



123 Virus Free - ClO₂ Fumigation



The solution to environmental sanitation

Environmental contamination of food processing facilities can lead to significant problems, including recalls and other liabilities. International food processors of all sizes are utilizing JUNO's unique and extensive line of chlorine dioxide (ClO₂) products and services to help combat various sanitation challenges.

JUNO is a versatile water activated ClO₂ gas generation technology.

- No chemical mixing. No expensive generator. The easiest ClO₂ generation.
- Perfect for routine or emergency disinfection.
- Inexpensive, safe, and can be scaled to any size application.

Advantages



- Guaranteed 6-log kill
- Safe, portable, and easy to use
- No capital investment
- Eliminates all bacteria, mold, and other micro-organisms
- No residue or post treatment clean up
- Non-corrosive at generated levels

Common Organisms



- Listeria
- E. coli
- Salmonella
- Clostridium
- Brucella
- Campylobacter
- Viruses
- Protozoa
- Mold
- Yeast
- Many other organisms

Targeted Applications



- Complete or partial facility treatments
- Spiral freezers
- Electrical boxes
- Food transport trailers
- Processing equipment
- Dry clean only areas
- Aseptic fillers
- HVAC
- CIP/COP

Validation / Quality Monitoring



VALIDATION (Three-pronged approach)

- Pre/Post ATP swabs are taken to determine bioload reduction.
- 6-log biological indicators are used to confirm JUNO's guaranteed 6-log kill.
- Pre/Post swabbing is done to identify the CFU aerobic plate count reduction.

About Chlorine Dioxide (ClO₂)



Chlorine dioxide works by penetrating the cell wall of microorganism and disrupting the pathogen's metabolic functions, thus immediately and permanently eliminating the problem at its source.



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FIRST AID

If in eyes:

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

If on skin or clothing:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

If swallowed:

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control centre or doctor
- Do not give anything by mouth to an unconscious person.

If inhaled:

- Move person to fresh air.
- If person is not breathing, call an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.
- Call a poison control center or doctor for further treatment advice.

NOTE TO PHYSICIAN

Probable mucosal damage may contraindicate the use of gastric lavage.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

DANGER. CORROSIVE. Causes irreversible eye damage and skin burns. Harmful if swallowed or absorbed through skin. Wear protective goggles or face shield. Wear coveralls, over long-sleeved shirt and long pants, socks, chemical resistant footwear, and rubber gloves. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

Handlers applying in an occupation setting must wear gloves {When using the fogging method of application, the following statement will be used:}

Harmful if inhaled: Avoid breathing dust or spray mist. People must vacate the premises during fogging treatments; a one-hour restricted entry interval (REI) is required.

A 200 ppm use-solution of chlorine dioxide is a broad spectrum disinfectant effective against *Hepatitis B Virus, *Hepatitis C Virus, *Newcastle Disease virus, *Norovirus, *Human coronavirus, and the following gram negative and gram positive bacteria: Escherichia coli O157:H7, Pseudomonas aeruginosa, Staphylococcus aureus, Salmonella enterica, and Bordetella bronchiseptica after 10 minutes of contact.

The 200 ppm use-solution is also effective against Staphylococcus aureus (MRSA) and Enterococcus faecalis (VRE) after 5 minutes of contact, tuberculocidal† against Mycobacterium bovis‡ after 5 minutes of contact at 20oC and *virucidal against *HIV-1 (the virus that causes AIDS) after 1 minute of contact and *Feline Panleukopenia virus, *Pseudorabies,*Transmissible Gastroenteritis virus and *Swine Influenza A Virus after 5 minutes of contact. A complete list of organisms and treatment conditions are shown in the table below.

Viruses*:	Use-Dilution (ppm)	Time (minutes)
*Minute Virus of Mouse (Parvovirus) (MVM-p) †	100	10
*Minute Virus of Mouse (Parvovirus) (MVM-i) †	100	10
*Mouse Hepatitis Virus (MHV-A59) †	100	10
*Mouse Hepatitis Virus (MHV-JHM) †	100	10
*Murine Parainfluenza Virus Type 1 (Sendai) †	100	10
*Sialodacryoadenitis Virus (Coronavirus) (SDAV) †	100	10
*Theiler's Mouse Encephalomyelitis Virus (TMEV) †	100	10
*Avian Influenza A (H3N2) virus	100	10
*Canine Parvovirus†	100	10
*Feline Panleukopenia virus†	200	5
*Foot & Mouth Disease virus	100 or 200	30
*Hantavirus	100	10
*Hepatitis B Virus	200	10
*Hepatitis C Virus	200	10
*HIV-1	200	1
*Human Coronavirus	200	10
*Infectious bursal disease virus (IBDV)†	100	10
*Influenza A virus (Hong Kong)	100	10
*Marek's disease virus (MDV) †	100	10
*Newcastle Disease virus†	200	5
*Norovirus	200	10
*Porcine circovirus type 2†	200	5
*Transmissible Gastroenteritis Virus	200	5
*Porcine Respiratory and Reproductive Syndrome virus (PRRSV) †	100	10
*Pseudorabies†	200	5
*Swine Influenza A Virus†	200	5
*Vaccinia virus	50 or 100	10
Bacteria (Disinfectant):		
<i>Bordetella bronchiseptica</i>	200	10
<i>Corynebacterium bovis</i>	100	10
<i>Enterococcus faecalis Vancomycin Resistant</i>	200	5
<i>Escherichia coli O157:H7</i>	200	10
<i>Helicobacter pylori</i>	100	10
<i>Mycobacterium bovis</i> ‡	200	5
<i>Pseudomonas aeruginosa</i>	200	10
<i>Salmonella enterica</i>	200	10
<i>Staphylococcus aureus</i>	200	10
<i>Staphylococcus aureus (MRSA)</i>	100 or 200	10
<i>Staphylococcus aureus Methicillin Resistant</i>	200	10
Bacteria (Sanitizer):		
<i>Salmonella enterica</i>	25	1
<i>Listeria monocytogenes</i>	25	1

† = animal viruses

‡ = tuberculocidal against Mycobacterium bovis



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