

CHLORINE DIOXIDE

The Next Generation in Chlorine Dioxide Production

PurDOX™ BCD is a proprietary aqueous blend of sodium chlorate and hydrogen peroxide that is used to generate chlorine dioxide (ClO₂) upon mixing with sulfuric acid. The resultant, ClO₂-rich liquid must be prepared under vacuum using appropriate equipment that first directly mixes the precursor reactants in a reaction chamber and then dilutes them into the water process stream being treated.

Features and Benefits

- Broad spectrum antimicrobial
- Efficiently activated to produce ClO₂
- Microbes cannot develop resistance to ClO₂
- Compatible with corrosion and scale inhibitors
- Cost-effective and reliable microbial control
- Does not react with ammonia and maintains selective oxidation despite organics contamination
- Minimizes the formation of THMs and HAAs

Registered Applications – PurDOX™ BCD

PurDOX™ is used in large volume applications where the purity of the chlorine dioxide is not critical. EPA registered biocidal applications include:

- Cooling Water (recirculating and once-through)
- Textile Processing Water
- Pulp/Paper Process Water
- Pasteurizer, Cannery and Retort
- Impounded Lake, Pond and Reservoir Water
- Sewage and Waste Water Systems
- Gas and Oil Water and Fluids (not California)
- Agricultural Water (Non-food contact)

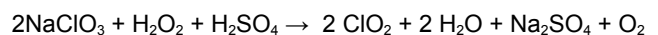
Non-Registered Applications – PurDOX™

PurDOX™ is also available as a non-registered chemical for oxidative and odor applications:

- Leather processing (not California)
- Agricultural water (Non-food contact)
- Oxidizing nutrients
- Eliminating odors
- Controlling scale and deposits
- Controlling iron and manganese
- Controlling corrosion
- Reducing sludge
- Clarifying/precipitating organic and inorganic particles
- Reducing TOC (total organic carbon)
- Reducing color
- Destruction of odors caused by phenolics, simple cyanides, and sulfides by chemical oxidation

Reaction Chemistry

The PurDOX™ technology is used in large applications when chlorine gas is not available on-site and the customer wants to avoid adding a third chemical to the process. The PurDOX™ replaces chlorine gas with a blend of sodium chlorate and hydrogen peroxide into a single product called PurDOX™ and uses low iron sulfuric acid to react with the PurDOX™ precursor to generate chlorine dioxide as shown below:



This reaction theoretically yields 100% conversion of PurDOX™ to chlorine dioxide and a generator efficiency of 95% of the theoretical yield is achievable. Alternative reaction chemistry using different precursors are also available from International Dioxide. Capacities for PurDOX™ can range from 100 pounds per day and up.

Engineering Considerations and Support

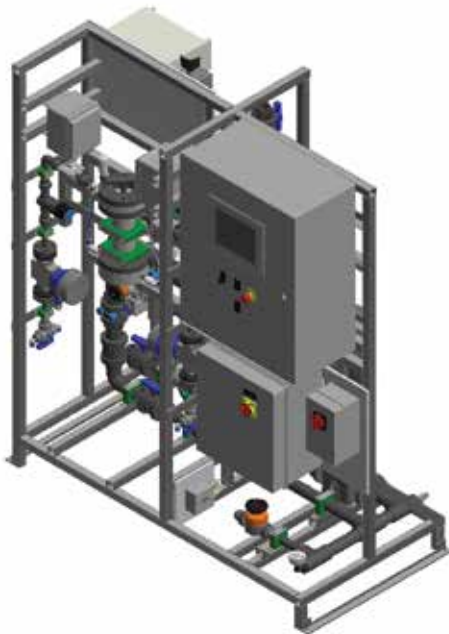
International Dioxide engineers, designs, manufactures and tests all of its chlorine dioxide generators with in-house resources. Each generator is tested to insure the machine meets your specification in your environment. This ensures smooth installation and commissioning.

Technical Services

International Dioxide provides:

- Custom-engineered chlorine dioxide generators to meet those needs not satisfied by our standard equipment.
- Assistance to our customers to assess and satisfy treatment needs.
- On-site customer assistance programs that are tailored to support the successful application of chlorine dioxide at your facility.

PurDOX™ VB – (Vacuum-Based)



PurDOX™ Generation Equipment

The PurDOX™ generator achieves safe, cost effective conversion of PurDOX™ to chlorine dioxide. The critical design principle in the PurDOX™ generator is the reaction and delivery of chlorine dioxide in a safe, reliable and easy-to-operate manner. All PurDOX™ generators are affordable, safe, and highly efficient systems.

The PurDOX™ generator utilizes an eductor to draw the precursor chemicals from their storage container, through the reaction chamber and into the process stream. The chemicals remain under vacuum until safely diluted. It is the dilution water flowing through International Dioxide's eductor-based technology that creates a vacuum. This ensures that chemicals are only drawn into the generator when dilution water is flowing. This approach minimizes any chance for precursor leakage or unsafe chemical reactions. The vacuum-based PurDOX™ design eliminates the need for metering pumps with their inherent need for frequent maintenance, reliability problems, and concerns with high pressure leaks of hazardous chemicals. If the motive water supply water is lost, vacuum is no longer being created and chemicals will stop being pulled into the generator. The PurDOX™ chemical reaction takes place in a specially designed reactor to ensure that the chemical concentrations are proportionally maintained at a safe level.

The PurDOX™ generator is manufactured so that all desired modules are already interconnected. This allows for a rapid installation at your facility and minimizes skilled labor resources. Each generator is safety engineered to reduce the hazards of operating and servicing the generator. We extensively use low voltage components reducing electrical hazards and designs that are easily flushed reducing chemical hazards. Each of the optional features is easy to integrate because of the modular design with simple connections. Pipe unions and high quality tubing fittings are used for fast and reliable connections.

Information Available

International Dioxide is a world-leading provider of chlorine dioxide products and related technology for disinfecting, sanitizing, and odor control applications. For additional information about PurDOX™ sodium chlorate precursor solutions and PurDOX™ chlorine dioxide generator systems, please contact the sales office at 1-800-477-6071 or online at idiclo2.com

Health and Safety Information: Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the International Dioxide, Inc. products mentioned in this publication. For materials mentioned which are not International Dioxide, Inc. products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., safety data sheets and product labels. Consult your International Dioxide representative or contact the International Dioxide, Inc. Regulatory Affairs Representative.

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