

Material Safety Data Sheet

1 - 20 ppm Chlorine/Nitrogen

Section 1: Product and Company Identification

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Product Code: 1 - 20 ppm Chlorine/Nitrogen

Gas Name	Concentration
Chlorine	1 - 20 ppm
Nitrogen	Balance

	Chemical Substance	Chemical Family	Trade Names
Chlorine	CHLORINE	halogens, gas	CHLORINE MOLECULAR; DIATOMIC CHLORINE; DICHLORINE; MOLECULAR CHLORINE; UN 1017; Cl2
Nitrogen	NITROGEN, COMPRESSED GAS	inorganic, gas	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2

Section 2: Hazards Identification

	Description	Main Health Hazard
Chlorine	Yellow or green, distinct odor, irritating odor Non-flammable. Containers may rupture or explode if exposed to heat.	Harmful, toxic if inhaled, respiratory tract burns, skin burns, eye burns
Nitrogen	Colorless, odorless Containers may rupture or explode if exposed to heat.	Difficulty breathing

Likely Routes of Exposure:

	Inhalation	Ingestion	Eye	Skin	Health Effects	Target Organs	Medical Condition Aggravated by
Chlorine	Burns, chest pain, difficulty breathing, headache, dizziness, hyperactivity, emotional disturbances, bluish skin color, lung damage, death	Ingestion of harmful amounts is unlikely	Burns	Burns	Harmful, toxic if inhaled, respiratory tract burns, skin burns, eye burns	Respiratory system	Heart problems, respiratory system conditions
Nitrogen	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma	Ingestion of a gas is unlikely	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing	Respiratory system	Pre-existing conditions of respiratory system.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 3: Composition/Information on Ingredients

	CAS #	% by Weight
Chlorine	7782-50-5	1 - 20 ppm
Nitrogen	7727-37-9	Balance

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Chlorine	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 before reuse. Destroy contaminated shoes.	Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Not likely route of exposure.	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.	For inhalation, consider oxygen. Avoid gastric lavage or emesis.
Nitrogen	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	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.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Chlorine	Non-flammable. Use appropriate extinguishing media for surrounding fire.	Non-flammable	<ul style="list-style-type: none"> Full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus Non-flammable.
Nitrogen	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	<ul style="list-style-type: none"> Respiratory protection may be needed for frequent or heavy exposure.

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
Chlorine	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Evacuate area and downwind locations.	Avoid contact with combustible materials.	Stop leak if possible without personal risk. Reduce vapors with water spray. Dig holding area such as lagoon, pond or pit for containment. Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.
Nitrogen	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

	Methods for Cleanup	Other Information
Chlorine	Collect runoff for disposal as potential hazardous waste. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Absorb with activated carbon. Collect spilled material using mechanical equipment.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
Nitrogen	N/A	N/A

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Chlorine	70.906	Cl ₂	3.214 g/L @ 0 C	Not available	100%	Not applicable	Soluble: Alkali
Nitrogen	28.0134	N ₂	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Chlorine	Stable at normal temperatures and pressure. It reacts with water to form a weak, highly corrosive solutions of hydrochloric acid and hypochlorous acid, which can decompose to hydrochloric acid and oxygen.	Stable at normal temperatures and pressure. It reacts with water to form a weak, highly corrosive solutions of hydrochloric acid and hypochlorous acid, which can decompose to hydrochloric acid and oxygen.	Combustible materials, bases, metals, halogens, metal salts, reducing agents, amines, metal carbide, metal oxides, oxidizing materials, halo carbons, acids
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Chlorine	Corrosive hydrogen chloride, hydrochloric acid and hypochlorous acid.	Will not polymerize.
Nitrogen	Oxides of nitrogen	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

	Oral LD50	Dermal LD50	Inhalation
Chlorine	0.86 mg/L (1 hr-Rat)	Not available	Burns, chest pain, difficulty breathing, headache, dizziness, hyperactivity, emotional disturbances, bluish skin color, lung damage, death
Nitrogen	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
Chlorine	Burns	Burns	Harmful, toxic if inhaled, respiratory tract burns, skin burns, eye burns
Nitrogen	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Chlorine	ACGIH: A4 -Not Classifiable as a Human Carcinogen	Available.	Available.	No data
Nitrogen	Not hazardous	Not available	Not available	No data

Section 12: Ecological Information

Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Chlorine	Fish toxicity: LC50 Fathead minnow: 0.07 to 0.15 (96 hour); 390 ug/L 96 hour(s) LC50 (Mortality) Orangethroat 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) Phyto toxicity: Not available Other toxicity: 20 ug/L 96 day(s) (Growth) Water-milfoil (Myriophyllum spicatum)	The atmospheric half-life and lifetime of this material due to photolysis is estimated at 10 and 14 minutes, respectively. The half-life of free resid	Not expected	Not available
Nitrogen	Fish toxicity: Not available	Not available	Not available	Not available

	Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available			
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Section 13: Disposal Considerations

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

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Chlorine, Nitrogen	UN1956	2.2	Not applicable		75 kg	150 kg	N/A

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Chlorine	Chlorine	UN1017	2.3; 8	Not applicable
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Chlorine	10 LBS RQ	100 LBS TPQ	10 LBS RQ
Nitrogen	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Chlorine	Yes	No	No	No	Yes
Nitrogen	Yes	No	No	No	Yes

SARA 372.65

Chlorine	CHLORINE
Nitrogen	Not regulated.

OSHA Process Safety

Chlorine	1500 LBS TQ
Nitrogen	Not regulated.

State Regulations

	CA Proposition 65
Chlorine	Not regulated.
Nitrogen	Not regulated.

Canadian Regulations

	WHMIS Classification
Chlorine	A, D1A, E
Nitrogen	A

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Chlorine	Listed on inventory.	Not listed.	Not determined.
Nitrogen	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

	NFPA Rating
Chlorine	HEALTH=4 FIRE=0 REACTIVITY=0
Nitrogen	HEALTH=1 FIRE=0 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard