SIEMENS

Siemens Industry, Inc.
Water Technologies Business Unit

Material Safety Data Sheet

SECTION 1 – CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Chlorine Dioxide Gas **Chemical Family:** Inorganic gas
This material is produced and consumed on-site by the user as necessary.

Manufacturer's Name: Siemens Industry, Inc. - Water Technologies Business Unit
Address: 2650 Tallevast Road, Sarasota, FL 34243
Product/Technical Information Phone Number: 941.355.2971
Medical/Handling Emergency Phone Number: CHEMTREC 1.800.424.9300
24 hours a day
Transportation Emergency Phone Number: CHEMTREC 1.800.424.9300
24 hours a day

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SECTION 2 – COMPOSITION INFORMATION

Chemical Name	Percent by Weight	CAS#
Chlorine dioxide	100	10049-04-4

SECTION 3 – HAZARDS IDENTIFICATION

Appearance & Odor: Yellow-green gas with pungent chlorine-like odor.

Emergency Overview: Yellow-green gas with an odor like chlorine. Corrosive to eyes, nose, throat, lungs, and gastrointestinal tract. Strong oxidizer. Decomposes upon exposure to sunlight and may decompose spontaneously at concentrations above about 10 vol % in air.

Fire & Explosion Hazards: Material is non-combustible.

Primary Route(s) of Exposure: Inhalation, skin and eye contact.

Inhalation – Acute Effects: Severe respiratory irritant. Inhalation of vapors may cause bronchospasm and pulmonary edema which may be delayed at onset. May also cause severe headaches which may be delayed and long lasting.

Skin Contact – Acute Effects: Corrosive. Contact may cause irritation and redness. This material may be absorbed through the skin.

Eye Contact – Acute Effects: Corrosive. Contact will irritate and be painful. Contact may injure eyes causing corneal damage.

Ingestion – Acute Effects: An unlikely route of exposure. This material will irritate the mouth, throat, and stomach if ingested.

Existing Medical Conditions Possibly Aggravated by Exposure: Asthma, bronchitis, emphysema and other lung diseases and chronic nose, throat, sinus, and cardiac conditions.

SECTION 4 – FIRST AID MEASURES

Inhalation First Aid: Remove victim to fresh air. Give artificial respiration ONLY if breathing has stopped. **Obtain medical attention immediately.**

Skin Contact First Aid: Immediately flush for 15-20 minutes with flowing water while removing contaminated clothing and/or shoes. Remove goggles last to keep material from washing into eyes. Clothing should be washed before reuse. **Obtain medical attention immediately.**

Eye Contact First Aid: Immediately irrigate eyes with flowing water continuously for 15-20 minutes while holding eyes open. Contacts should be removed before or during flushing. DO NOT instruct person to neutralize. **Obtain medical attention immediately.**

Ingestion First Aid: Do not induce vomiting**.** Examine lips and mouth to determine whether the tissues are damaged which may indicate ingestion. Absence of such signs is not conclusive. Loosen clothing such as a collar, tie, belt, or waistband. If victim is not breathing, give artificial respiration. If victim is conscious, give plenty of water to dilute the stomach contents. **Obtain medical attention immediately.**

Note to Physician: The patient should be kept under medical review for at least 48 hrs after exposure as delayed pulmonary edema may occur.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point/Method: Not flammable **Auto Ignition Temperature:** Not flammable.

Extinguishing Media: Flood with water. Use water spray to reduce vapors.

Fire Fighting Procedures: Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Use water with caution and in flooding amounts. Use water spray to cool nearby containers.

Fire & Explosion Hazards: This material may decompose autocatalytically with a pink or violet flame which may ignite combustible materials. This flame may be extinguished by diluting/cooling with air. This material does not require air for it to burn.

Hazardous Products of Decomposition and/or Combustion: Corrosive chlorine gas, flammable oxygen gas, and corrosive hydrogen chloride.

NFPA Ratings: HEALTH - 3 FLAMMABILITY - 3 REACTIVITY - 3

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Stop the leak at its source if it is possible to do so safely. Wear SCBA respiratory protection if necessary to avoid breathing vapors.

SECTION 7 – HANDLING AND STORAGE

Handling: Refer to the equipment manufacturer's recommendations for the design, operation, and maintenance of chlorine dioxide generating equipment. Provide adequate ventilation in production area. Avoid breathing vapors or contact with vapors.

Storage: Not applicable since under normal conditions of use, this material is not stored but is produced and consumed on-site as necessary.

SECTION 8 –PERSONAL PROTECTION/ EXPOSURE CONTROL

Respiratory Protection: If use conditions generate vapors in concentrations exceeding exposure limits, wear a respirator equipped with acid gas cartridges.

Skin Protection: Wear neoprene, nitrile, or PVC gloves, boots, and rain coat or rain suit if use conditions generate vapors.

Eye Protection: Wear chemical goggles and face shield if contact with vapors is likely.

Ventilation Protection: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Other Protection: Safety showers, with quick opening valves that stay open, and eye wash fountains or other means of washing the eyes with a gentle flow of cool to tepid tap water should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

Exposure Limits:

Component	OSHA PEL, ppm	ACGIH TLV, ppm
Chlorine dioxide gas	0.1 0.3 (STEL)	0.1 0.3 (STEL)

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Yellow-green gas with chlorine-like odor.

Vapor Density (air = 1): 2.4 **Solubility in Water:** 8 g/l at 15 ^{0} C

Odor Threshold: Typically evident to humans at concentrations of 0.2 – 1.0 ppm.

SECTION 10 – STABILITY AND REACTIVITY

Stability: This material is reactive and unstable. At concentrations in air of about 10 % v/v this material can spontaneously decompose. At higher concentrations, this material may explosively decompose and rupture its container. These explosions may ignite nearby combustible materials.

Incompatibilities: Combustibles, oxidizable organic materials, hydrogen sulfide, metallic dusts. Contact may cause a fire.

Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition Products: Corrosive chlorine gas, corrosive hydrogen chloride gas, and flammable oxygen gas.

Conditions to Avoid: Avoid excessive heat or contamination which could cause the product to decompose. Avoid concentrating the vapors since highly concentrated vapors, greater than about 10 % in air, may explosively decompose upon shock, friction, concussion, or material contact.

SECTION 11 – TOXICOLOGICAL INFORMATION

Toxicology Data: Oral LD 50 (rat) = 292 mg/kg
Inhalation LC Lo (rat) = 500 ppm/15 min
Eye irritation (rabbit) = moderate

Carcinogenicity: A 2 year mouse bioassay study indicated no clear evidence of carcinogenicity.

Mutagenicity: Positive mutagenicity findings were noted in a small fraction of mutagenesis assays conducted.

SECTION 12 – ECOLOGICAL INFORMATION

Acute Ecotoxicity: Adult Fathead minnow 96-hr LC 50 = 0.17 mg/l
Chemical Fate: No data available.

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of residue from clean up operations in accordance with all applicable regulations. Generators of waste material are required to evaluate all waste for compliance with RCRA and any local disposal procedures and regulations.
NOTE: State and local regulations may be more stringent than federal regulations.

SECTION 14 – TRANSPORTATION INFORMATION

Not applicable since this material is produced and consumed on-site as required.

SECTION 15 – REGULATORY INFORMATION

OSHA Hazard Communication: Corrosive
OSHA Process Safety: Yes TQ = 1000 lb
TSCA Inventory: Yes
CERCLA Section 103: No
SARA Section 302: No
SARA Section 304: No
SARA Section 313: No

SARA Section 311:

Acute Health: Yes
Chronic Health: No
Fire: Yes
Pressure Release: Yes
Reactive: Yes
California Proposition 65: No

SECTION 16 – OTHER INFORMATION

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the user thereof. It is the buyer's responsibility to ensure that its activities comply with federal, state, provincial, and local laws.

Revision Indicator: Legal Entity name change 04/01/11