



Pet Friendly

Kid Friendly

Earth Friendly

EPA Registered Hospital Disinfectant • Carpet and Soft Surface Sanitizer • Mold & Mildew Killer Odor Eliminator • Allergen Eliminator • HVAC and Air Ducts • Food Contact Sanitizer

TRAINING MANUAL

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Mission Statement

Vonos creates products that are Pet Friendly, Kid Friendly, Earth Friendly, and highly effective, with the end user's health and safety as our top priority. Vonos creates disinfectants differently.

Why WeClean

There are generally two approaches to cleaning: First there's cleaning for appearance - when something looks dirty you clean it. Then there's cleaning for health. Cleaning for health is as practical to our life style as eating correctly, getting enough sleep, and exercising. Healthy cleaning doesn't only apply to our homes, but to all areas we inhabit: our workplaces, schools, restaurants, childcare centers, and health care facilities, to name a few. We all want to live in a healthy environment, yet many of the common cleaning and disinfecting products sold today contain harmful chemicals strong enough to cause eye, nose, and lung irritation, as well as rashes, headaches, nausea, and asthma.

The United States Environmental Protection Agency estimates that cleaning products alone contribute approximately 8 percent of total non-vehicular emissions of volatile organic compounds (VOCs). Look under your kitchen sink, have you brought toxins into your home, all in the name of healthy cleaning?

In the real world, time allocated for a given task is tied to economy. For this reason, cleaning, sanitizing, and disinfecting should be approached systematically. We need a well thought out plan developed, implemented, and periodically revisited to make sure it's still functional.

Resources spent on training and supplies to create an effective cleaning program will amply repay its practitioners several times over. Costs will decrease due to the reduction of illnesses, employee sick days, and increased long - term gains generated by client comfort satisfaction and health. Along with source reduction, we will be helping to reduce the amount of harmful chemicals making their way into the water we drink, the air we breathe, the land in which we grow our food, and in our own bodies.

The Hippocratic Oath... "First Do No Harm"

In the past, we have been given the choice of a "Green Chemistry" that was safe for the people and the planet, but all too often just did not work as well as conventional cleaning products. Now, after years of research and new product development, that has changed. We now have the advantage of choosing another way of achieving healthy cleaning.

As you follow this training manual, you will learn about a breakthrough technology, Vonos. We have designed our product around a chemistry that is unique in all of nature. Effective on a broad spectrum of viruses , and bacteria, including "super bugs" like MRSA, H1N1, and SARS COVID-2 Vonos breaks down to simple salt and produces no harmful byproducts.

The Vonos Facts

Vonos is an EPA- registered hospital disinfectant cleaner, mold killer, and super effective odor eliminator. It's ready to use, and no mixing is required just spray, wipe, or fog right from the bottle. Ecologically sound, nonirritating to the skin, and non-corrosive to treated articles, Vonos food contact surface sanitizer is NSF certified (no rinse required) and kills 99.999% of bacteria, including e Coli, Salmonella and Listeria in less than 60 seconds.

Vonos kills bacteria by chemically altering certain amino acids and the RNA in the cell. These amino acids (RNA) are important building blocks in the proteins that help to form cell walls. When these proteins are destroyed, the cell wall ruptures and the organism dies.

Viruses are eliminated in a different way, by reacting with peptone, a water soluble substance that originates from the hydrolysis of proteins to amino acids, preventing protein formation. In the chemical reaction, Vonos takes on an electron from the amino acid and reverts back to a chlorite ion. The amino acid gives up an electron, which is what chemists call oxidation.

Anti - Microbial Action









Nerovirus



H1N1 (Swine Flu)

Vonos has been proven effective against Methicillin - resistant Staphylococcus aureus (MRSA), Norovirus, Legionella pneumophilia, E. coli and the H1N1 virus (Swine Flu) in testing conducted by certified independent laboratories under GLP conditions submitted to the US EPA. Removing mold and bacteria can involve strong chemicals that may trigger health problems, such as chlorine bleach products that produce trihalomethanes (THM) and haloacetic acids (HAAS) which are linked to cancer. Now there's an ecologically sound alternative.

Vonos is colorless, odorless, and so mild you can wash your hands in it. Plus, it will not harm hard or soft surfaces, or colorfast fabrics. Use it on shower curtains, under sinks, in basements, and in crawl spaces - anywhere mold and bacteria are found.

Vonos is shelf stable and ready to use, with no mixing required. Spray, wipe, or fog right from the bottle for hospital grade disinfection. For economy, Vonos can also be diluted and still perform quickly to reduce bacteria on food contact surfaces by 99.999% in under 30 seconds - use it on your cutting board with no rinse required.

Vonos is stabilized to retain over 98% of its strength for over one year under normal storage conditions. At the same time, the stabilization is controlled to allow a rapid equilibrium between the "stabilized" and "free" chlorine dioxide. This means that Vonos total 2,000 - ppm Chlorine Dioxide is available almost instantly as needed to destroy harmful microbial substances, and whatever is not used will be available in reserve for long - term residual activity.

Vonos includes components that dramatically decrease the size of its particles. This increases the ability of the active solution to spread on and to penetrate both hard and porous surfaces. This also makes it effective against airborne pathogens by reducing droplet size through the use of sprayers and foggers.

Vonos also has a unique ability to significantly reduce allergen levels in the most common household allergy triggers: dust mites, cat dander, and molds.

Q. What does it mean that a disinfectant product is "green"?

A. The EPA is currently reviewing the way third parties will be able to vary "Green" claims on all disinfectant labels. EPA policy at this point does not allow green claims to be placed directly on any disinfectant product's label. While Vonos is mild on skin, hard surfaces, and fabric, and will almost certainly qualify for green status when the designation is allowed, we cannot advertise this claim until it is permitted by the EPA. Vonos is a powerful disinfectant able to kill some of the toughest and most resistant forms of bacteria and mold. The chemical composition of Vonos is such that it has a minimal impact on the environment and contains no ozone harming volatile compounds (VOCs). Vonos breaks down to a simple salt and produces no harmful by - products.

Q. With so many disinfectants and mold removers on the market, why should I choose Vonos?

A. The easiest way to answer this question is to point out that not all disinfectants are created equal. When evaluating and comparing disinfectant products, take a close look at their core ingredients. Vonos uses a unique chemical compound called chlorine dioxide. While other competitors and manufacturers have attempted to copy and produce a form of stabilized chlorine dioxide similar to Vonos, our revolutionary formula is simply unequaled. Chlorine dioxide has been used during Anthrax attacks, in the aftermath of Hurricane Katrina, to purify drinking water, and most recently to kill MRSA and Coronavirus in schools and hospitals. Also consider carefully what kinds of chemicals you want around your children, employees, patients, students, and close family members. Most disinfectants and mold removers on the market are extremely toxic, but Vonos gives you peace of mind that you are using an effective product that does not come with any alarming safety warnings and precautions. You no longer need to use harsh chemicals that increase VOCs in your environment. Using Vonos can actually reduce the level of allergen in your home and workplace.

Chlorine Dioxide (CLO2), Stabilized Chlorine Dioxide, and Vonos

Chlorine Dioxide (CLO2)

While chlorine dioxide has "chlorine" in its name, the chemistry is radically different from chlorine. As we all learned in high school chemistry, we can mix two compounds and create a third that bears little resemblance to its parents. For instance, by mixing two parts hydrogen with one of oxygen, liquid water is formed. We should not be misled by the fact that chlorine and chlorine dioxide share a word in common. The chemistries of the two compounds are completely different. The chlorine dioxide molecule has one chlorine atom and two oxygen atoms. This combination creates a molecular free radical - a magnetic like attraction that seeks out electron donors and selectively oxidizes harmful bacteria and mold.

CLO2 has been recognized for its powerful disinfecting properties since the early 1900s. It is used by municipalities to purify drinking water.

Environmentalists now recommend its use in eco - friendly paper production. Produced on site, these treatments require sophisticated chemical generation equipment and limit practical use to only large scale industrial operations.

Stabilized CLO2

In an effort to commercialize CLO2 for the general public, several companies have developed methods to produce "stabilized CLO2". These products usually require a two - step process mixing an acid "activator" into a chlorite solution to produce CLO2. Yet even though these products claim to have the same amount of this key ingredient, it cannot be assumed that these products will all perform in an equal manner. The results are solutions of varying strength - and safety - with a shelf life of a few days to just a few hours.

Environmental impact

Unlike Chlorine, CLO2 produces no chlorinated by products or carcinogenic compounds such astrihalomethanes (THM) and haloacetic acids (HAAS). When CLO2 is photo oxidized by sunlight, it falls apart. The reaction process of chlorine dioxide with bacteria and other substances takes place in two steps. In the first stage the chlorine dioxide molecule accepts an electron and chlorite is formed (ClO3). In the second stage chlorine dioxide accepts 4 electrons and forms chloride (Cl-). Both chlorate and chlorite are oxidizing agents. Chlorine dioxide, chlorate and chlorite dissociate into sodium chloride (table salt).

The Difference between Cleaning, Sanitizing, and Disinfecting

Cleaning is a prerequisite for effective sanitization and disinfection. Organic deposits from food residues, skin cells, mold spores, oils, greases, and proteins are food for bacteria and are where bacteria live. These organic deposits can prevent the sanitizer or disinfectant from coming into contact with bacteria, viruses or spores.

Q. What is the difference between a cleaner and a disinfectant?

A. Cleaners are not registered with the EPA and cannot make public health claims on their labels about killing germs or having any anti-microbial action.

Q. Can I clean and disinfect at the same time?

A. In some cases you can clean and disinfect at the time, but this depends on how dirty the surfaces you are cleaning and disinfecting. The dirtier the surface, the less effective the disinfectant. Disinfectants need to contact the area to disinfect and can't do this effectively with a barrier of dirt or grime in the way. Once the dirt has been wiped away, the disinfectant can get to work. Under lightly soiled conditions, you can clean and disinfect in the same step with just Vonos.

NOTE: The EPA requires all disinfectants carry the following label direction: "For heavily soiled areas, a pre-cleaning step is required."

Sanitizer

A sanitizer reduces, but does not necessarily totally eliminate microorganisms on a treated surface. The EPA registers food - contact surface sanitizers and sanitizing rinses for surfaces such as dishes, utensils, and food processing equipment, and for non-food-contact surface sanitizers such as carpet sanitizers, air sanitizers, laundry additives, and in - tank toilet bowl sanitizers. The FDA and EPA use the legal definition of a "Sanitizer" as a compound that is capable of killing 99.999% or a 5-log reduction of infectious organisms in a bacterial population within 30 seconds. "Sanitization" means the application of cumulative heat or chemicals on cleaned food-contact surfaces that, when evaluated for efficacy, is sufficient to yield a reduction of 5 logs, which is equal to a 99.999% reduction of representative disease microorganisms of public health importance.

Q. What is the difference between a 'food contact sanitizer' and a 'non- food contact sanitizer?

A. A food contact sanitizer, at a minimum, reduces the level of Staphylococcus aureus and Escherichia coli by 99.999% on a food contact surface within one minute. A potable water rinse is not allowed after sanitization of a food contact surface. A non- food contact sanitizer, at a minimum, reduces the level of Staphylococcus aureus and Klebsiella pneumonia or Enterobacter aerogenes by 99.9% on non - food contact surfaces within 5 minutes.

Q. What does "no rinse required on food contact surfaces" mean?

A. "No rinse required on food contact surfaces" is a safety rating given by NSF International (previously the National Sanitation Foundation). The NSF testing guidelines are a continuation of the USDA product approval and listing program, including the FDA 21. Vonos is rated "**no rinse required on food contact surfaces**" category D2, meaning Vonos is approved to use in commercial or residential kitchens to control bacteria, without the need to wash/rinse the area with water after Vonos is applied.

Q. What is a Hospital Disinfectant?

A. Part of the EPA registration process, disinfectant products are put through rigorous testing to prove their efficacy and measure toxicity. The EPA registers three types of disinfectants: Limited, General, and Hospital. All three disinfectants destroy or irreversibly inactivate certain microorganisms on hard, inanimate surfaces, and objects.

Disinfectant

A disinfectant destroys or irreversibly inactivates microorganisms on hard, inanimate surfaces and objects. The EPA registers three types of disinfectants based on the type of efficacy data submitted: Limited, General (or Broad - spectrum), and Hospital. You can determine a "limited," "general," or "hospital" disinfectant by the microorganisms listed on the label.

Limited – Must be supported by efficacy testing against either Salmonella cholerasuis (gram - negative bacteria) or Staphylococcus aureus (gram-positive bacteria). Limited disinfectants are found mostly in household use.

General – Must be supported by efficacy testing against both Salmonella cholerasuis and Staphylococcus aureus. General disinfectants are used in commercial areas.

Hospital – Must be supported by AOAC Use Dilution or AOAC Germicidal Spray efficacy testing against Staphylococcusaureus, Salmonella cholerasuis and Pseudomonas aeruginosa. The bacteria Pseudomonas aeruginosa hides behind biofilm and is difficult to eliminate. Killing this bacteria is required for Hospital Disinfectants.

Also as part of this evaluation process, products are assigned to a toxicity category. The categories range from category 1 (highly toxic) to category 4 (no exposure warnings required on the label). Vonos received an EPA category 4 rating for all exposure routes with the exception of mild eye irritation.

The Good, the Bad, and the Ugly

Bacteria

Beneficial bacteria are essential to many of the processes that support life. Everything from our digestive system, to organic gardeners' compost piles, to our favorite yogurt rely on friendly bacteria to support life. In fact, bacteria were some of the first life forms to appear on earth. These very small organisms made of only one cell exist either as aerobic bacteria (requires the presence of oxygen to live and grow) or anaerobic (can survive without the presence of oxygen in their immediate environment). Their ability to adapt creates both life giving opportunities and life threatening health problems. Harmful bacteria have posed serious threats to our health for many centuries. Yet with the development of modern antibiotics, many of the diseases of ancient times are today largely controlled. However, due to the misuse of these "miracle cures", antibiotics have also allowed bacteria to once again adapt for survival, creating "super bugs" such as MRSA.

Viruses

A virus is a microorganism smaller then a bacterium, which cannot grow or reproduce apart from a living cell. A virus invades a living cell and uses that cell's chemical machinery to keep itself alive and replicate. It may reproduce with fidelity or with errors (mutations), and this ability to mutate makes treatment more difficult. Viruses cause many common human infections. Examples of viral illness rang from the common cold, which is usually caused by one of the rhinoviruses, to acquired immunodeficiency syndrome (AIDS).

Food -Borne Diseases

A food -borne disease is a disease caused by consuming contaminated foods. There are more than 250 know food-borne diseases. The majority of them are infectious and are caused by bacteria, viruses and parasites and can be highly contagious. All food-borne diseases enter the body through the gastrointestinal tract with the first symptoms including nausea, vomiting, abdominal cramps, and diarrhea.

Biofilms

Biofilms are a collection of microorganisms surrounded by the slime they secrete, attached to either an inert or living surface. Biofilms present challenges due to their inherent characteristic of protecting inner organisms from contact with disinfectants. Vonos active ingredient, chlorine dioxide, is effective at removing biofilms.

Mold & Mildew

Mold and mildew are fungi that can be found both indoors and outdoors. Molds grow best in warm, damp, and humid conditions, spreading and reproducing by making spores. Mildew requires moisture. The optimal growth range for mildew is 70 to 93 percent relative humidity. Mold spores can survive in harsh conditions, such as dry conditions, that do not support mold growth.

Odor

Unpleasant odors have been recognized as a warning sign of potential risks to human health. Odor sensations from environmental sources might cause health symptoms that are dependent on many environmental factors. Odors are not only warning signs but also maybe the direct cause of some symptoms.

The following Q&A is from an interview with Anne Camper from the Center for Biofilm Engineering (CBE). Ms. Camper is an Associate Professor of Civil Engineering and an Associate Dean for Research and Graduate Education, Montana State University, Bozeman, Montana.

Q. What is biofilm?

A. Biofilm can best be described as "bugs on surfaces stuck on slime." A biofilm is a complex structure of bacteria that functions as a community. Its sticky polymers attach it to a surface, and as it grows, it takes on the appearance of microscopic mushrooms and streamers.

See appendix information on CL02

Q. Where does biofilm form?

A. Wherever there is water. It is found in virtually every aquatic environment. Fish tanks are an obvious example, however, it forms in many places one may not expect, such as in the form of plaque on teeth almost immediately after brushing. It can also form inside the human body, making it of concern for medical implants. Yet, not all biofilm is bad. For instance, bio–mineralization may help recover precious metals. It begins with attachment where biofilm cells have congregated, followed by colonization, then growth. This process can be very short, usually within hours.

Q. How is biofilm different from suspended (planktonic) bacteria?

A. Being attached rather than suspended makes a world of difference. Biofilm organisms have an enhanced survival mechanism. Bacteria change as soon as they are attached to a surface. The most obvious change is that they excrete a slimy material. Biofilm bacteria turn on a whole different set of genes, which makes it a significantly different organism to deal with. Biofilm behavior is much more complex because they live in organized communities. They are resistant to biocides and antimicrobial agents. Disinfectants are effective for killing single cells, but not clumps because they only kill those on the outside. These outside cells sacrifice themselves for the rest of the colony.

Q. How do you prevent or eliminate biofilm?

A. You can't prevent it or eliminate it, but you can manage it. The best ways to do this is by modifying surfaces (there is no biofilm- proof surface, but some are easier to clean, such as stainless steel), adding biocides or chemicals to a watering system, mechanical cleaning, and various other pretreatment strategies such as reverse osmosis.

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Definitions

Cleaning - is a prerequisite for effective Sanitization and Disinfection. Organic deposits from food residues, skin cells, mold spores, oils, greases and proteins are food for bacteria and are where bacteria live. These organic deposits can prevent the sanitizer or Disinfectant from coming into contact with bacteria, viruses or spore.

Sanitizer - A sanitizer reduces but does not necessarily eliminate microorganisms on a treated surface to levels that are considered acceptable according to current health codes or regulations. EPA registers food-contact surface sanitizers for surfaces such as sanitizing rinses for dishes, utensils and food processing equipment, and nonfood-contact surface sanitizers such as carpet sanitizers, air sanitizers, laundry additives, and in- tank toilet bowl sanitizers. The FDA and EPA use the legal definition of a compound that is capable of killing 99.999% or a 5 -log reduction of infectious organisms in a bacterial population within 30 seconds.

Disinfectant- A disinfectant destroys or irreversibly inactivates microorganisms, on hard, inanimate surfaces and objects. EPA registers three types of disinfectants based on the type of ecacy data submitted: Limited, General (or Broad - spectrum), and Hospital.

Hospital Disinfectant - A disinfectant that is a general or broad- spectrum disinfectant and is e effective against the bacterial pathogen Pseudomonas aeruginosa is a Hospital disinfectant. These disinfectants are generally for use in hospitals, clinics, dental offices, or other health care related facilities.

Bio film - under certain conditions biofilms may develop from bacteria, molds and yeast. These biofilms can be invisible on surfaces. Biofilms present challenges to the food service industry due to their inherent characteristic of protecting inner organisms from contact with disinfectants. **Food -contact surface** - (1) A surface of equipment or a utensil with which food normally comes into contact; or (2) A surface of equipment or a utensil from which food may drain, drip, or splash (a) Into a food, or (b) Onto a surface normally in contact with food.

Non -food-contact surface - Floors, walls, areas under tables, counters, and other areas such as restrooms, where food is not prepared, stored or consumed. Porous Surface - Able to absorbs. Example: Clothing and Fabrics. Test for color fastness on inconspicuous spot rust. Fabric covered furniture, clothes, drapes and curtains are examples of porous objects which can matter and sanitize and the objects. Water Vacuums such as Hoover and HEPA type suction cleaning systems in bags can be used to help.

Semi -Porous Surface - Permitting the passage of certain molecules and hindering that of others. Example: wood, plaster, dry wall, concrete, and carpet.

Non -Porous Surface - The Opposite of Porous will not absorb. Example: glass, metal, plastic, counter tops, appliances, stainless steel and glazed ceramic tile.

Note: The presence of food debris or dirt on nonfood contact surfaces may provide a suitable environment for the growth of microorganisms, which employees may inadvertently transfer to food. If these areas are not kept clean, they may also provide harborage for insects, rodents, and other pests.

Applicators

These time saving tools ensure correct dilutions and application of Vonos

Microfiber cloths, wipes and mops have been shown to be more effective at removing smaller particles than cotton fibers.

Proportioner - Proportioning systems to ensure correct dilutions of Vonos for 32oz quarts with secondary labels

Spray bottle - The 32oz Vonos spray bottle is best used when a smaller amount of product is called for to treat a localized area.

Pump sprayer - Similar to application with a spray bottle, the use of a pump sprayer will allow for a greater output of product. This method is most suitable when the area to be treated is large, a very high output is desired or when saturation is necessary.

Power Fogger - The Power Fogger is available to treat small to medium size jobs. It comes equipped with a rotary dial to allow for an adjustment of output volume and particle size. This flexibility makes the Power Fogger a good choice given it's versatility to apply a heavy coat of product or to use a much smaller particle which may be fogged to eliminate airborne contaminants. Particle size is adjustable between fifteen and thirty microns.

Electrostatic Sprayers - Some jobs will require one hundred percent coverage of surfaces in an area. When this is the case, an electrostatic sprayer is the best option. As Vonos particles leave the sprayer wand, they are electrically charged resulting in an attraction of the particles to an object's surfaces. Think of this electrical attraction similarly to magnetic attraction. Rather than targeting the forward facing surfaces only, the charged particles will envelope the objects in a room and will result in superior coverage. When it is imperative that the product reaches all surfaces, use an electrostatic sprayer.

Back Pack Sprayer - Operating unparalleled maneuverability, the lightweight Back Pack Sprayer is the preferred application method among many service providers and facilities needing to treat multiple spaces. Ideal for overhead application, this sprayer gives the user the ability to adjust the output of Vonos from a near mist to a heavier particle used to thoroughly coat or saturate a porous surface. This sprayer is capable of producing droplets between ten and fifty microns. The internal bladder allows for one and a half hours of continuous use before needing to refill. – Depending on unit

Note: Any of the above mentioned applicators are to be used solely for the application of Vonos. Use of other products within the same applicator is prohibited and will void any warranty. Mixture of chemicals can cause a chemical reaction. Please rinse applicators before use.

A variety of specialized equipment is available to increase efficiency limiting both time spent and product used on the job.

Safety

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Test fabric for color fastness. Vonos contains a diluted oxidizing agent. Do not mix with vinegar or acidic cleaners. All personnel performing housekeeping maintenance shall follow guidelines of facility Health and Safety Program, chemical MSDS sheets and facility specifications. Follow the label directions carefully when using any cleaners, sanitizers or disinfectants.

Storage

Store large quantities in buildings that comply with OSHA 1910.106 and prevent build - up of vapors by maintaining continuous flow of fresh air. 5

Do not store above 120 °(F) or near open flame. Keep away from heat, strong <u>sunlight</u>, and strong acids. Keep container closed when not in use. Do not transfer contents to unlabeled bottles or other unlabeled containers.

Disposal empty container. Then offer for recycling or reconditioning, or puncture and dispose of in sanitary landfill, or incineration. Wastes resulting from the use of this product may be disposed of on site or an approved waste disposal facility.

Discard excess or used Vonos solution in drain with running water. See Appendix 4 for Specimen label.

Shelf Life

Unopened – 24 months in original container Opened – 12 months in original container

5 See Specimen label

GUIDELINES



Guidelines for Sanitizing Food Preparation Areas:

Public health and food safety require an ongoing function of constantly evaluating, reviewing, implementing improvements, and monitoring success. In the following section, we address a working game plan, and the tools needed for sanitization of commercial food preparation areas . Designated by the International Sanitization Foundation (NSF) as a no rinse required food contact surface sanitizer, Vonos is a versatile multi -purpose solution that can be used full strength, or diluted for multiple application.

Terms Used ⁶ "Food -contact surface" "Non-food -contact surface" "Cleaning " "Disinfection" "Sanitizing" ⁶see full description in definition section

Recommended Equipment

- Microfiber cloths Proportioner
- Sprayers and foggers

Need in non-ventilated spaces.

- 3M half face reusable respirator with 3M Model #(6002) chlorine dioxide cartridge
- Safety Eye Protection

Dilutions

Vonos comes in a full strength formula Ready To Use (RTU) and can be diluted down. Automatic mixing units can be truck mounted or mounted at your home. Vonos is formulated Ready To Use (RTU) full strength US EPA Hospital Disinfectant for non-porous surfaces.

5:1 dilution, Vonos is used as Fabric and Carpet Sanitizer. First test for color Fastness in an inconspicuous space. Do not use on wool fabrics.

9:1 dilution, Vonos is used as a no rinse required non - porous and food surface contact surface sanitizer.

Hot Spots/ Area of Attention

Beverage, Ice and Water Equipment-Iced tea dispensers, carbonated beverage dispenser nozzles, beverage dispensing circuits or lines, water vending equipment, bean grinders, ice makers, and ice bins must be cleaned on a routine basis to prevent the development of slime, mold, or soil residues that may contribute to an accumulation of microorganisms.

Refrigeration units - Refrigeration units can harbor food and organic material/debris that can foster microbiological growth, even at cold temperatures. Refrigeration units in disrepair may no longer be capable of properly cooling or holding foods at safe temperatures. In addition, although refrigerator temperatures are set at safe levels, during use and at rush times, the refrigerators may not maintain the desired temperatures. It is crucial to incorporate refrigeration units into your daily cleaning regiment and to immediately clean any spills.

Can Openers - The cutting or piercing parts of can openers will accumulate food particles that, if left untreated, will lead to an accumulation of microorganisms. Spraying with Vonos easily treats these small and sometimes hard to reach areas.

Cutting Surfaces - Cutting boards and blocks that become scratched and scored may be difficult to clean and sanitize. As a result, food particles and microorganisms transmissible through food may accumulate. These microorganisms may be transferred to foods that are prepared on such surfaces. After thoroughly cleaning, saturate the surface with Vonos and allow to air dry.

Sponges, Cloth Towels and Microfiber Towels-Sponges are not recommended for cleaning food preparation areas as they can harbor bacteria. Paper towels are acceptable for cleaning only, not sanitization. They can be used to clean up food spills and to clean food preparation areas, but they should be immediately disposed of when finished cleaning. Micro fiber cloths retain more liquid than towels and are manufactured with such fibers that they tend to "hold on to" particles. If reuseable cloths are used, they should be placed into a separate laundry area and completely sanitized before reuse. Between uses, a cloth may be left submerged in a pail of fresh Vonos at a 9:1 dilution.

Countertops - Countertops should be thoroughly cleaned with hot soapy water before you begin to prepare food and again after coming into contact with any food products. Make sure to use only those cleaning products designed and tested for use in food preparation areas, and use them according to the manufacturer's instructions. Vonos is a "No Rinse Required Sanitizer for Food Contact Surfaces (D-2) by the National Sanitary Foundation (NSF). Many products not designed or tested for use in food preparation may leave harmful residues. **Dishes and Utensils** - Make sure to thoroughly wash your dishes and utensils with hot soapy water, then rinse and sanitize. If you need to use the same dish or piece of equipment more than once, wash and rinse it thoroughly before you switch to the next food product. Scrape and pre-wash, then wash with a good detergent. Rinse with potable water, then sanitize by immersion in 9:1dilution of Vonos. Place on a rack or drain board to airdry. Do not rinse or wipe.

Tables - After each customer, tables should be wiped using a microfiber cloth and Vonos. Between use, a cloth may be left submerged in a pail of fresh Vonos at a 9:1 dilution.

Non -Food Contact Areas

It is important to note the presence of food debris or dirt on nonfood contact surfaces may provide a suitable environment for the growth of microorganisms, which employees may inadvertently transfer to food contact areas. It is therefore equally important to clean and sanitize these areas.

Floors - After floor cleaning, Vonos can be fogged or electrostatically sprayed on floors, below counters and cabinets, around and on machines, sinks, beverage fountains/taps and ice machines to sanitize in areas not easily accessible by physical methods. A proportioner can be used directly in a mop bucket. It is important to note, however, that for proper sanitization to occur, the mop head itself must be sanitized using the correct protocol.

Carpet Sanitizing - Carpets, by design, are soil and organic matter magnets. The tight knit fibers make carpets difficult to keep clean and microorganisms, allergens and debris builds up in carpets. Typical cleaning methods include HEPA vacuuming, liquid application and suction removal and steam liquid application and suction removal. Vonos is a registered Carpet Sanitizer. Carpets can be sanitized and deodorized using Vonos in your liquid application method. For synthetic carpet fibers such as nylon, olen or Polypropylene - for use on wool carpet. Test for color fastness in inconspicuous area. Carpet should free of excessive soil before applying. Apply at a dilution of 5:1.

- Allow for a dwell time of 10 minutes.
- Do not rinse or use an extraction wand to remove excess moisture.
- Carpet can air dry or carpet fans may be used if carpet needs to dry faster.

Vonos works by oxidation to eliminate odors. Simply spray, fog or wipe on and allow to air dry to provide long lasting residual deodorizing action. Vonos must come into contact with the cause of the odor to be effective. Vonos is great for synthetic carpet fibers such as nylon, olen or polypropylene - not intended for use on animal fibers such as wool carpet. Test for color fastness in an inconspicuous area.

Carpet should be clean and free of excessive soil before applying. Apply by sprayer at a rate of approx. 22 oz. per square yard. Vonos must come onto contact with contaminant to work. Allow to dwell for 10 min. Do not rinse, use extraction wand and dry stroke carpet to remove excess moisture. Carpet can air dry or fans may be used in order to dry carpet faster.

Seats, Booths, Benches- Use Vonos and microfiber cloths to clean, deodorize and sanitize vinyl cushions and chair covers.

Stainless Steel - Use Vonos on stainless steel surfaces to both sanitize and polish. Vonos does not leave streaks after all dirt and debris is removed. Microfiber cloths perform well for this task.

Restroom Cleaning - Thoroughly clean restrooms based on usage. In high traffic areas such as retail stores and common areas of lodging facilities, restrooms should be cleaned more often than in one situations where the load is less. Visual inspection of facilities provides input into the proper frequency of cleaning events.

Contact Times

Vonos has published a contact time chart illustrating the approved kill times on various organisms. To view this chart, refer to test summary section of manual. Vonos Diluted at 9:1 (no rinse required on food contact surface rating) allows a user to simply wet a surface and allow to air dry. The elapsed time necessary to air dry is sufficient to effectively sanitize a surface.

Monitoring

Food service employees shall visually and physically inspect food contact surfaces of equipment and utensils to ensure that the surfaces are clean.



Guidelines for Healthcare Facilities

Facility managers, infection control officers, boards and building service contractors working together to implement effective cleaning and disinfection programs can help stem the spread of illness within Healthcare Facilities.

Terms Used 7 "Porous Surface" "Semi -Porous Surface" "Non - Porous Surface" "Cleaning" "Disinfection" "Sanitizing" "Biofilms"

7 See full description in definition section

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Recommended Equipment

- Microfiber cloths Proportioner
- Sprayers and foggers

Need in non -ventilated spaces.

- 3M Half face reusable respirator with 3M (6002) chlorine dioxide cartridge
- Eye Protection goggles

Dilutions

Vonos comes in a full strength formula Ready To Use (RTU) and can be diluted down. Automatic mixing units can be truck mounted or mounted at your home. Vonos is formulated Ready To Use (RTU) full strength US EPA Hospital Disinfectant for non- porous surfaces.

5:1 dilution, Vonos is used as Carpet cleaner and Carpet Sanitizer.

9:1 dilution, Vonos is used as a no rinse required non- porous and food surface contact surface sanitizer.

Automatic mixing units or a proportioner are available through Vonos to provide the two primary working dilutions (food surface sanitizer/cleaner and carpet sanitizer & deodorizer).

Frequency of Cleaning, Sanitizing or Disinfection

Based on the amount of dirt, grime and dust accumulates, the frequency of general cleaning can be adjusted from daily to weekly to monthly. Sanitizing and disinfection procedure frequency is based on regulatory requirements for the application at hand, i.e. food service or healthcare type applications.

Hot Spots/ Areas of Attention

Ceiling Tiles- Use Vonos in a 5:1 dilution in a fogger or e mist sprayer after micro-cleaning ceiling tiles to provide the best cleaning and disinfection method.

Carpet Sanitizing - Carpets, by design, are soil and organic matter magnets. The tight knit fibers make carpets difficult to keep clean and microorganisms, allergens and debris builds up in carpets. Typical cleaning methods include HEPA vacuuming, liquid application and suction removal and steam liquid application and suction removal. Vonos is a registered Carpet Sanitizer. Carpets can be sanitized and deodorized using Vonos in your liquid application method. For synthetic carpet fibers such as nylon, olen or Polypropylene-not intended for use on wool carpet. Test for color fastness in inconspicuous area. Carpet should free of excessive soil before applying.

- Apply at a dilution of 5:1.
- Allow for a dwell time of 10 minutes.
- Do not rinse or use an extraction wand to remove excess moisture.
- Carpet can air dry or carpet fans may be used if carpet needs to dry faster.

Vonos works by oxidation to eliminate odors. Simply spray, fog or wipe on and allow to air dry to provide long lasting residual deodorizing action. Vonos must come into contact with the cause of the odor to be effective. Vonos is great for synthetic carpet fibers such as nylon, olen or polypropylene-not intended for use on animal fibers such as wool carpet. Test for color fastness in an inconspicuous area.

Carpet should be clean and free of excessive soil before applying. Apply by sprayer at a rate of approx. 22 oz. per square yard. Vonos must come onto contact with contaminant to work. Allow to dwell for 10 min. Do not rinse, use extraction wand and dry stroke carpet to remove excess moisture. Carpet can air dry or fans may be used in order to dry carpet faster.

Floors - Floors may be cleaned using a full strength, 9:1 or 5:1 dilution based on dirt load levels and disinfected using the full strength solution, dependent upon the cleaning criteria and objectives. Frequently touched surfaces or touch points-Regularly clean and/or disinfect surfaces that are frequently touched. These include doorknobs and door push plates, light switches, handrails, elevator buttons and panels, telephones, toilet push handles, computer keyboards, alarm controls, door bells, countertops and desks, and drawer handles and knobs, to name a few. Use RTU Vonos cleaner and disinfectant on these surfaces. Residential and commercial touch points include Ceiling Fan switches, Vent knobs, Ceiling light switches, walls- next to doorways and corners, Door Handles, Cabinet Handles, Light Switches, Telephones, Computer/Calculator Keyboards, Copier touch pads, Writing Utensils, drinking water dispenser switches, machine touch pads, vehicle steering wheels, handles and dashboard switches, Appliance Handles, Shelves, books, objects, Dressers, Closets, Electronic Equipment and desks.

Note: Do not apply Vonos RTU directly onto electronic equipment as water would if applied directly. Computers and electronic equipment are considered high touch points, clean and eliminate any grime or dirt build-up and apply a light mist of Vonos as the last step to disinfect the surface. Do not saturate.

Elevators - Regularly clean and disinfect the buttons, doors, handrails and other surfaces frequently touched. An elevator can be a mold, bacteria and germ delivery device. The Inside of an elevator shaft is the perfect breeding ground for mold, germs and bacteria as it is a dark, dank, warm climate where moisture can accumulate on the odor. The elevator acts as a plunger forcing this contaminated air into the elevator and spread to other odors of the facility.

Walls - Walls may be cleaned, sanitized or disinfected using the appropriate dilution. Microfiber cloths and mops have been evaluated and shown to attract and hold smaller diameter particles than cotton mops, single use mop heads eliminate cross contamination, reduction in water usage and use and exposure to disinfectant chemicals, microfiber mopping is more ergonomic.

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Restroom cleaning - Thoroughly clean restrooms based on usage. In hightraffic areas such as retail stores and common areas of lodging facilities, restrooms should be cleaned more often than in once situations where the traffic load is less. Visual inspection of facilities provides input into the proper frequency of cleaning events.

Biofilms - Under certain conditions biofilms may develop from bacteria, molds and yeast. These biofilms can be invisible on surfaces. Biofilms present challenges to disinfection effectiveness due to the inherent characteristics of a biofilm, which protect inner organisms from contact with disinfectants. Vonos active ingredient chlorine dioxide is effective at removing biofilms.

Ensure that cleaning staff members have easy access to cleaning plans, product labels, MSDS's and method cards. Use the appropriate cleaner, sanitizer and/or disinfectant diluted according to the label instructions. Do not mix Vonos with vinegar or acidic cleaners.

Fresh cleaning solutions

Use appropriate cleaning methods to reduce the spread of contamination in your facility. These include single area use mopping, double -bucket techniques, frequent changes of cleaning solutions in buckets, use of sprayer-based applications and color-coded cleaning tools.

Use appropriate mopping methods to reduce the spread of contamination in your facility.

Dedicated mop head cleaning using microfiber mops-the most hygienic mopping method. Prepare Vonos cleaning solution at full strength for heavily soiled areas, body fluids, black water releases and moldy/mildew surfaces. The goal is to remove all organic matter.

To Deodorize

Vonos works by oxidation, not by masking of odors. Eliminates odors caused
by fire smoke, tobacco smoke, musty odors and stale cooking odors. Simply spray or wipe on full strength and let air dry to provide long lasting residual deodorizing action. When fogging apply 1 quart per 2000 cubic ft. following spray applicator manufacturer's directions for use. Vonos must come into contact with the cause of the odor to be effective. For pet urine stains in carpet, blot urine as dry as possible then saturate stain with Vonos through carpet pad.

Disinfectant Concentration and Application

The effectiveness of chemical sanitizers is determined primarily by concentration and contact times. The active ingredients must come in contact with the microorganisms for a minimum period of time to complete the molecular damage and render the microorganisms ineffective. The same holds true for deodorizing, or oxidizing odor molecules, concentration and application method effects the ability of the active ingredients to come in contact with the odor molecule and oxidizing it to non-odor constituents.

To verify that the application concentration is proper, a simple strip test for chlorine dioxide can be used to verify the proper concentration. A more accurate method is a titration method available as a small pool testing -like kit.

To verify that sanitizers were applied to appropriate surfaces, wet strips can be placed on appropriate target surfaces. Upon completion of sanitizer steps, the wet strips can be inspected for evidence of sanitizer application.

Contact Times

Vonos has published a contact time chart illustrating the approved kill times on various organisms. To view this chart, refer to Test Summary section of this manual. Vonos Diluted at 9:1 (no rinse required on food contact surface rating) allows a user to simply wet a surface and allow to air dry. The elapsed time necessary to air dry is sufficient to effectively sanitize a surface.



Guidelines for Daycare Facilities, Schools and Universities

Academic institutions routinely encounter a diverse population of students and potential worldwide range of disease transmission.

Terms Used 8 "Porous Surface" "Semi-Porous Surface" "Non- Porous Surface" "Cleaning" "Disinfection" "Sanitizing"

8 See full description in definition section

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Recommended Equipment

- Microfiber cloths Proportioner
- Sprayers and foggers

Need in non -ventilated spaces.

- 3M Half face reusable respirator with 3M (6002) chlorine dioxide cartridge
- Eye Protection goggles

Dilutions

Vonos comes in a full strength formula Ready To Use (RTU) and can be diluted down. Automatic mixing units can be truck mounted or mounted at your home. Vonos is formulated Ready To Use (RTU) full strength US EPA Hospital Disinfectant for non- porous surfaces.

5:1 dilution, Vonos is used as Carpet cleaner and Carpet Sanitizer.

9:1 dilution, Vonos is used as a no rinse required non- porous and food surface contact surface sanitizer.

Automatic mixing units or a proportioner are available through Vonos to provide the two primary working dilutions (food surface sanitizer/cleaner and carpet sanitizer & deodorizer).

Hot Spots/ Areas of Attention

Elevators - Regularly clean and disinfect the buttons, doors, handrails and other surfaces frequently touched. An elevator is a mold, bacteria and germ delivery device. Inside the elevator shaft, the environment is the perfect breeding ground for mold, germs and bacteria; a dark, dank, warm climate where moisture can accumulate on the odor. The elevator acts as a plunger forcing this contaminated air into the elevator and onto the odors. Escalators (especially hand rails)

Building Entrances

Door knobs/handles, Security locks, buttons Intercom systems, chairs and other resting areas. Lobby and reception counters and hand rails in staircases.

Daycare Facilities

In daycare settings, playpens should be cleaned and disinfected daily (after hours when children are not present). Spray playpens and use microfiber wipes using a 9:1 dilution of Vonos. Let stand for 10 minutes. Wipe treated surfaces so that they remain visibly wet for 30 seconds, then air dry. In daycare settings, mouthed toys should be cleaned and disinfected frequently using microfiber towels and a 9:1 dilution of Vonos. After wiping toys with Vonos, allow to air dry.

To clean hard odor surfaces, damp-mop using a 9:1dilution of Vonos. Allow standing for 10 minutes, then rinse and dry. Use a two- bucket method with separate wash and rinse microfiber mop heads in each bucket.

To prevent cross contamination wear disposable gloves when cleaning with 9:1 dilution of Vonos and when cleaning surfaces contaminated by bodily secretions. Properly dispose of gloves after cleaning each guest room. If cleaning involves contact with body fluids, properly dispose of gloves immediately.

To Deodorize

Vonos works by oxidation, not by masking of odors. Eliminates odors caused by re smoke, tobacco smoke, musty odors, stale-cooking odors. Simply spray at the droplet size level (large drops or e mist) or wipe on full strength and let air dry to provide long lasting residual deodorizing action. When spraying, apply 1 quart per 2000 cubic ft. following sprayer manufacturer's directions for use keeping in mind the droplet size required for the appropriate application. Vonos must come into contact with the cause of the odor to be effective. For pet urine stains in carpet, blot urine as dry as possible then saturate stain with Vonos through carpet pad.

Restroom Cleaning

Thoroughly clean restrooms based on usage. In high-traffic areas, restrooms should be cleaned more often than in once situations where the traffic load is less. Visual inspection of facilities provides input into the proper frequency of cleaning events. Ensure that cleaning staff members have easy access to cleaning plans, product labels, MSDS's and method cards. Use the appropriate cleaner, sanitizer and/or disinfectant diluted according to the label instructions. Do not mix Vonos with vinegar or acidic cleaners. Vonos has published a contact time chart illustrating the approved kill times on various organisms. To view this chart, refer to Test summary section of manual.

Vonos Diluted at 9:1 (no rinse required on food contact surface rating) allows a user to simply wet a surface and allow to air dry. The elapsed time necessary to air dry is suffcient to effectively sanitize a surface.

Monitoring

Employees will visually and physically inspect surfaces and equipment to ensure that the surfaces are clean.

Gyms – Do not spray untreated metals as Vonos is a waterbased product and may cause rust to untreated surfaces. You can clean weights by using a microfiber towel and RTU Vonos. You can spray and wipe off and allow to air dry, do not allow to be wet for more than 2 minutes.

9 Note: Food preparation and service areas in these facilities please reference Guidelines for Sanitization of Food Preparation Areas



Guidelines for Commercial and Residential Contract Cleaners

Facility managers and building service contractors can work together to implement effective cleaning, sanitization and disinfection programs that improve indoor air quality, reduce costs, reduce environmental impacts and help stem the spread of illness within buildings and communities.

Terms Used 10 "Porous Surface" "Semi -Porous Surface" "Non - Porous Surface" "Cleaning" "Disinfection" "Sanitizing"

10 See full description in definition section

Recommended Equipment

- Microfiber cloths Proportioner
- Sprayers and foggers

Need in non -ventilated spaces.

- 3M Half face reusable respirator with 3M (6002) chlorine dioxide cartridge
- Eye Protection goggles

Dilutions

Vonos comes in a full strength formula Ready To Use (RTU) and can be diluted down. Automatic mixing units can be truck mounted or mounted at your home. Vonos is formulated Ready To Use (RTU) full strength US EPA Hospital Disinfectant for non- porous surfaces.

5:1 dilution, Vonos is used as Carpet cleaner and Carpet Sanitizer.

9:1 dilution, Vonos is used as a no rinse required non-porous and food surface contact surface sanitizer.

Automatic mixing units or a proportioner are available through Vonos to provide the two primary working dilutions (food surface sanitizer/cleaner and carpet sanitizer & deodorizer).

Hot Spots/ Area of Attention

Drop Ceiling Tiles - Use Vonos in a 5:1 dilution in a fogger or e mist sprayer after micro-cleaning ceiling tiles to provide the best cleaning and disinfection method.

Carpet Sanitizing - Carpets, by design, are soil and organic matter magnets. The tight knit fibers make carpets difficult to keep clean and microorganisms, allergens and debris builds up in carpets. Typical cleaning methods include HEPA vacuuming, liquid application and suction removal and steam liquid application and suction removal. Vonos is a registered Carpet Sanitizer. 1:5 Carpets can be sanitized and deodorized using Vonos in a time saving simple step.

Vonos works by oxidation to eliminate odors. Simply spray, fog or wipe on and allow to air dry to provide long lasting residual deodorizing action. Vonos must come into contact with the cause of the odor to be effective. Vonos is great for synthetic carpet fibers such as nylon, olen or polypropylene-not intended for use on animal fibers such as wool carpet. Test for color fastness in an inconspicuous area.

Carpet should be clean and free of excessive soil before applying. Apply by sprayer at a rate of approx. 22 oz. per sq. yd. Vonos must come onto contact with contaminant to work. Allow to dwell for 10 min. Do not rinse, use extraction wand and dry stroke carpet to remove excess moisture. Carpet can air dry or carpet fans may be used in order to assist dry faster.

Floors - Floors may be cleaned using a full strength 9:1 or 5:1 dilution based on dirt load levels and disinfected using the full strength solution, dependent upon the cleaning criteria and objectives.

Walls - Walls may be cleaned, sanitized or disinfected using the appropriate dilution. Microfiber cloths and mops have been evaluated and shown to attract and hold smaller diameter particles than cotton mops, single use mop heads eliminate cross contamination, reduction in water usage and use and exposure to disinfectant chemicals, microfiber mopping is more ergonomic.

Frequently touched surfaces - Regularly clean and/or disinfect surfaces that are frequently touched. These include doorknobs and door push plates, light switches, handrails, elevator buttons and panels, telephones, toilet push handles, computer keyboards, alarm controls, door bells, countertops and desks, and drawer handles and knobs, to name a few. Use RTU Vonos cleaner and disinfectant on these surfaces.

Residential and Commercial Touch Points Include

Ceiling, Ceiling Fans, Vents, Ceiling lights, Walls-top to bottom, artwork, trim collection areas, Kickboards, Door Handles, Cabinet Handles, Light Switches, Telephones, Computer/Calculator Keyboards, Copier touch pads, Writing Utensils, drinking water dispenser switches, machine touch pads, vehicle steering wheels, handles and dashboard switches, Appliance Handles, Shelves, books, objects, Dressers, Closets, Electronic Equipment and desks.

Hot Spots/ Area of Attention

Elevators - Regularly clean and disinfect the buttons, doors, handrails and other surfaces frequently touched. An elevator is a mold, bacteria and germ delivery device. Inside the elevator shaft, the environment is the perfect breeding ground for mold, germs and bacteria; a dark, dank, warm climate where moisture can accumulate on the floor. The elevator acts as a plunger forcing this contaminated air into the elevator and onto the floors.

To Deodorize

Vonos works by oxidation, not by masking of odors. Eliminates odors caused by fire smoke, tobacco smoke, musty odors, stale cooking odors. Simply spray at the droplet size level (large drops or fine mist) or wipe on full strength and let air dry to provide long lasting residual deodorizing action. When spraying, apply 1 quart per 2000 cubic ft. following sprayer manufacturer's directions for use keeping in mind the droplet size required for the appropriate application. Vonos must come into contact with the cause of the odor to be effective. For pet urine stains in carpet, blot urine as dry as possible then saturate stain with Vonos through carpet pad.

Restroom Cleaning

Thoroughly clean restrooms based on usage. In high traffic areas such as retail stores and common areas of lodging facilities, restrooms should be cleaned more often than in office situations where the traffic load is less. Visual inspection of facilities provides input into the proper frequency of cleaning events. Ensure that cleaning staff members have easy access to cleaning plans, product labels, MSDS's and method cards. Use the appropriate cleaner, sanitizer and/or disinfectant diluted according to the label instructions. Do not mix Vonos with vinegar or acidic cleaners.

Use appropriate mopping methods to reduce the spread of contamination in your facility. Dedicated mop head cleaning using microfiber mops-the most hygienic mopping method. Prepare Vonos cleaning solution at full strength for heavily soiled areas, body fluids, black water releases and moldy/mildew surfaces. The goal is to remove all organic matter. Place clean/sterile microfiber mop heads in the solution. The mop heads can be color coded for separate rooms.

After removal of gross dirt and organic material, use a wet mop head to clean ceilings, floors and/or walls. Work your way out of the area to minimize cross contamination.

- Change mop heads periodically based on square feet cleaned.
- One mop head generally cleans an 8x8 to 12x12 foot area.
- Place used mop head in plastic bag for transport to cleaning area.
- Replace mop with a fresh mop head form the solution bucket.
- To prevent the spread of contamination, sponges, mops, cleaning cloths and the like must be washed between cleaning tasks and allowed to dry thoroughly.

Uniforms and cleaning tools

- Ensure daily washing of clothing, microfiber cloths, microfiber mops, microfiber towels and other linens, with a minimum of agitation and shaking.
- Bag all textiles at the collection site and transport them in a closed laundry bag.
- Machine -wash all kitchen and restaurant laundry.
- Follow local hygiene rules and use appropriate products at the appropriate concentrations to reduce the risk of spreading contaminants.
- Use appropriate personal hygiene practices like, hand washing, loose hair control, cross-contamination from other work areas, etc.

Wiping Methods

- Prepare Vonos cleaning solution at full strength for heavily soiled areas, body fluids; gray or black water releases and moldy/mildew surfaces. The goal is to remove all organic matter.
- Place clean/sterile microfiber washcloths in the solution.
- The washcloths can be color coded for separate areas/rooms.
- After removal of gross dirt and organic material, use a washcloth to clean/sanitize/disinfect ceilings, floors and/or walls. Work your way out of the area to minimize cross contamination.
- Change washcloths periodically based on square feet cleaned. One 1x1 foot washcloth generally cleans a 6x6 foot surface area.
- Place used washcloths in plastic bag for transport to cleaning area.
- Replace washcloths with a fresh mop head from the solution bucket.
- To prevent the spread of contamination, sponges, mops, cleaning cloths and the like must be washed between cleaning tasks and allowed to dry thoroughly.

Monitoring

Based on the amount of dirt, grime and dust accumulates. The frequency of general cleaning can be adjusted from daily to weekly to monthly. Sanitizing and disinfection procedure frequency is based on regulatory requirements for the application at hand, i.e. food service or healthcare type applications.

Gyms – Do not spray untreated metals as Vonos is a waterbased product and may cause rust to untreated surfaces. You can clean weights by using a microfiber towel and RTU Vonos. You can spray and wipe off and allow to air dry, do not allow to be wet for more than 2 minutes.

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Chlorine DioxideFAQs

Q. What Makes Chlorine Dioxide (ClO2) Different from Chlorine?

A. While chlorine dioxide (CLO2) has "chlorine" in its name, its chemistry is radically different from that of chlorine. As we all learned in high school chemistry, we can mix two compounds and create a third that bears little resemblance to its parents. For instance, by mixing two parts of hydrogen gas with one of oxygen- liquid water is the formed. We should not be misled by the fact that chlorine and chlorine dioxide share a word in common. The chemistries of the two compounds are completely different. Chlorine dioxide is generally accepted to be more powerful, easier to use, and more environmentally friendly than equivalent chlorine treatments. It is a more expensive treatment, but its superior environmental performance means that it is rapidly replacing chlorine in a number of applications. Chlorine and chlorine dioxide are both oxidizing agents (electron receivers). However, chlorine has the capacity to take in two electrons, whereas chlorine dioxide can absorb five. This means that, mole for mole, CLO2 is 2.5 times more effective than chlorine. Of equal, if not greater importance is the fact that chlorine dioxide will not react with many organic compounds, and as a result CLO2 does not produce environmentally dangerous chlorinated organics. For example; aromatic compounds have carbon atoms arranged in rings and they may have other atoms, such as chlorine, attached to these rings, to form a chlorinated aromatic-a highly toxic compound that persists in the environment long after it is produced. Chlorine dioxide's behavior as an oxidizing agent is quite dissimilar. Instead of combining with the aromatic rings, chlorine dioxide breaks these rings apart. In addition, as the use of chlorine dioxide increases, the generation of chlorinated organics falls dramatically. Chlorine dioxide is an oxidizing biocide and not a metabolic toxin. This means that chlorine dioxide kills microorganisms by disruption of the transport of nutrients across the cell wall, not by disruption of a metabolic process.

Of the oxidizing biocides, chlorine dioxide is the most selective oxidant. Both ozone and chlorine are much more reactive than chlorine dioxide, and they will be consumed by most organic compounds. Chlorine dioxide however, reacts only with reduced sulfur compounds, secondary and tertiary amines, and some other highly reduced and reactive organics. This allows much lower dosages of chlorine dioxide to achieve a more stable residual than either chlorine or ozone. The efficacy of chlorine dioxide is at least as high as chlorines, though at lower concentrations. But there are more and important advantages:

- 1. The bactericidal efficiency is relatively unaffected by pH values between 4 and 10.
- 2. Chlorine dioxide is clearly superior to chlorine in the destruction of spores, bacteria's, viruses and other pathogen organisms on an equal residual base.
- 3. The required contact time for CLO2 is lower.
- 4. Chlorine dioxide has better solubility.
- CLO does not produce the corrosion associated with high chlorine concentrations. This significantly reduces long-term maintenance costs.
- 6. Chlorine dioxide does not react with NH3 or NH4+.
- 7. It destroys THM precursors and increases coagulation.
- 8. CLO destroys phenols and has no distinct smell.

- 9. It is better at removing iron and magnesia compounds than chlorine, especially complex bounds.
- 10. It has been proven beyond doubt that chlorine dioxide removes biofilm from water systems and prevents it from forming when dosed at a continuous low level. Hypochlorite on the other hand has been proven to have little effect on biofilms.

Q. How does chlorine dioxide disinfect?

A. Chlorine dioxide disinfects through oxidation. It is the only biocide that is a molecular free radical. Chlorine dioxide only reacts with substances that give o an electron. Chlorine, oppositely, adds a chlorine atom to or substitutes a chlorine atom from the substance it reacts with. Substances of organic nature in bacterial cells react with chlorine dioxide, causing several cellular processes to be interrupted. Chlorine dioxide reacts directly with amino acids and the RNA in the cell. It is not clear whether chlorine dioxide attacks the cell structure or the acids inside the cell. The production of proteins is prevented. Chlorine dioxide acts the cell membrane by changing membrane proteins and fats and by prevention of inhalation. When bacteria are eliminated, the cell wall is penetrated by chlorine dioxide. Viruses are eliminated in a different way; chlorine dioxide reacts with peptone, a water-soluble substance that originates from hydrolysis of proteins to amino acids. Chlorine dioxide kills viruses by prevention of protein formation. Chlorine dioxide is more effective against viruses than chlorine or ozone. The predominant oxidation reaction mechanism for chlorine dioxide (and for ozone as well) proceeds through a process known as free radical electrophilic (i.e. electron-attracting) abstraction rather than by oxidative substitution or addition (as in chlorinating agents such as chlorine or hypochlorite). It has this ability due to unique one-electron exchange mechanisms. One electron is transferred and chlorine dioxide is reduced to chlorite (ClO2-).

Chlorine dioxide as a highly selective oxidizer

As an oxidizer chlorine dioxide is very selective. It has this ability

due to unique one-electron exchange mechanisms. Chlorine dioxide attacks the electron-rich centers of organic molecules. One electron is transferred and chlorine dioxide is reduced to chlorite (CLO2-).



SELECTIVITY OF CI2 vs CIO2

Chlorine dioxide is more selective as an oxidizer than chlorine. While dosing the same concentrations, the residual concentration of chlorine dioxide is much higher with heavy pollution than the residual concentration of chlorine. By comparing the oxidation strength and oxidation capacity of different disinfectants, one can conclude that chlorine dioxide is effective at low concentrations. Chlorine dioxide is not as reactive as ozo ne or chlorine and it only reacts with sulfuric substances, amines and some other reactive organic substances. In comparison to chlorine and ozone, less chlorine dioxide is required to obtain an active residual disinfectant. It can also be used when a large amount of organic matter is present. The oxidation strength describes how strongly an oxidizer reacts with an oxidizable substance. Ozone has the highest oxidation strength and reacts with every substance that can be oxidized. Chlorine dioxide is weak, it has a lower potential than hypochlorous acid or hypobromous acid. The oxidation capacity shows how many electrons are transferred at an oxidation or reduction reaction. The chlorine atom in chlorine dioxide has an oxidation number of +4. For this reason chlorine dioxide accepts 5 electrons when it is reduced to chloride.

The oxidation potentials of various oxidants:

oxidant	oxidation strength	oxidation capacity	
ozone (O ₃)	2,07	2 e-	
hydrogen peroxide (H2O2)	1,78	2 e-	
hypochlorous acid (HOCl)	1,49	2 e-	
hypobromous acid (HOBr)	1,33	2 e-	
chlorine dioxide (CIO2)	0,95	5 e-	

The following comparisons show what happens when chlorine dioxide reacts. First, chlorine dioxide takes up an electron and reduces to chlorite: CLO + e -[®] CLO -

The chlorite ion is oxidized and becomes a chloride ion: CLO - + 4H+ + 4e - [®] Cl - + 2H O These comparisons suggest that chlorine dioxide is reduced to chloride, and that during this reaction it accepts 5 electrons. The chlorine atom remains, until stable chloride is formed. This explains why no chlorinated substances are formed. When chlorine reacts it does not only accept electrons; it also takes part in addition and substitution reactions. During these reactions, one or more chlorine atoms are added to the foreign substance (chlorination).

Does chlorine dioxide oxidize in the same way as chlorine?

Contrary to chlorine, chlorine dioxide does not react with ammonia nitrogen (NH3) and hardly reacts with elementary amines. It does oxidize nitrite (NO2) to nitrate (NO3). It does not react by breaking carbon connections. No mineralization of organic substances takes place. At neutral pH or at high pH values, sulfuric acid (H2SO3) reduces chlorine dioxide to chlorite ions (CLO2-). Under alkalic circumstances chlorine dioxide is broken down to chlorite and chlorate (ClO3-): 2 CLO + 2OH - = H O + ClO - + CLO -

This reaction is catalyzed by hydrogen (H+) ions. The half life of watery solutions of chlorine dioxide decreases at increasing pH values. At low pH, chlorine dioxide is reduced to chloride ions (Cl-). When bacteria are eliminated, the cell wall is penetrated by chlorine dioxide. Organic substances within

cells and on the surface of cell membranes react with chlorine dioxide, causing cell metabolism to be disrupted. Chlorine dioxide also reacts directly with amino acids and the RNA in the cell. This reaction is not dependent on reaction time or concentration. Unlike non-oxidizing disinfectants, chlorine dioxide kills microorganisms even when they are inactive. Microorganisms are unable to build up resistance to chlorine dioxide.

In practical terms however, few bacteria live alone, and they are most often found in water and on surfaces in the form of a "biofilm" which is a close association of many millions of bacteria. Many biocides have particular problems in penetrating this biofilm, due to the polysaccharide "glue" that is secreted by the bacteria to hold the biofilm together. Unlike most biocides, chlorine dioxide can effectively penetrate biofilm to provide complete protection.

CHEMICAL OXIDATION BY CIO2

CLO possesses a chemical reactivity that differs markedly from other oxidants (Such as chlorine). Commercial applications have shown that chlorine dioxide can effectively oxidize many compounds considered to be waste and water pollutants. The table below lists a number of pollutants found in various industries and demonstrates the wide range of possible applications for the product.

Chlorine dioxide has been shown to be an effective treatment for the following pollutants:

- SULPHIDES ALDEHYDES
- REDUCED SULPHUR COMPOUNDS
- NITROGEN COMPOUNDS
- CYANIDES
- PHENOLS
- ALDEHYDES
- AMINES & MERCAPTANS
- THM PRECURSORS
- PESTICIDES
- ALGAE / SLIME
- METAL
- ALDEHYDES

Aldehydes are produced by a number of common industrial processes. Their treatment is a common problem, especially so in the photographic industry. In general, CLO2 can oxidize an aldehyde to its corresponding carboxylic acid. Formaldehyde is a major component in the formulations used in photo processing. Chlorine Dioxide oxidizes formaldehyde to formic acid and finally to carbon dioxide. Para formaldehyde can be depolymerised and eliminated completely by oxidation with chlorine dioxide.

AMINES AND MERCAPTANS

The major sources of odorous substances such as mercaptans and substituted amines include the chemical and petroleum industries, cooking and sanitary processes, animal feedlots and rendering plants. Between pH 5 & 9, 4.5 parts by weight of chlorine dioxide instantaneously oxidizes 1 part by weight of mercaptan (expressed as sulfur) to the respective sulfonic acid or sulfonate compound, thus destroying the mercaptan odor. Similarly, chlorine dioxide reacts with organic suldes and disuldes destroying the original odor.

Secondary and tertiary amines are also present in many wastewaters, causing their own unique odor problems. The oxidation of amines with chlorine dioxide depends on the pH of the reaction mixture and the degree of substitution of the amine.

Between pH 5 and 9, an average of 10 parts by weight of chlorine dioxide oxidizes 1 part by weight of a secondary aliphatic amine (expressed as nitrogen) removing all traces of amine odor. The higher the pH of the reaction mixture (chlorine dioxide and tertiary and/or secondary aliphatic amines) the more rapidly oxidation proceeds.

THM PRECURSORS

The key to understanding why chlorine dioxide is so effective can be found in the differences in the reactions of chlorine dioxide and chlorine with Tri-halomethane (THM) precursors such as humic and fulvic acids.

Chlorine reacts with THM precursors by oxidation and electrophilic substitution to yield both volatile and non-volatile chlorinated organic substances (THMs).

Chlorine dioxide, however reacts with THM precursors primarily by oxidation to make them non-reactive or unavailable for THM production. This means that pre-treatment with chlorine dioxide has an inhibiting effect on THM formation when chlorine is subsequently used.

PESTICIDES

Some pesticides can be oxidized to less toxic materials by chlorine dioxide. Specifically, Methylchlor (DMDT) and Adrian react with CLO2. With parathion, the reaction is slow near to pH 7; however, when pH is above 8, less biodegradable herbicides such as paraquat and diquat are eliminated within a few minutes.

ALGAE/SLIME

Chlorine dioxide has been sown to be effective in controlling algae growth. In one study, chlorine dioxide was found to be more effective than copper sulfate, at comparable treatment costs. Chlorine dioxide is believed to attach the pyrolle ring of the chlorophyll. This cleaves the ring and leaves the chlorophyll inactive. Since algae cannot function without chlorophyll metabolism, they are destroyed. The reaction of chlorine dioxide with algae and their essential oils forms tasteless, odorless substances.

Algae control is carried out by adding chlorine dioxide to the reservoir at night (To prevent photolytic decomposition of CLO2) The algae killing action is fast enough to be effective before the sun rises. A dosage of 1 mg/litre has been reported to control algae populations

SULFIDES

Many industrial processes produce sulfide-containing gases and waste products. These are generated, for example, during petroleum refining, coal coking, black liquor evaporation in kraft pulping, viscose rayon manufacture and natural gas purification. These gases and wastes are frequently scrubbed with alkaline solutions and require treatment before discharge. Between pH 5 and 9, an average of 5.2 parts by weight of chlorine dioxide instantaneously oxidizes 1 part by weight of hydrogen sulfide (expressed as sulfideion) to the sulfate ion.

NITROGEN COMPOUNDS

Nitrogen oxides are dangerous and corrosive. Nitrous Oxide (NO) and nitrogen dioxide (NO2) are industrial effluents that result from fuel combustion, nitric acid manufacture and use, and from metal finishing operations, which use nitrates, nitrites or nitric acid. Other sources include chemical processes in which nitrogen compounds are used as reagents. Chlorine dioxide has been used to scrub these contaminants. Nitric oxide contained in gas discharges from coke

kilns may be eliminated by oxidation by chlorine dioxide. This process is particularly convenient for continuous operation.

CYANIDES

Cyanide compounds originate from processes such as metal plating, steel case hardening, pickle liquor neutralizing, gold and silver ore refining and blast furnace stack gas scrubbing. Chlorine dioxide oxidizes simple cyanide to cyanate (a less toxic substance) and/or carbon dioxide and nitrogen. The end products depend on reaction conditions. In neutral and alkaline solutions below pH 10, an average of 2.5 parts by weight of chlorine dioxide oxidizes 1 part by weight of cyanide ion to cyanate. Above pH 10, an average of 5.5 parts by weight of chlorine dioxide oxidizes 1 part by weight of cyanide ion to carbon dioxide and nitrogen. Chlorine dioxide does not react with cyanate ion, nor has it been observed to form cyanogen chloride during the oxidation of cyanide. Chlorine dioxide also oxidizes thiocyanate to sulfate and cyanate. In neutral solutions, an average of 3.5 parts by weight of chlorine dioxide oxid of chlorine dioxide also oxidizes 1 part by weight of thiocyanate ion.

Notes:

Shipping and Sizes

Shipping Specifications

ITEM #	SIZE	QTY	ETIN	WEIGHT	SIZE	PALLET ASSEMBLY
V-D128G	128 OZ	4 Items/case 36 Cases/pallet	Case 860004834007	Case=36 lbs Pallet= 1278 lbs	Case=12"x12"x12" Pallet=48"x42"x56"	Tiers - 4 9 Cases/Tier
V-D320Q	32 oz	12 Items/case 36 cases/pallet	Case 860004834014	Case=24 lbs Pallet=1030 lbs	Case=16"x6"x12" Pallet=48"x42"x52"	Tiers - 4 9 Cases/Tier
V-D3-Sam	3 oz	24 items/case 60 cases/pallet	Call	Case=7 lbs Pallet=280 lbs	Case=10"x8"x7" Pallet=48"x42"x22"	Tiers - 3 20 Cases/Tier
V-640-P	5 Gal Pail	36 BIB's/Pallet	Unit 860004834021	Pail=45 lbs Pallet=1620 lbs	Pail =12"x12"x15" Pallet=48"x42"x52"	Tiers – 3 12 Pails/Tier
V-D7040-D	55 Gal Drum	1 Drum per Pallet	Drum 860004834038	Drum= 499ibs lbs 4 Drums= 1996 lbs	Pallet=42"x48"x38"	Tier – 1 4 drums per pallet
V-T35200-T	275 Gal Tote	1 Tote per Pallet	Call	1 Tote=2350 lbs	Pallet=42"x48"x52"	Tier- 1

*** Do not use metal drum pumps to pull chemical from drums, totes or pails.***

Equipment, Use, Safety

Porportioner Inserts



Secondary Labels







Carpet Sanitizer <u>5:1</u>

Sanitizador de Alfombras





Daily Sanitizer & Food Contact Surfaces NO RINSE REQUIRED 9:1

Sanitizador de uso diario para super cies que esten en contacto con los alimentos NO REQUIERE ENJUAGUE





Hard Surface & Floor Sanitizer

9:1 Sanitizador de super cies duras y de pisos







VONOS works by oxidation to eliminate odors. Simply spray, fog or wipe on and allow to air dry to provide long lasting residual deodorizing action. VONOS must come into contact with the cause of the odor to be effective For synthetic carpet fibers such as nylon, olefin or polypropylene - not intended for use wool carpet. Test for color fastness in an inconspicuous area. Carpet should be clean and free of excessive soil before applying. Apply by sprayer at a rate of approx. 22 ox per sq yds. Vonos must come onto contact with contaminate to work. Allow to dwell for 10 min. Do not rinse, use extraction wand and dry stroke carpet to remove excess moisture . Carpet can air dry or fans may be used in order to dry carpet faster.

VONOS funciona por oxidacion para eliminar olores. Simplemente se rocea o pasa y luego permita que se seque para obtener una larga accion de desodorizacion residual. Para rocear con VONOS aplique 1 cuarto de galon (1 quart) por 2000 pies cubicos, siguiendo las instrucciones del fabricante. VONOS debe tener contacto directo con la fuente que produce el olor para ser mas efectivo. Para alfombras de fibras sinteticas, como son, el nylon, olefin o polipropileno - no usar para alfombras de lana. Para la firmeza de color, pruebe en una 'area discreta. La alfombra tiene que estar limpia y libre de suciedad excesiva antes de aplicar VONOS. Aplique con el roceador (fogger) a un 'indice de aproximadamente 22 onzas por pie cuadrado. Para que VONOS de' resultado debe de entrar en contacto directo con la contaminacion. Permita esperar por 10 minutos. No enjuague o use una varita de extraccion para remover humedad excesiva. La alfombra puede secarse con ventiladores o al aire libre si necesitan secarlo rapidamente.

Daily Sanitizer & Food Contact Surfaces NO RINSE REQUIRED

Sanitizador de uso diario para superficies que esten en contacto con los alimentos NO REQUIERE ENJUAGUE Food Contact Immobile Surfaces: (food processing equipment, countertops, tables, appliances)Remove all gross food particles and soil by cleaning and rinse with potable water. Apply Vonos by wetting thoroughly and let stand for 1 minute, or longer if specified by government sanitary code. Let surfaces drain and air dry. Do not rinse or wipe.

For glassware, utensils, cookware and dishware: Scrape and pre-wash, then wash with a good detergent. Rinse with potable water, then sanitize by immersion in VONOS for 1 minute or longer if specified by government sanitary code. Place on a rack or drain board to air dry. Do not rinse or wipe.

Superficies inmoviles de contacto de alimentos: (equipos de procesamiento de alimentos, superficies, mesas, articulos electricos). Remueva todas las particulas de comida y residuos de la superficie, enjuagandolo con agua potable. Aplique Vonos mojandolo completamente y esperar un minuto (o mas si esta reglamentado por el codigo de sanidad del gobierno) Deje que la superficie drene y se seque. No enjuagar o repasar. Para la cristaleria, utensilios, bateria de cocina y vajilla: Repase y pre-limpie, luego lave con

un buen detergente. Enjuague con agua potable, y sanatice con inmersion. de Vonos por un minuto (o mas, si es reglamentado por el codigo de sanidad del gobierno)...Coloque en un anaquel o desaguadero para ventilar. No enjuague o repase.



Sanitizador de superficies duras y de pisos To clean countertops, walls, cabinets, etc., spray or fog on, agitate to remove heavily soiled areas and wipe dry if preferred. For flooring, remove all gross filth by cleaning and rinsing with potable water. Apply Vonos by mopping thoroughly allow to stand for 1 minute and allow surface to air dry.

Para la limpieza de mostradores, paredes, gabinetes, etc. use el spray o rocee. Para las 'areas mas sucias, refregar y secar manualmente, si prefiere. Para pisos,remover la suciedad enjuagando con agua potable. Aplique el Vonos trapeando completamente dejar por un minuto y permitir que la superficie se seque al aire libre. No es necesario enjuagar o repasar.

Areas of Use Dilution ratio

	Problems	Use
Vonos Ready To Use	Infection and Virus Control	Hospital Disinfectant
		Vehicles
		Nurseries
		Schools and Universities
		Athletic Facilities
	Mold & Mildew Control	Commercial & Residential
	Pet Stains	Farm Premises
		Poultry House
		Animal Pens
Vonos Diluted 5 to 1	Carpet and Fabric Sanitizer	Carpet and Fabric Sanitizer
Vonos Diluted 9 to 1	Daily Sanitizing	Daily Sanitizer with no rinse required for food contact surfaces

Vonos in its original packaging (RTU) is an EPA registered hospital grade disinfectant. The full-strength RTU is formulated to tackle the toughest sanitization needs and is required when the highest level of disinfection is required. Certain applications, however, may allow for a lesser concentration of Vonos active ingredient, stabilized chlorine dioxide (CLO2). At the RTU concentration, the amount of CLO2 in Vonos is equal to 2000ppm.

The Vonos research team in conjunction with the Environmental Protection Agency and NSF International has worked to determine the concentration at which Vonos retains its unique disinfecting properties yet allows for the application of the product on food contact surfaces without the need to wipe the surface after application. Lab test results indicate that the RTU formula may be diluted with water at a 1:9 ratio, bringing the level of CLO2 to 154ppm. This dilution of Vonos is referred to as a food contact surface sanitizer. The EPA and NSF International have both co d the Vonos Food Contact Surface Sanitizer to achieve a 99.999% sanitization at 154ppm CLO2 . NO RINSE.

The EPA has approved another concentration to be used as a carpet sanitizer and deodorizer. Research shows a 1:5 dilution, 333 ppm CLO2, to e effectively sanitize carpeting. As well as serving as a carper sanitizer, a 1:5 dilution is an excellent choice for odor removal. Depending on the source of the odor, a more aggressive concentration may be called for. Refer to your training and reference manual for additional information.

Reference Diagrams






Notes:

Testing Summaries and Vonos Product Label



EPA Registration Number: 82972-1-96360

Disinfection	Use Method	Contact Time	Study Conclusion	
Gram Negative Bacteria				
Acinetobacterbaumannii ATCC 19606	AOAC Use-Dilution	10 min.	Disinfection	
Pseudomonas Aeruginosa ATCC 15442	AOAC Use-Dilution	10 min.	Disinfection	
Legionella Pneumophila ATCC 33153	AOAC Use-Dilution	10 min.	Disinfection	
Salmonella enterica ATCC 10708	AOAC Use-Dilution	10 min.	Disinfection	
Klebsiellapneumoniae (NDM-1) ATCC BAA-2146	AOAC Use-Dilution	10 min.	Disinfection	
Escherichia Coli ATCC 11229	AOAC Use-Dilution	10 min.	Disinfection	
Gram Positive Bacteria				
Staphylococcus aureus MRSA ATCC 33592	AOAC Use-Dilution	10 min.	Disinfection	
Staphylococcus aureus ATCC 6538	AOAC Use-Dilution	10 min.	Disinfection	
Listeria monocytogenes ATCC 15313	AOAC Use-Dilution	10 min.	Disinfection	
Enveloped Viruses	Use Method	Contact Time	Study Conclusion	
Swine Influenza (H1N1) Virus	Virucidal Efficacy	5 min.	Complete inactivation	
Respiratory Syncytial Virus	Virucidal Efficacy	5 min.	Complete inactivation	
Influenza B Virus	Virucidal Efficacy	5 min.	Complete inactivation	
Hepatitis A Virus	Virucidal Efficacy	5 min.	Complete inactivation	
Hepatitis B Virus	Virucidal Efficacy	5 min.	Complete inactivation	

Hepatitis C Virus	Virucidal Efficacy	5 min.	Complete inactivation
Human Immunodeficiency Virus (HIV Type 1)	Virucidal Efficacy	5 min.	Complete inactivation



EPA Registration Number: 82972-1-96360

Non-Enveloped Viruses	Use Method	Contact Time	Study Conclusion
Rotavirus	Virucidal Efficacy	5 min.	Complete inactivation
Norovirus Feline Calicivirus	Virucidal Efficacy	5 min.	Complete inactivation
Murine Norovirus (MNV-1)	Virucidal Efficacy	5 min.	Complete inactivation
Food Contact Sanitizer	Use Method	Contact Time	Study Conclusion
Escherichia Coli ATCC 11229	AOAC Food Contact Sanitization	30 sec.	99.999 Kill (no rinse required)
Staphylococcus aureus ATCC 33592	AOAC Food Contact Sanitization	30 sec.	99.999 Kill (no rinse required)
Carpet Sanitizer	Use Method	Contact Time	Study Conclusion
Staphylococcus aureus ATCC 6538	DIS/TSS-8 Carpet Sanitizer	10 min.	99.9 Carpet Sanitizer
Enterbacter aerogenes ATCC 13048	DIS/TSS-8 Carpet Sanitizer	10 min.	99.9 Carpet Sanitizer
Soft Surface Sanitization	Use Method	Contact Time	Study Conclusion
Staphylococcus aureus ATCC 6538	Soft Surface Sanitization	5 min.	Sanitization
Enterbacter aerogenes ATCC 13048	Soft Surface Sanitization	5 min.	Sanitization
Fungi onSurface	Use Method	Contact Time	Study Conclusion
Aspergillus Niger ATCC 6275	Hard Surface Mildew Fungistatic	10 min.	>1 week protection
Aspergillus Niger ATCC 6275	Fabric Mildew Fungistatic	10 min.	>4 weeks protection
Stachybotrus Chartarum	Sporicidal Viability	10 min.	No germination of spores

Aspergillus Fumigatus	Sporicidal Viabiloty	10 min.	No germination of spores
Alternaria Alternata	Sporicidal Viabiloty	10 min.	No germination of spores
Penicillum sp	Sporicidal Viabiloty	10 min.	No germination of spores

VONOS LABEL





EPA Toxicity Category Rating System

	BLEACH	P HENOL S	QUATS	Von	OS
Toxicity Study	Category I High Toxicity	Category II Moderate Toxicity	Category III Low Toxicity	Category IV Very Low Toxicity	EPA Toxicity Rating
Acute Oral	Up to and including 50 mg/kg	>50 thru 500 mg/kg	>500 thru 5000 mg/kg	>5000 mg/kg	Category IV Very Low Toxicity
Acute Dermal	Up to and including 200 mg/kg	>200 thru 2000 mg/kg	>2000 thru 5000 kmg/kg	>5000 mg/kg	Category IV Very Low Toxicity
Acute Inhalation	Up to and including 0.05 mg/liter	>0.05 thru 0.5 mg/liter	>0.5thru 2.0 mg/liter	>2mg/liter	Category IV Very Low Toxicity
Eye Irritation	Corrosive (Irreversible destruction of ocular tissue) or corneal involvement or irritation persisting for more than 21 days	Corneal involvement or irritation clearing in 8-21 days.	Corneal involvement or irritation clearing in 7 days or less	Minimal effects clearing in less than 24 hours	Category IV Low Toxicity
Skin irritation	Corrosive (Tissue destruction into the dermis and/or scarring)	Severe irritation at 72 hours (Severe erythema or edema)	Moderate irritation at 72 hours (Moderate erythema)	Mild or slight irritation (No irritation or slight erythema)	Category IV Very Low Toxicity

Material Safety Data Sheet (MSDS)



Safety Data Sheet Vonos LLC

July 2, 2020

Section 1: Product and Company Identification

Manufacturer/Distributor

Vonos, LLC 1317 Edgewater Drive STE 476 Orlando, FL 33804 (800)698-6667

Н	0	
F	0	
R	0	
PE		

Medical Emergency

Phone Numbers

(800) 222-1222

Section 2: Hazards Identification

Emergency Overview: Colorless liquid with mild fresh odor. Avoid contact with eyes. Keep out of reach of children.

GHS Classification: This material is not considered hazardous by the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200)

Potential Health Effects

Eye Contact: Eye contact may cause mild eye irritation with discomfort.

Skin Contact: Does NOT cause skin irritation and the product is NOT skin sensitizer.

<u>Inhalation:</u> Does NOT cause any respiratory irritation. If consumer product accidentally contacts strong acids in restricted ventilation area, avoid breathing the vapors and allow adequate time for the vapors to disperse before re-entering the restricted area.

Ingestion: Non-Toxic **Carcinogenicity Information**: IARC, NTP, OSHA, and ACGIH list none of the components present in this material at concentrations equal to or greater than 0.1% as carcinogens.

Section 3: Composition / Information on Ingredients

Ingredients	CAS Number	Wt %
Oxychlorine Compounds	Mixture	0.200
n-Alkyl Dimethyl Benzyl Ammonium Chloride	68391-01-5	0.125
n-Alkyl Dimethyl Ethylbenzyl Ammonium Chloride	85409-23-0	0.125
Inert Ingredients	Mixture	99.55

At these concentrations none of the ingredients are known to pose any

hazards to human health.





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Inert Ingredients	Mixture	99.55

At these concentrations none of the ingredients are known to pose any

hazards to human health.

SDS No: V2020

Page 1 of 4



Vonos, LLC

SDS:

Section 4: First Aid Measures

Inhalation

Does NOT cause any respiratory irritation. If consumer product accidentally contacts strong acids in restricted ventilation area, avoid breathing the vapors, and allow adequate time for the vapors to disperse before reentering the restricted area.

Skin Contact

Does NOT cause skin irritation.

Eye Contact In case of contact, flush eyes with plenty of water.

Ingestion

Non-toxic. Give a glass of water.

Section 5: Fire Fighting Measures

Flammable Properties: Flash Point: Not Available (Non Flammable)

Flammable Limits: Lower Flammable Limit: Not Established

Burn Rate: Unknown

Upper Flammable Limit: Not Established

Flammability Classification: Non-Flammable liquid Auto ignition

Temperature: Not Established Hazardous Combustion Products: Thermal or

other decomposition may yield chlorine dioxide or chlorine. Extinguishing Media:

N/A (Non-Flammable liquid)

Considerations: None

FIRE FIGHTING INSTRUCTIONS: Non-Flammable liquid

NFPA Rating: Health: 0 Flammability: 0 Reactivity: 0 PPE: None

Section 6: Accidental Release Measures

Spill Clean Up

No special cleanup measures are required for the consumer product. To avoid the possibility of "bleaching" the spill should be absorbed with paper towels, and the area rinsed with clean water.

Additional

Accidental Release Measures

Spills are slippery and should be cleaned up promptly.



Section 7: Handling and Storage

Handling: Keep away from heat and strong acids. Do not ingest. Keep container closed. Use only with adequate ventilation.

Storage: Keep container tightly closed and sealed until ready for use. Keep container in a well-ventilated place. Do not store above $120_{\circ}F$ or near fire of open flame. Store large quantities in buildings to comply with OSHA 1910.106. Do not transfer contents to bottles or other unlabeled containers. Do not reuse empty containers. Keep out of reach of children.

Incompatible materials: Strong acids

Special Packaging Materials: None

SDS No: V2020

Page 2 of 4

VONOS

Section 8: Exposure Control/ Personal Protection

Engineering Controls: Use in adequately ventilated areas.

Personal Protective Equipment:

Eye/Face Protection: Not required for consumer product.

Skin Protection: Not required for consumer product.

Respirators: None required for normal use. If consumer product accidentally contacts strong acids in restricted ventilation area, Avoid breathing the vapors, and allow adequate time for the vapors to disperse before re-entering the restricted area.

Exposure Limits:

Oxychlorine Compounds: n-Alkyl Dimethyl Ethylbenzyl Ammonium Chloride:

PEL (OSHA): Not available TLV (ACGIH): Not available PEL (OSHA): Not available TLV (ACGIH): Not available

n-Alkyl Dimethyl Benzyl Ammonium Chloride:

PEL (OSHA): Not available TLV (ACGIH): Not available

Section 9: Physical and Chemical Properties

Appearance:	Colorless liquid
Physical State:	Liquid
Boiling Point (°F):	212
Freezing Point (°F):	32
Volatile Organic Compounds (VOC):	None
Specific Gravity:	1.003 @ 68°F (20°C)

Odor: pH: Solubility in Water: Vapor Pressure (mm Hg): Evaporation Rate: Density (lb/gal): Mild-Fresh 8 - 9 100% Not Available Less than Ether 8.40 @ 68°F (20°C)

Section 10: Stability and Reactivity

Chemical Stability: The product is stable. acids

Incompatibility with other Materials: Strong

Conditions to avoid: Contact with strong acids

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Thermal or other decomposition may yield chlorine dioxide or chlorine.

Section 11: Toxicological Information

TOXICITY TESTING – ACUTE **Inhalation** – Studies with Wistar Albino rats exposed to a respirable aerosol made from a solution of Vonos at a level of 2.08 mg/l for four hours resulted in no deaths and no abnormal necropsy observations. **Eye Contact** – Studies with New Zealand white rabbits showed this product is a very mild ocular irritant; mild conjunctival irritation was observed, but cleared within 24 hours. **Skin Contact** – Study of dermal toxicity in New Zealand white rabbits showed the product to be non- toxic: Dermal LD₅₀> 5,000 mg/kg of body weight; Study of dermal irritation in New Zealand white rabbits showed the product is not a dermal irritant. In Dermal Sensitization studies, Vonos was determined not to be a sensitizer. **Swallowing** - Acute oral toxicity in albino rats: Non- toxic LD₅₀> 5,000 mg/kg of body weight.

EPA TOXICITY RATING – IV This is the lowest category on the scale and is designed for substances that are the least hazardous.

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Section 12: Ecological Information

Environmental Hazards: Not data available.

Environmental Fate: Not data available.

Section 13: Disposal Considerations

Waste Disposal: Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations.

Section 14: Transport Information

Shipping Information: Not regulated by DOT, IMO/IMDG and IATA/ICAO for ground, air or ocean shipments.

Section 15: Regulatory Information

U.S. Federal Regulations:

TSCA: All components appear in TSCA Inventory exposure limits.

OSHA: Refer to Section 8 for

CERCLA SARA Hazard Category:

Section 311 and 312: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories: Information not available.

Section 313: This product contains following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: None

State regulations: State Right to Know information is not provided. **California prop. 65 (no significant risk level):** None

International Regulations:

Canadian WHMIS: Not controlled

Canadian Environmental Protection Act (CEPA): Additional information available upon request.

EU Regulations: Additional information available upon request.

Section 16: Other Information

HMIS Rating:Health:0Flammability:0Reactivity:0PPE: None

The information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Vonos, LLC The Data on this sheet related only to the specific material designed herein. Vonos, LLC assumes no legal responsibility for the use or reliance on this data.

End of SDS

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Notes: