

HALOX Products Fact Sheet

Integrated Chlorine Dioxide (ClO₂) Systems

Electrochemical ClO₂ Systems



Halox SRE electrochemical ClO₂ generator, dosing package on containment skid with measurement and control system mounted in the rear. ClO₂ Output: up to 2.4 Kg/day (5.5 lb/day).

Chemical ClO₂ Systems



Accu-Cide chemical ClO₂ generator, dosing package on containment skid with measurement and control system mounted in the rear. ClO₂ Output: up to 4.5 kg/day (10 lb/day) and more.

HALOX INTEGRATED CHLORINE DIOXIDE SYSTEMS

Halox Technologies, Inc., develops, manufactures, sells and supports chemical and electrochemical systems and ancillary equipment for generating, delivering, and measuring chlorine dioxide (ClO₂), a highly effective biocide. by installation, start-up, training, application recommendations, equipment calibration, maintenance and remediation procedures.

Halox generated chlorine dioxide is used in potable water, industrial and process water, and water hygiene applications. Halox offers integrated technologies for site-specific solutions using the safest, most reliable methods of chlorine dioxide generation. Since 1998, over 950 Halox chlorine dioxide systems have been supplied worldwide.

HALOX GENERATED CHLORINE DIOXIDE

Chlorine dioxide (ClO₂) is a highly effective, environmentally-friendly microbiocide. It is a selective oxidant that attacks both planktonic and sessile bacteria, disinfects surfaces, and rapidly reduces biofilms. ClO₂ is a stable, dissolved gas that is a strong bactericide and virucide at concentrations as low as 0.1 ppm. Halox ClO₂ is an effective disinfectant that penetrates the cell walls microorganisms and disrupts metabolic functions. This is more efficient than other oxidizers that “burn” whatever they come in contact with. With minimal contact time, it is highly effective against Legionella, Amoebal cysts, Giardia cysts, Listeria, Coliforms including E-Coli, Staphylococcus, Salmonella, and Cryptosporidium. ClO₂ is also effective against virus, mold, yeast, algae and fungus. It provides a practical solution for the problems associated with phenols, sulfides, iron and manganese contaminants, and their taste and odor within water systems.

Control of Biofilm

No biocide has proven to control biofilm better than ClO₂. It reduces or eliminates the biofilm where bacteria thrive and reproduce, causing these organisms to be significantly reduced within a water system.

Other oxidizers react mostly on the surface of the biofilm to form an oxidized layer, like charring on wood. This precludes further penetration. ClO₂ is a dissolved gas that penetrates biofilm by molecular diffusion. It travels to the base of the film where it attacks microorganisms and loosens the biofilm at its point of attachment.

Chlorine Dioxide Approvals

- United States Environmental Protection Agency (USEPA)
- United States Food and Drug Administration (FDA)
- Building Services Research and Information Association of the UK (BSRIA)

Chlorine dioxide is approved and recommended by the U. S. Environmental Protection Agency as an environmentally friendly drinking water additive to replace chlorine. The U. S. Food and Drug Administration permits the use of chlorine dioxide in many food applications. ClO₂ is in widespread use in The United Kingdom and continental Europe. In the UK, the Building Services Research and Information Association (BSRIA) has recommended ClO₂ as the best available technology for control of Legionella in hot and cold water systems.

THE HALOX ADVANTAGE

Halox offers the latest innovations in stable chlorine dioxide generation systems.

Safety

Traditional generation techniques for ClO₂ use strong acids and are difficult and dangerous to operate. They produce excessive concentrations of ClO₂ (i.e. 1500 to 20,000 ppm). The Halox system is based on a reaction chamber (cassette or column) that directly converts sodium chlorite to chlorine dioxide. When operated according to Halox guidelines, this Halox equipment generates a safe, dilute solution at a controlled, measurable rate that contains up to 550 ppm of chlorine dioxide. Immediately after generation, the ClO₂ solution is fed directly to the water being treated. This self-contained system is safe to use and simple to operate.

Site Application Engineering

The installation of all Halox generators and ancillary components is made easy through the Halox Integrated Modular Design Process. A simple form (provided by Halox) lists the required site specific application parameters. Halox then recommends a solution based on a complete system. With hundreds of systems installed in more than twenty countries, no other supplier can offer such a complete, reliable *Systems-Approach* for each and every application.

HALOX CHLORINE DIOXIDE SYSTEMS AND GENERATORS

Halox Chlorine Dioxide offers a wide variety of applications, including:

- all types of healthcare facilities, i.e. hospitals, clinics, senior citizen/assisted living facilities, etc.
- food and beverage processing, including breweries, canneries, bottlers, slaughter houses, meat, fish, and fowl processing plants, vegetable / produce / fruit washing processes, etc.
- general water hygiene for potable water, industrial / food sanitizing wash applications, and in cooling water systems (cooling towers, settling ponds, etc.).

Halox Technologies offers state-of-the-art generating, delivery, and measuring systems for chlorine dioxide. Halox brings economical ClO₂ to a large group of new users for whom the high cost and complexity of generating equipment has been prohibitive. Approved by both the United States Environmental Protection Agency and the Food and Drug Administration, chlorine dioxide is produced at very safe, easy to handle concentrations. Halox offers two generator systems, each designed for utmost safety and reliability.

Halox SRE Electrochemical Systems

Halox SRE ClO₂ generators use electricity within the unit's cassette(s) to generate a small amount of acid. This acid converts the single precursor, sodium chlorite, into ClO₂ and table salt. There is NO acid to handle, NO chlorine and NO bleach. This greatly reduces regulatory restrictions, paperwork, and reporting as well as worker exposure to hazardous materials.

Halox SRE1000 generators use 1 to 4 cassettes (5 grams each) to produce up to 20 g/hr (1.06 lb/day) of ClO₂.

Halox SRE2000 generators use 1 to 4 cassettes (25 grams each) to produce up to 100 g/hr (5.5 lb/day) of ClO₂.

SRE electrochemical generators are CE Marked and conform to UL61010A-1 and CSA C22.2 NO. 1010.1 for electrical safety

Halox SRE electrochemical generators offer:

- Safe Production of ClO₂
- Up to 2.4 Kg/day (5.5 lb/day) ClO₂
- Safe concentrations of ClO₂
- Chlorine-Free ClO₂
- On-Demand ClO₂
- Single Precursor
- No THMs/No HAAs
- Not pH Dependent
- Environmentally Friendly
- Alternative to Bleach, Ozone, Bromine
- Pure Product Stream
- Simple Operation
- No Pipe Corrosion
- Point-Of-Use Generation
- No Bleach, No Added Acid, No Chlorine Gas



Accu-Cide Chemical Generators

Accu-Cide chemical generators are recommended where larger amounts of chlorine dioxide are desired and/or where handling of regulated chemicals is not a restraint. Accu-Cide generators safely mix dilute sodium chlorite and acid to generate chlorine dioxide. No chlorine and no bleach are used.

Accu-Cide generators are available in wall-mount or skid-mount configurations. Standard models produce ¼ lb, 1 lb, 5 lb and 10 lb (112 gm, 456 gm, 2.2 kg and 4.5 kg) of ClO₂ per day.

Because, Accu-Cide generators use a 'scaleable' technology, systems capable of producing larger amounts of ClO₂ at the same safe concentrations are also available. Contact Halox for specific details.

Accu-Cide generators are CE marked and conform to UL 61010A-1 and CSA C22.2 No. 1010.1, EMC: 89/336/EEC and LVD: 73/23/EEC for electrical safety.

Accu-Cide chemical generators offer:

- Safe Production of ClO₂
- Up to 4.5 Kg/day (10 lb/day) ClO₂ and more
- Safe concentrations of ClO₂
- On-Demand ClO₂
- Chlorine-Free ClO₂
- No THMs/No HAAs
- Not pH Dependent
- Environmentally Friendly
- Alternative to Bleach, Ozone, Bromine
- Pure Product Stream
- Simple Operation
- No Pipe Corrosion
- Point-Of-Use Generation
- No Bleach, No Chlorine Gas



HALOX ClO₂ DOSING PACKAGES

The amount of ClO₂ required for water disinfection depends on the system demand, makeup rate, and desired residual. In situations where peak demand calls for large amounts of ClO₂ or in high pressure applications, a Halox ClO₂ dosing package should be used. Halox ClO₂ dosing packages include a coated tank, high-low level controls and alarms, a leak containment skid and a control box. They require minimal assembly and contain all the necessary components for safely storing and metering ClO₂ solutions. Rugged and dependable pumps, sized to match ClO₂ generation rate/system feed rate, will supply up to 65 gallons-per-hour (246 liters-per-hour) of ClO₂ solution into pressurized lines up to 150 psi. Larger sizes are available.



HALOX ClO₂ DOSING PACKAGES (Cont)

1. Optimal control of ClO₂ residual in distribution systems.
2. Safety relative to spills and over/under production of ClO₂
3. Ease of operation.
4. Easy-to-use interface between ClO₂ generator and final use.
5. Mechanical/electrical compatibility with ClO₂ generators.
6. Material compatibility with ClO₂.

HALOX MEASUREMENT AND CONTROL (MAC) SYSTEM

The Halox ClO₂ measurement and control (MAC) system offers cost effective, reliable, high-performance measurement and control of chlorine dioxide solutions. When combined with Halox ClO₂ generators and dosing systems, the state-of-the-art MAC system provides for fully integrated, closed loop control. The Halox MAC System measures ClO₂ residual concentrations in treated water. This data is used to control dosing rates (via a 4-20 mA output) to keep the residual optimized or to validate the accuracy of a given dosing scheme.

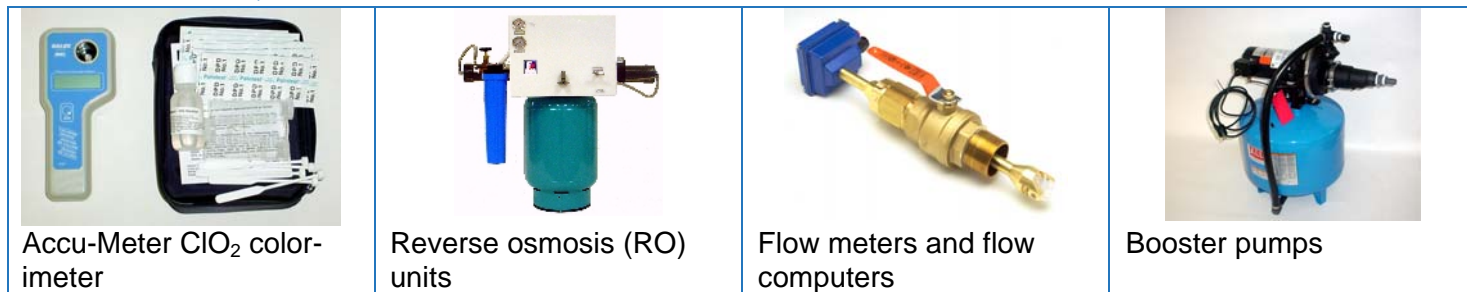


The MAC System is available as a pre-assembled unit, comprising sensor with flow cell and controller, mounted on a ready-to-install panel. The sensor, flow cell and controller can be purchased individually.

Additional Features/Benefits

- CE Certified
- Automatic (Programmable) or Manual Operation
- Modular Design Hardware and Software
- Compatible with all Halox ClO₂ generators and dosing systems; provides one-stop shopping for the safe and effective generation of ClO₂
- User friendly

ANCILLARY EQUIPMENT



Halox offers a variety of ancillary products for use in chlorine dioxide generation and chlorine dioxide delivery systems. Among the ancillary equipment, product offerings include:

- Accu-Meter colorimeters measure ClO₂ up to 4.00 mg/L
- Reverse osmosis (RO) units
- Flow meters and flow computers
- Booster pumps

ABOUT HALOX TECHNOLOGIES

Founded in 1998, Halox maintains corporate headquarters in Bridgeport, Connecticut. Halox is housed in a modern administration / production facility that contains all of the company's administrative, research and development, and manufacturing. The company has representation throughout the world. Only Halox can offer integrated technologies for site-specific solutions using the safest, most reliable methods of chlorine dioxide generation. Since 1998, over 950 Halox chlorine dioxide systems have been supplied worldwide.