



Gas Detection For Life

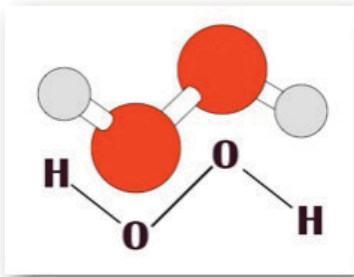
Application Brief

October 6, 2020

Gas Monitoring for Sterilization Processes

Sterilization Applications

With the COVID-19 pandemic there has been an increase in disinfecting and sterilizing processes worldwide. Most of these processes include conditioning an area or an item with a desired concentration to perform the sterilization phase. **Hydrogen peroxide, chlorine dioxide, and ozone** are mainly used in this application.



What is Hydrogen Peroxide?

Hydrogen peroxide (H₂O₂) is a colorless liquid at room temperature with a bitter taste. Small amounts of gaseous hydrogen peroxide occur naturally in the air. Hydrogen peroxide is unstable, decomposing readily to oxygen and water with release of heat. Although nonflammable, it is a powerful oxidizing agent that can cause spontaneous combustion when it comes in contact with organic material. Hydrogen peroxide is found in many households at


low concentrations (3-9%) for medicinal applications and as a bleach for hair and clothing. In other industries, hydrogen peroxide is used in higher concentrations as a bleach for textiles and paper, as a rocket fuel component, and for producing foam rubber and organic chemicals.

Exposure Symptoms

Irritation of eyes, nose & throat; corneal ulcer; skin redness, blistered skin.

Respirator Recommendations

Begin at 10 ppm

Exposure Limits	NIOSH ACHIH OSHA	
	8 Hours	IDLH
Hydrogen Peroxide H ₂ O ₂ 	1 ppm	75 ppm

RKI Solution



EAGLE



SC-8000



GD-70D

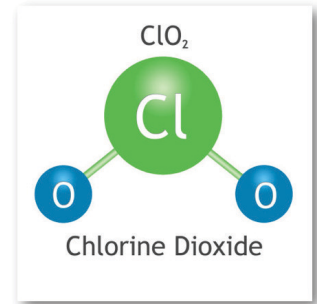
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Gas Monitoring for Sterilization Processes

What is Chlorine Dioxide?

Chlorine dioxide (ClO₂) is a yellow-green gas with an odor similar to chlorine with excellent distribution, penetration and sterilization properties due to its gaseous nature. Although chlorine dioxide has chlorine in its name, its properties are very different, much like carbon dioxide is different than elemental carbon. Chlorine dioxide has been recognized as a disinfectant since the early 1900s and has been approved by the US Environmental Protection Agency (EPA) and the US Food and Drug Administration (FDA) for many applications. It has been demonstrated as an effective broad spectrum, anti-inflammatory, antibacterial, fungicidal, and virucidal agent, as well as a deodorizer.

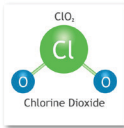


Exposure Symptoms

Irritation of eyes, nose & throat; cough, wheezing, chronic bronchitis

Respirator Recommendations

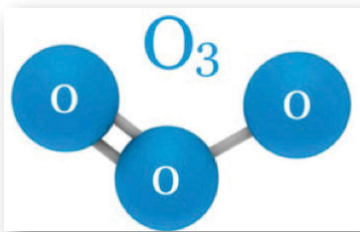
Begin at 1 ppm

Exposure Limits	NIOSH OSHA	
	8hr TWA	15 min STEL
Chlorine Dioxide ClO ₂ 	0.1 ppm	0.3 ppm

RKI Solution



What is Ozone?




Ozone (O₃) is a gaseous molecule primarily found in Earth's upper atmosphere. It is a pale blue gas with a pungent smell similar to chlorine. Ozone is a powerful oxidant. With its third oxygen molecule, it is able to destroy germs, viruses, and microbes that may cause surface or air contamination.

Exposure Symptoms

Cough, throat irritation, chest pains from inflammation, wheezing, shortness of breath

Respirator Recommendations

Begin at 1 ppm

Exposure Limits	NIOSH OSHA	
	8hr TWA	15 min STEL
Ozone O ₃ 	0.1 ppm	0.3 ppm

RKI Solution



Gas Monitoring for Sterilization Processes

RKI Solutions

RKI offers portable and fixed system solutions for hydrogen peroxide, chlorine dioxide, and ozone depending on the need.



EAGLE

The EAGLE is a 6-channel sample-drawing portable monitor that can be configured to detect hydrogen peroxide, chlorine dioxide, ozone and other gases if needed.

0 – 3.00 ppm and 0.02 resolution for H₂O₂

lowest initial reading is 0.18 ppm

0 – 1.00 ppm and 0.01 resolution ClO₂

lowest initial reading is 0.06 ppm

0 – 1.00 ppm and 0.01 resolution O₃

lowest initial reading is 0.06 ppm



SC-8000

The SC-8000 is a single gas portable monitor with an internal sampling pump and a range of:

0 – 3.00 ppm and 0.02 resolution for H₂O₂

lowest initial reading is 0.09 ppm

0 – 1.00 ppm and 0.01 resolution O₃

lowest initial reading is 0.03 ppm



GD-70D

The GD-70D smart transmitter has the ability to continuously monitor as a fixed system. It has alarm indications and alarm relays that can be used for ventilation or other automated responses.

0 – 3.00 ppm and 0.02 resolution for H₂O₂

0 – 0.6 ppm and 0.01 resolution O₃

Gas Monitoring for Sterilization Processes

Ordering Information

Part#	Description	Group	Subgroup	List Price
72-5124RK	EAGLE for Hydrogen Peroxide (H ₂ O ₂) 0 - 3.00 ppm, (no probe)	Portables	Eagle	2,300.00
72-5118RK	EAGLE for Chlorine Dioxide (ClO ₂) 0 - 1.00 ppm (also detects chlorine)	Portables	Eagle	2,300.00
72-5109RK	EAGLE for Ozone (O ₃) (no probe), 0 - 1.00 ppm	Portables	Eagle	2,300.00
73-0053-H ₂ O ₂	SC-8000 toxic gas detector, Hydrogen Peroxide (H ₂ O ₂) 0 - 3.00 ppm, Li-ion type	Portables	SC-8000	2,455.00
73-0053-O ₃	SC-8000 toxic gas detector, Ozone (O ₃), 0 - 1.0 ppm, Li-ion type	Portables	SC-8000	2,455.00
GD-70D-H ₂ O ₂	Smart transmitter, GD-70D for Hydrogen Peroxide (H ₂ O ₂), 0 - 3.00 ppm	Fixed Head	GD-70D	1,495.00
GD-70D-O ₃	Smart transmitter, GD-70D for Ozone (O ₃), 0 - 1.00 ppm	Fixed Head	GD-70D	1,495.00

References: The National Institute for Occupational Safety and Health (NIOSH); Agency for Toxic Substances and Disease Registry; CDC

Resources

[SC-8000 Datasheet](#)

[SC-8000 Price List](#)

[EAGLE 1 Datasheet](#)

[EAGLE 1 Price List](#)

[GD-70D Datasheet](#)

[GD-70D Price List](#)