting. Vomiting will cause further damage to the mouth and throat. If individual is conscious and alert, immediately rinse mouth with water and give milk or water to drink. If possible, do not leave individual unattended.
Inhalation	If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.
Note to Physicians	Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin, lung (for example, asthma-like conditions), immune system.

5. Fire-fighting Measures

Flash Point	Not applicable
Explosive Limit	Not applicable

Autoignition Temperature	No data
Hazardous Products of Combustion	May form: chlorine
Fire and Explosion Hazards	No special fire hazards are known to be associated with this product.
Extinguishing Media	Use an extinguishing media appropriate for surrounding fire..
Fire Fighting Instructions	Water may be used to keep fire-exposed containers cool until fire is out. Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipmentsection of this MSDS.
NFPA Rating	Health - 3, Flammability - 0, Reactivity - 1

Conditions of Flammability	Does not burn. Note that chlorine is a strong oxidizing agent and is a serious fire risk due to its reactivity.
Means of Extinction	Product does not burn. Where fire is involved use any fire fighting agent that is appropriate extinguishing media for material that is supplying the fuel to the fire. Avoid direct contact with water to leaking container surfaces. Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents
Flash Point	Not applicable
Autoignition Temperature	Not applicable
Upper Flammable Limit	Not applicable
Lower Flammable Limit	Not applicable
Hazardous Combustible Products	Toxic products are formed when combustibles burn in chlorine. Water sprayed directly on chlorine forms corrosive hypochlorous and hydrochloric acids.
Special Fire Fighting Procedures	Wear NIOSH-approved self-contained breathing apparatus and protective clothing. Remove chlorine containers from fire area if safe to do so. Use water spray to cool containers, knock down fumes, and to direct escaping gas away from persons. Use water with caution since chlorine in water is very corrosive. Ventilate area. Chlorine gas is heavier than air and may collect in low areas.
Explosion Hazard	May react to cause fire and explosion upon contact with many organic compounds, ammonia, hydrogen, and many metals at elevated temperatures.

6. Accidental Release Measures

Small Spill	Dilute with water and absorb onto a noncombustible absorbent material.
Large Spill	Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred. Collect and add slowly to large volume of water. Persons not wearing protective equipment should be excluded from area of spill until clean-up is completed. Stop spill at source. Dike to prevent spreading. Pump to salvage ank.

7. Handling and Storage

Handling	Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Emergency eyewash fountains and safety showers should be available in the immediate vicinity of potential exposure

Handling Procedures:
Store containers as per Chlorine Institute Guidelines. Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling.Avoid all situations that could lead to harmful exposure. Liquid chlorine lines must have suitable expansion chambers between block valves dues to high coefficient of expansion. Inspect piping and containers used for chlorine service on a regular basis. Emergency equipment should be readily available. An emergency plan and special training where chlorine is used should be established.

Storage Requirements:
Store in a cool, dry location outdoors or in well-ventilated areas, detached/segregated areas of noncombustible materials. Refer to Chlorine Institute guidelines and local regulations for other storage requirements. Keep containers tightly closed, and away from incompatible materials. Store away from sunlight and sources of heat and ignition. 68 kg cylinders should be stored in an upright position. Prevent exposing cylinders to temperatures above 51oC.

8. Exposure controls and personal protection

Eye Protection	Chemical splash goggles and face shield (8" min.) in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your industrial hygienist.)
Skin Protection	Wear impervious gloves (consult your safety equipment supplier).To prevent skin contact, wear impervious clothing and boots..
Respiratory Protections	If overexposure has been determined or documented, a NIOSH/MSHA jointly approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators under specified conditions. (See your safety equipment supplier.) Engineering or administrative controls should be implemented to reduce exposure.
Engineering Controls	Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).
Exposure Guidelines	Component
WATER (7732-18-5)	No exposure limits established
SODIUM HYPOCHLORITE (7681-52-9)	No exposure limits established

Protective Equipment:
EyesChemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.

Respiratory:
Up to 5ppm: cartridge respirator with cartridge protecting against chlorine or supplied air respirator.
Up to 10ppm: supplied air respirator operated in continuous flow mode; or powered air purifying respirator with cartridge protecting against chlorine;or full facepiece chemical cartridge respirator with cartridge protecting against chlorine; or full facepiece self contained breathing apparatus.
Emergency or entry in unknown or IDHL (10ppm for chlorine) conditions:
positive pressure full facepiece self contained breathing apparatus or positive pressure full facepiece supplied air respirator with auxiliary positive pressure self contained breathing apparatus.

Gloves:
Impervious gloves of chemically resistant material (butyl rubber,neoprene) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Eyes	Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.
Respiratory	Up to 5ppm: cartridge respirator with cartridge protecting against chlorine or supplied air respirator. Up to 10ppm: supplied air respirator operated in continuous flow mode; or powered air purifying respirator with cartridge protecting against chlorine;or full facepiece chemical cartridge respirator with cartridge protecting against chlorine; or full facepiece self contained breathing apparatus.Emergency or entry in unknown or IDHL (10ppm for chlorine) conditions:positive pressure full facepiece self contained breathing apparatus or positive pressure full facepiece supplied air respirator with auxiliary positive pressure self contained breathing apparatus.
Gloves	Impervious gloves of chemically resistant material (butyl rubber, neoprene) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
Clothing	Body suits, aprons, and/or coveralls of chemical resistant material (butyl rubber, neoprene, Teflon, Responder, Viton) should be worn at all times.Wash contaminated clothing and dry thoroughly before reuse.

Footwear	Impervious boots of chemically resistant material should be worn at all times.

Engineering Controls:

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.
Other	Emergency shower and eyewash should be in close proximity.

9. Physical and chemical properties

Boiling Point	(for component) 212.0 F (100.0 C)
Vapor Pressure	(for component) 17.500 mmHg
Specific Vapor Density	No data
Specific Gravity	1.220 - 1.250 @ 68.00 F
Liquid Density	10.400 lbs/gal @ 68.00 F 1.250 kg/l @ 20.00 C
Percent Volatiles	87.5%
Evaporation Rate	Slower Than Ethyl Ether
Appearance	No data
State	Liquid
Physical Form	Homogeneous Solution
Color	Clear To Yellow Liquid
Odor	Chlorinated Bleach Odor
pH	13.5
Solubility in Water	Soluble

10. Stability and reactivity

Hazardous Polymerization : Product will not undergo hazardous polymerization.

Stability	Strong oxidizer. Stable in steel containers at room temperature. Heat above 215oC can cause steel to ignite chlorine. Reacts with water to form hypochlorous acid and hydrochlorice acid.
Incompatibility	Hydrocarbons, turpentine, acetylene, hydrogen, alcohols, some metals (powdered aluminum, brass, iron, copper foil, potassium, tin, titanium), nitrogen compounds, non-metals (boron, active carbon,phosphorus, silicon), ammonia, sodium hydroxide and water.
Hazardous Products of Decomposition	Ammonia and other nitrogen compounds react with chlorine to form highly explosive nitrogen trichloride. Hydrochloric and hypochlorous acids may form from chlorine in the presence of water vapor.Chlorine in contact with carbon monoxide and sulphur dioxide may form phosgene and sulfuryl chloride respectively.

Polymerization	Will not occur

11. Toxicological information

Irritancy	Severe irritant. Skin and eye irritant.
Sensitization	Not available
Chronic/Acute Effects	Repeated or prolonged exposure to 0.4-9.0ppm gas may cause respiratory effects, inflammation of the nose, and corrosion of tooth enamel. Fatigue may occur when repeatedly exposed to chlorine. High concentrations inhaled may result in unconsciousness and death.
Synergistic Materials	Not available
Animal Toxicity Data	LD50 (Inhalation, Rat): 293ppm at 1 hour LD50 (Inhalation, Mice): 137ppm at 1 hour
Carcinogenicity	Not listed on IARC, NTP, OSHA and ACGIH carcinogen lists.
Reproductive Toxicity	Not available
Teratogenicity	Not available
Mutagenicity	Not available

12. Ecological information

Fish Toxicity:
LC50 (Fathead Minnow, 96 hours): 0.07-0.15ppm
LC50 (Bluegill, 96 hours): 0.44mg/L

Biodegradability:
Product not biodegradable. Chlorine can however, be converted to chloride by reducers in natural environment. Presence of light will accelerate dissipation of chlorine in water.

Environmental Effects:
Will cause immediate damage to wildlife, fish, and plants. Unlikely to accumulate due to reactivity with moisture and tissues.

13. Disposal considerations

Waste Management Information	Dispose of in accordance with all applicable local, state and federal regulations.

14. Transport information

UN number	Not applicable		
UN proper shipping name	Chlorine Liquid		
Transport hazard class(es)	ADR/RID: NA	IMDG: NA	IATA:NA
Packaging group	ADR/RID: III	IMDG: III	IATA:III
Environmental hazards	ADR/RID: No	IMDG: No	
Further information	No data available		

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture	This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.
Other regulations	Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable. Take note of Dir 94/33/EC on the protection of young people at work.
Chemical Safety Assessment	For this product a chemical safety assessment was not carried out

16. Other information

The data given here is based on current knowledge and experience. This Safety Data Sheet describes the product in terms of safety requirements and does not signify any warranty with regard to the product's properties The data given here only applies when product used for proper application(s). The product is not sold as suitable for other applications usage in such may cause risks not mentioned in this sheet. Do not use for other application(s) without seeking advice from manufacturer.