

**Safety Data Sheet****Chlorine Dioxide Gas****ClorDiSys Solutions, Inc.****Safety Data Sheet****Revision Date:** 01/02/2019**Date Printed:** 01/02/2019**Date Reviewed:** 01/02/2019**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Common Name:** Chlorine Dioxide Gas**Chemical Name:** Chlorine Dioxide Gas**Product Use and  
Restrictions on Use:** Biocide**Supplier:** ClorDiSys Solutions, Inc.  
PO Box 549  
Lebanon, NJ 08833**For Chemical Emergency Call PERS (24 Hours/Day, 7 Days/Week):**

1-800-633-8253 (Domestic/Canada)

1-801-629-0667 (International)

**2. HAZARDS IDENTIFICATION****GHS Classification:**

GHS: Contact Hazard- Skin	Category 2 - Causes skin irritation
GHS: Contact Hazard- Eye	Category 1 - Causes serious eye damage
GHS: Acute Toxicity- Inhalation	Category 2 – Fatal if inhaled
GHS Acute Toxicity- Oral	Category 3 – toxic if Swallowed
GHS Target Organ Toxicity (Single Exposure)	Category 2 – May Cause Damage to Respiratory System, Blood, Kidneys
GHS Target organ Toxicity (Repeated Exposure)	Category 2 – May Cause Damage to Blood and/or Kidneys
GHS: Carcinogenicity	Not classified as a carcinogen per GHS criteria. This product is not classified as a carcinogen by NTP, IARC, or OSHA

**Signal Word: Warning****Hazard Pictograms:****GHS Hazard Statements:****GHS- Health Hazard Statement(s)**

Fatal if Inhaled

Toxic if Swallowed

Causes Serious Eye Damage

Causes Skin Irritation

May Cause Damage to Organs (Respiratory, Kidney and Blood Systems)

May Cause Damage to Renal System (Kidneys) and Blood System Through Prolonged or Repeated Exposure

**GHS- Precautionary Statement(s)**

Do not Breathe Dust, Fume, Gas, Mist, Vapors, or Spray

In Case of Inadequate Ventilation, Wear Respiratory Protection

Wear Protective Gloves, Protective Clothing, Eye and Face Protection

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Wash Thoroughly After Handling  
 Use Only Outdoors or in a Well-Ventilated Area  
 Do Not Eat, Drink or Smoke When Using This Product  
 Keep Away From Heat  
 Keep/Store Away From Clothing and Other Combustible Materials  
 Take any Precaution to Avoid Mixing with Combustibles

**GHS- Precautionary Statement(s)**

IF INHALED: Remove person to fresh air and keep comfortable for breathing  
 Specific treatment is urgent (see Section 4 of SDS or First Aid information on this label)  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so.  
 Continue rinsing  
 IF SWALLOWED: Immediately call POISON CENTER or doctor/physician. Rinse mouth.  
 Specific Treatment (see Section 4 of the safety data sheet and/or the First Aid information on the product label)  
 IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.  
 IN CASE OF FIRE: Use agent suitable for surrounding fire to extinguish

**EMERGENCY OVERVIEW:** A greenish-yellow gas with a pungent odor similar to chlorine. **STRONG OXIDIZER.** Gas and solutions are severe respiratory irritants. May cause pulmonary edema, which may be delayed in onset. ClO<sub>2</sub> gas partial pressures above 10% volume can decompose spontaneously with a corresponding pressure pulse or “puff”. Generation capacity is stoichiometrically limited to 4%. In-use concentration typically range from 0.04% to 0.18%. Decomposes on exposure to sunlight or UV. **CORROSIVE** to the eyes and skin. Can cause damage to vegetation. Read the entire MSDS for a more thorough evaluation of the hazards.

**General:** Chlorine dioxide normally exists as a gas at room temperature and the most important route of exposure is inhalation, followed by eye and skin exposures.

**Potential Health Effects:**

**Inhalation:** Severe respiratory irritant. May cause bronchospasm and pulmonary edema, which may be delayed in onset. May also cause severe headaches. All symptoms may be delayed and long lasting. Long term exposure may cause chronic bronchitis.

**Ingestion:** Not applicable.

**Skin Contact:** May be harmful if absorbed through skin. May cause skin irritation.

**Eye Contact:** Severe irritant. Exposure may cause visual disturbance, i.e., seeing halos around lights.

**Exposure Limits:** ACGIH 1992-93: TWA 0.1 ppm, STEL 0.3 ppm (0.9 mg/m<sup>3</sup>).

**Carcinogenicity:** Not listed by IARC or ACGIH.

**Mutagenicity:** Information not available.

**Reproductive Effects:** Information not available.

**Teratogenicity and Fetotoxicity:** Information not available.

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**Synergistic Materials:** May have synergistic effects in conjunction with chlorine, other chlorine oxides and chlorine fluorine compounds.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Ingredient	CAS #	EINECS#	%	Notes
<b>Chlorine dioxide</b>	10049-04-4	233-162-8	0-0.036% Vol in Air	Typical room concentration
<b>Chlorine dioxide</b>	10049-04-4	233-162-8	0-0.18% Vol in Air	Typical isolator concentration

**4. FIRST AID MEASURES**

**Inhalation:** Move person to fresh air. Aid in breathing, if necessary, and get immediate medical attention. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

**Ingestion:** Never give anything by mouth to an unconscious person. Rinse mouth with water.

**Skin Contact:** Wash with soap and water. Get medical attention if irritation persists.

**Eye Contact:** Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Note to Physicians:** Following exposure the patient should be kept under medical review for at least 48 hours as delayed pulmonary edema may occur.

**5. FIRE FIGHTING MEASURES**

**Flash Point, C:** Not Applicable

**Autoignition Temperature, C:** Not Applicable

**Lower explosive Limit, %:** Not Applicable

**Upper Explosive Limit, %:** Not Applicable

**Conditions of Flammability:** Chlorine dioxide gas may decompose autocatalytically with a pink/violet flame which may ignite combustible materials. This flame can be extinguished by diluting/cooling with air. Chlorine dioxide does not require air for it to burn.

**Hazardous Combustion Products:** Chlorine, oxygen, and hydrochloric acid.

**Extinguishing Media:** When combustibles are burning in the presence of chlorine dioxide (or other strong oxidizers) water is the only effective extinguishing medium.

**Fire Fighting Procedures:** Apply water from as far a distance as possible, in flooding quantities as a spray or fog. Remove all flammable and combustible materials from the

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vicinity, especially oil and grease. Use water with caution. Self-contained breathing apparatus for fire fighting if necessary.

**Fire Fighting Protective Equipment:** Use eye protection and impermeable gloves. Use of contact lenses should not be permitted when potentially exposed to this material. Persons in the vicinity of chlorine dioxide gas or solutions should carry a respirator suitable for escape purposes at all times, in case of accidental release of significant amounts of gas.

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions:** Keep appropriate PPE nearby.

**Methods for cleaning up:** Ventilate area until below the TLV-TWA level.

**7. HANDLING AND STORAGE**

**Handling:** Equipment manufacturer's recommendations for design, operation and maintenance of chlorine dioxide generation equipment must be followed. Take all precautions to avoid personal contact. Prevent the release of gas into workplace air. Always ensure adequate ventilation in handling areas. Locate safety shower and eyewash station close to chemical handling area. Keep away from incompatibles, heat, sparks, flames and other ignition sources. Locate safety shower and eyewash station fairly close to chemical handling area.

**Storage Requirements:** Chlorine dioxide gas is not stored.

**8. EXPOSURE CONTROL / PERSONAL PROTECTION**

**Engineering Controls:** Good ventilation should be provided, so that chlorine dioxide levels are maintained below the TLV at all times.

**PERSONAL PROTECTIVE EQUIPMENT**

**Protective Equipment:** Use eye protection and impermeable gloves. Use of contact lenses should not be permitted when potentially exposed to this material. Persons in the vicinity of chlorine dioxide gas or solutions should carry a respirator suitable for escape purposes at all times, in case of accidental release of significant amounts of gas.

**Eye Protection:** Use full face-shield and chemical safety goggles when there is potential for contact. Maintain eye wash fountain and quick-drench facilities in work area.

**Skin Protection:** If contact with gas is possible, then use chemical protective gloves, coveralls, boots and/or other resistant protective clothing. Have a safety shower/eye-wash fountain readily available in the immediate work area. Some operations may require the use of a chemical protective full-body encapsulating suit and respiratory protection.

**EXPOSURE GUIDELINES****Chlorine Dioxide (100%)**

ACGIH Time Weighted Average (TLV-TWA) : 0.1 ppm (0.3 mg/m<sup>3</sup>)

ACGIH Short Term Exposure Limit (STEL) 0.3 ppm (0.9 mg/m<sup>3</sup>)

**9. PHYSICAL AND CHEMICAL PROPERTIES**

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<b>Form:</b>	Gas
<b>Color:</b>	Greenish-Yellow
<b>Odor:</b>	Similar to chlorine
<b>Boiling Point,</b>	11°C
<b>Freezing point:</b>	-59 °C
<b>Solubility (in water):</b>	8 g/L @ 15°C
<b>pH:</b>	No Data Available

**10. STABILITY AND REACTIVITY**

<b>Hazardous Decomposition Products:</b>	Chlorine (Cl <sub>2</sub> ), oxygen (O <sub>2</sub> ), and hydrochloric acid (HCl).
<b>Chemical Stability:</b>	Chlorine dioxide is a reactive, unstable gas. At ClO <sub>2</sub> partial pressures above about 76 mm Hg (10 Vol%) in air it can decompose spontaneously with a corresponding pressure pulse or “puff”. Generation capacity is stoichiometrically limited to 4%. In-use concentration typically range from 0.04% to 0.18%.
<b>Incompatibility with other Substances:</b>	Chlorine dioxide is a powerful oxidizing agent that is incompatible with combustible materials, oxidizable organic vapors, hydrogen sulfide, or metallic dusts. Fire may occur.
<b>Reactivity Conditions:</b>	Highly reactive on contact with incompatible materials and will decompose upon exposure to sunlight, ultraviolet light, or heat.
<b>Hazardous Polymerization:</b>	Will not occur.

**11. TOXOLOGICAL INFORMATION****TOXICOLOGICAL DATA**

<b>Product:</b> Chlorine dioxide	<b>LD50</b>	<b>LC50</b>
	292 mg/kg	0.29 mg/L
	(rat, oral)	(inhalation)
<b>Mutagenicity:</b>	No human data available.	
<b>Reproductive Effects:</b>	No human data available.	
<b>Teratogenicity and Fetotoxicity:</b>	No evidence	

**12. ECOLOGICAL INFORMATION**

<b>Elimination information (persistence and degradability):</b>	No data available
<b>Environmental Fate:</b>	No data available.
<b>Ecotoxicological Information:</b>	No data available.

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**Disposal of Waste Method:** Federal, state and local disposal laws and regulations will determine the proper waste disposal/recycling/reclamation procedure. All waste materials should be reviewed to determine the applicable hazards (testing may be necessary).

**14. TRANSPORT INFORMATION**

**US Department of Transportation (US-DOT):** Shipping FORBIDDEN

**International Maritime Organization (IMO):** Shipping FORBIDDEN

**International Air Transport Association (IATA):** Shipping FORBIDDEN

**15. REGULATORY INFORMATION**

**OSHA Hazards:** No OSHA Hazards

**TSCA Status:** On TSCA Inventory

**DSL Status:** All components of this product are on the Canadian DSL list.

**SARA 302 Components:** SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components:** SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards:** No SARA Hazards.

**Massachusetts Right To Know Components:** No Components Listed.

**Pennsylvania Right To Know Components:** No Components Listed.

**New Jersey Right To Know Components:** No Components Listed.

**California Prop. 65 Components:** This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

**16. OTHER INFORMATION**

**Revision Number:** 1/2019

**Section(s) Revised** Emergency contact number

**Prepared By:** ClorDiSys Solutions, Inc

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