



## **DIOX-A 10 CHLORINE DIOXIDE GENERATOR**

### **WALLACE & TIERNAN® PROCESS SYSTEMS**

The DIOX-A 10 chlorine dioxide generator was designed for the preparation of small quantities of chlorine dioxide. As starting chemicals for the preparation of chlorine dioxide Cedolyt A9 (hydrochloric acid, 9 %) and Nadolyt C7.5 (sodium chlorite, 7.5 %) are used. Both solutions are fed from standard carboys directly into the reaction tank where the sodium chlorite and the hydrochloric acid are converted into chlorine dioxide.

### **TYPICAL APPLICATIONS**

- Potable water, particularly in complex water systems and for preventing and eliminating legionellae
- Water in beverage industry, breweries and food industry
- Cooling water
- Wastewater

Chlorine dioxide is a powerful disinfectant and oxidising agent, excellent at destroying odours. Chlorine dioxide has been found to be superior to chlorine as a disinfectant. This chemical has a higher oxidising reduction potential than chlorine and can achieve destruction of such organic substances and virus which are not attacked by chlorine. At identical concentrations the capability of chlorine dioxide to destroy spores and virus is higher than that of chlorine. The use of chlorine dioxide eliminates the formation of undesirable or harmful trihalomethanes (haloforms).

Chlorine dioxide oxidises unpleasant pollutants such as phenols, algae and products resulting from their decomposition into neutrally tasting substances.

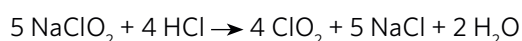
### **Key Benefits**

- Preparation and storage of long-term stable chlorine dioxide solutions in small quantities
- Prevention of chlorites and chlorates by flushing after every generating cycle
- Continuous dosing
- Facility to meter solution by several metering pumps to multiple points of application
- PLC-controlled unit with mimic diagram
- Optimal process precision by control of the chemical dosage
- Pre-assembled unit

Unlike chlorine the rate of disinfection by chlorine dioxide does not decrease, but remains stable with rising pH. Chlorine dioxide does not react with ammonia or amino compounds. This is a substantial difference when compared with chlorine that reacts with ammonia to form chloramines which have a negative influence on treated water.

Chlorine dioxide has a very high persistence in water. After the oxidation process, chlorine dioxide is capable of maintaining an active residual for a long period. Thus long distribution mains and storage tanks are better protected against reinfection.

As starting chemicals for preparing chlorine dioxide dilute sodium chlorite and hydrochloric acid are used. The chemical equation for their reaction is:



Sodium + hydrochloric- → Chlorine + sodium- + water  
acid chlorite dioxide chlorite

By the reaction of sodium chlorite with hydrochloric acid an aqueous solution of chlorine dioxide and sodium chloride (common salt) is generated.

#### Method of operation

In the Wallace & Tiernan® DIOX-A generator, chlorine dioxide is produced as an aqueous solution of constant strength. For the generation, Cedolyt A9 and Nadolyt C7.5 are used. Both reagents are fed by means of peristaltic pumps directly from commercial carboys into a pressureless reaction tank.

The precise feed rate of the peristaltic pumps is constantly monitored by flow totalisers. Any undue deviation of the flow rate or a failure of the operating water supply will automatically shut down the system and set off an alarm signal. The surplus of hydrochloric acid in the reaction tank ensures a high conversion rate of the chlorite into chlorine dioxide.

After a defined reaction time, the chlorine dioxide solution of approx. 20 g/l is flushed out by water into an emission-free preparation tank and simultaneously diluted to < 2.5 g/l. At this concentration the solution remains stable over extended periods. From the preparation tank the chlorine dioxide solution flows into the storage tank from where the dilute solution is metered by one or more metering systems. This dual-tank arrangement ensures always a constant dosing strength irrespective of the actual feed rate.

The gas volume displaced by the filling and emptying of the process tanks is passed and neutralised emission-free through an absorption unit. All electrical functions are interlocked and grouped in an integral electronic control system. Operating conditions and alarms are displayed on a mimic diagram. For the reagent supply tanks optional bunds are available.

#### TECHNICAL DATA

	DIOX-A 3	DIOX-A 10
Maximum capacity of the generator	3 g/h ClO <sub>2</sub>	10 g/h ClO <sub>2</sub>
Feed rate Nadolyt C7.5	75 ml/h	250 ml/h
Feed rate Cedolyt A9	225 ml/h	750 ml/h
ClO <sub>2</sub> strength in the storage tank	0,7 g/l	2,0 g/l
Required operating water pressure	2 - 4 bar	
Power supply	1/N/PE AC 230 V, 50 Hz	
Power consumption	approx. 80 VA	
Fuse	max. 16 A	
Dimensions (W x H x D)	800 x 1000 x 300 mm	
Weight	approx. 50 kg	



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