



os|3
ON-SITE GENERATION

Frequently Asked Questions
NORTH AMERICA



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INTRODUCTION TO ELECTROLYZED WATER

1. What is OSG technology?

On-Site Generation (OSG) is an innovative technology that enables cleaning solutions to be made on site. OSG technology uses an electrolysis process to convert water, electricity and a small amount of salt into effective cleaning and disinfecting/sanitizing solutions. It eliminates the need for most conventional packaged chemicals that have been used for years to clean education facilities, public venues, casinos, retail stores and many other spaces.



2. What are the benefits of Orbio[®] OSG?



Simplified cleaning process — one Orbio[®] OSG unit replaces a wide range of multi-colored concentrates. Just as important, it reduces the training requirements for new cleaning staff on multiple chemicals, their dilutions and applications. This simplified cleaning process can also help reduce lost-time accidents.



Improved health and safety — this technology reduces employee, customer and cleaning team exposure to highly concentrated conventional chemicals. OSG solutions have no added fragrances, which reduces unwanted odors and improves indoor air quality.



Enhanced brand reputation — Orbio[®] OSG technology can enhance your brand reputation by making a bold statement that your enterprise is committed to “doing good.”



Lower “hard costs” — generating cleaning solutions on site significantly reduces weekly or monthly purchasing, shipping and disposal of most daily-use packaged chemicals.



Reduced environmental footprint — a life cycle assessment by a third-party expert demonstrates the dramatically reduced environmental footprint of OSG compared to shipping conventional packaged chemicals*.



Lower “soft costs” — OSG technology can dramatically reduce soft costs such as training, ordering, stocking and inventorying of most daily-use packaged chemicals. It's a mix of simplicity and science — fewer steps, better outcomes.

*LCA by EcoForm for the Orbio 5000-Sc is available at orbio.com

INTRODUCTION TO ELECTROLYZED WATER (Cont.)

3. How does Orbio[®] OSG technology work?

Uncomplicated OSG devices, which are relatively low cost and simple to maintain, are connected to a facility's tap water supply, drain and standard electrical outlet. Softened tap water and salt are combined and the mixture flows into an electrolytic cell. This water electrolysis process creates two separate streams — a cleaning solution and a disinfecting/sanitizing solution.

Built-in sensors measure critical output parameters in both solutions to ensure efficacy. The solutions are then dispensed into spray bottles, automatic scrubbers, mop buckets and carpet extractors for cleaning crews to use.

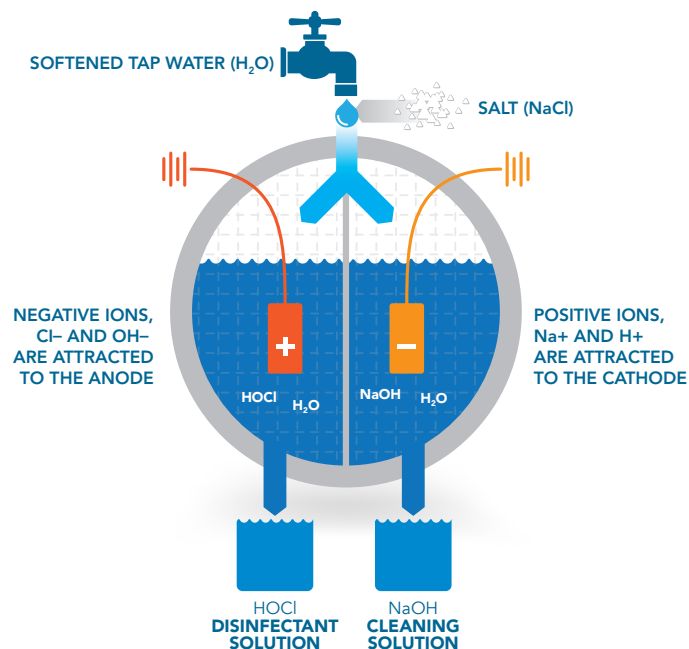
Instead of a cluttered closet full of multi-colored chemicals, cleaning crews have two simple choices — cleaning solution or disinfecting/sanitizing solution. The Orbio[®] OSG solutions contain no dyes, buffers, chelating agents or complicated dilution processes of conventional packaged chemicals.

4. Who is Orbio[®] Technologies?

We are a Tennant Company group and a leading innovator in sustainable technologies that provide effective cleaning without the use of conventional daily use chemicals. Using electrolyzed water technology, the Orbio[®] portfolio solutions enable cleaning devices and equipment to achieve the same effect without the hazards or large environmental footprint associated with the use of traditional packaged chemicals.



ELECTROLYZED WATER PROCESS



5. How is Orbio different from competitors?

The new Orbio[®] os3 system delivers what the market has been asking for — small, simple and affordable OSG technology. Orbio Technologies is backed by the strong financial and R & D support of Tennant Company, which has been going strong for 143 years. Our proven, groundbreaking product development uses Split Stream Technology based in the science of electrochemistry. We also have one of the largest service and support networks in the industry — utilizing our Direct and Authorized Distributor network for sales and service support.

TECHNOLOGY

How does the Orbio[®] os3 work?

The os3 uses Orbio[®] Split Stream Technology, which is based on the electrolysis process. Water, salt and electricity are used to create a low concentration of sodium hydroxide (NaOH), an effective cleaning agent as well as a low concentration of hypochlorous acid (HOCl), a disinfectant and sanitizer.



CLEANING APPLICATIONS

(MultiSurface Cleaner)

1. Where can I use MultiSurface Cleaner?

MultiSurface Cleaner can be used on hard and soft surfaces, vertical and horizontal surfaces, on and off the floor. It is effective on:

- Hard floors — vinyl composite tile (VCT) – with or without floor finish, terrazzo (sealed or unsealed), sealed, polished or open concrete, sheet vinyl, granite, natural stone, sealed wood, rubberized flooring and other hard flooring surfaces.
- Soft floors (carpeting) — nylon, wool, polypropylene (Olefin), and polyester (always check carpet manufacturer specs for color stability and non-shrinking properties before using a water-based product)
- Windows, mirrors, doors, walls, and other surfaces made of glass, Plexiglas, plastic, sealed wood, stainless steel and other hard non-porous surfaces.

2. What products can it replace?

- General-purpose and neutral pH daily cleaners for hard floors
- Alkaline floor cleaners and degreasers designed for organic greases and oils
- Pre-spray cleaners for soft floors
- In-tank cleaners for soft floors
- All-purpose cleaners
- Glass cleaners
- Stainless steel cleaners

3. What specific types of machines or tools can I use it in?

- Automatic scrubbers (riding or walk-behind)
- Carpet Extractors (canister with wand, pull-back, walk-behind, riding or spotters)
- Bonnet pad cleaning – carpet (single disc use)
- Interim carpet cleaners/soil transfer (ReadySpace[®] Technology)
- Spray bottles (spray and wipe applications)
- Micro-fiber flat mop systems
- Standard mop & bucket systems
- High pressure washers

REPLACE THESE



WITH THIS



IN THESE



MultiSurface *CLEANER* (RTU)

1. What does the MultiSurface *Cleaner* solution contain and what is its pH?

It is a low concentration of sodium hydroxide (NaOH), a raw material commonly used in cleaners and detergents to improve cleaning performance on oils, fats and proteins. The pH is 10 to 11.5.

2. How is the MultiSurface *Cleaner* composition different from conventional cleaning chemicals?

Most conventional cleaners typically contain chelating agents, which enhance performance in hard water areas. Many chelating agents are at the top of raw material lists of environmental concerns because they don't readily biodegrade. Due to the use of an integral water softener, the MultiSurface *Cleaner* does not need these chemicals of concern for effective cleaning performance.

In addition, many conventional cleaners also contain solvents, alcohol, surfactants, dyes or fragrance — all of which are absent in the clear, fragrance-free, yet effective MultiSurface *Cleaner*.



3. How long does the MultiSurface *Cleaner* solution remain effective?



- Autoscrubber, extractor, all-surface cleaner — 30 days



- Spray bottle — 90 days if filled and kept capped



- Sealed container used to fill other bottles — 90 days if filled and kept capped



- Microfiber flat mops system — 8 hours, if soil is not introduced into the solution



- Open bucket — 8 hours. As with conventional cleaning chemicals, the efficacy will degrade quicker if a soiled tool (like a soiled string mop or soiled hand cloth) is dipped and re-dipped into the solution.

MultiMicro[™] 200^{*} SOLUTION (RTU)

1. What does the MultiMicro 200 solution contain and what is its pH?

It is a low concentration of hypochlorous acid (HOCl). The pH is 6 – 8 in this RTU form.

2. What is hypochlorous acid?

Hypochlorous Acid (HOCl) is a weak acid, which forms when chlorine dissolves in water. HOCl is the most prevalent form contributing to the free available chlorine (FAC) at near-neutral pH levels. It is used in disinfecting, sanitizing and deodorizing.

3. How is hypochlorous acid different than bleach (sodium hypochlorite)?

Bleach or sodium hypochlorite (NaClO) is an effective antimicrobial, like hypochlorous acid (HOCl). However, due to its typically higher concentration in contributing to the free available chlorine (FAC) at higher pH levels (10 – 11), it exhibits a typically strong chlorine odor, a bleaching effect on many surfaces, as well as a short shelf life in RTU form — typically 1 day.

4. How is the os3 generator and MultiMicro 200 output regulated by the US EPA?

The os3 generator is regulated by the US EPA as a pesticidal device. Pesticidal devices are not required to be registered with the US EPA. However, the US EPA requires pesticidal devices to conform to the same data, labeling and claim requirements as traditional packaged US EPA-registered antimicrobial products.

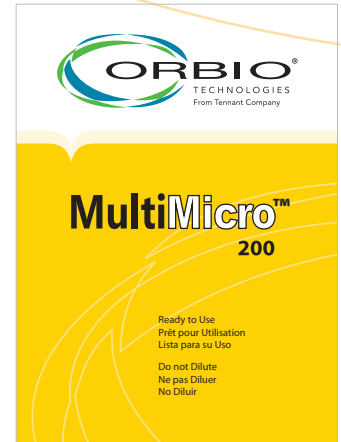
5. How does the US EPA regulate pesticidal devices?

The US EPA requires that pesticide devices be manufactured at US EPA-registered establishments and that the manufacturer report annual production volumes. The US EPA establishment number must appear on the labeling that accompanies the pesticide device. The os3 is manufactured at a US EPA-registered establishment and the labeling includes the US EPA establishment number. The establishment registration number is 090643-KY-001.

6. What antimicrobial claims does MultiMicro 200 have in the US?

Orbio has generated data that supports the use of MultiMicro 200 as a One-Step Cleaner-Disinfectant with a minimum contact time of 10 minutes. Data has also been generated to support the use of MultiMicro

200 as a Food Contact Surface Sanitizer with a minimum 1 minute contact time and a Non-Food Contact Surface Sanitizer with a minimum of 5 minute contact time. Orbio has generated a MultiMicro 200 Efficacy Summary that summarizes the data that supports the MultiMicro 200 disinfecting and sanitizing claims. The generated efficacy data supports specific pathogen control claims and is microorganism specific.



7. How can one product be both a cleaner disinfectant as well as a food contact surface sanitizer?

The US EPA regulates sanitizers that are allowed for use on surfaces that come in contact with food. The applicable regulations allow the use of free available chlorine (FAC) at up to 200 ppm to be used on food contact surfaces. Thus, MultiMicro 200 can be used as a food contact surface sanitizer, as it meets the US EPA criteria and the efficacy requirements for a food contact surface sanitizer. MultiMicro 200 also meets the US EPA cleaner/disinfectant efficacy requirements at the same 200 ppm concentration with different contact times. MultiMicro 200 can replace both a food contact surface sanitizer and a one-step cleaner disinfectant/sanitizer at the same concentration following the appropriate use directions.

8. What is the shelf life of MultiMicro 200 solution?

MultiMicro 200 is intended to be used within 7 days of dilution.

9. Will MultiMicro 200 be available from os3 units in Canada?

Orbio os3 units installed in Canada will be set up to dispense only MultiSurface Cleaner, as the MultiMicro solution is currently going through the Canadian regulatory process for antimicrobial products. On approval, units may be converted to dispense both solutions.

^{*}MultiMicro 200 refers to MultiMicro Concentrate that has been diluted by the Orbio[®] os3 dispenser to the ready-to-use form containing 200ppm free available chlorine.

DISCHARGE STREAM

Why is there a discharge stream?

The electrolysis process creates two streams. The Orbio[®] os3 system produces both the MultiSurface Concentrate and the MultiMicro[™] Concentrate at the same time, regardless of whether one or the other of the tanks is full. When the generator's tanks are full and one of the solutions is dispensed, it will automatically begin to generate more solution to begin refilling both of the tanks. The solution created for the full tank will be discharged down the drain. The unit's water softener also produces a very small discharge stream.

OPTIONAL ORBIO[®] os3 SATELLITE SYSTEM

1. What is the os3 Satellite System?

The optional os3 Satellite System is an Orbio innovation that allows the dilution and dispensing of either or both the Multi-Surface Cleaner and the MultiMicro 200 at remote areas, away from the main os3 generator. Concentrates are created at the os3 generator and are transferred to spill-proof Solution Transport Containers via a hose set. Once filled, these containers are moved to remote areas where they are connected to a dispenser and diluted as needed.

2. How is the number, location, configuration, etc. of satellite locations determined?

Orbio sales representatives will work with customers to conduct a site survey. A recommendation of the number, location and configuration of os3 generators as well as number, location and configuration of any satellite stations will be made, based upon detailed information gained during the survey.



3. How many satellite systems can one generator support?

This is dependent upon the amount of solutions dispensed from the generator and demand placed on the same generator to refill the Transport Containers to be used at the Satellite Stations. As a guide, the Transport Containers are filled at a rate of 1.0 g/3.8 L per hour for the MultiSurface Concentrate and 1.4 g/5.3 L per hour for the MultiMicro Concentrate.

4. What is the shelf life of the concentrates at the satellite locations?

MultiSurface Concentrate has a shelf life of 90 days. MultiMicro Concentrate has a shelf life of 30 days.

INSTALLATION

1. Who installs the Orbio[®] os3 system?

The Orbio Authorized Distributor, its subcontracted professional installers, the end-user or Tennant Service will inspect the site to determine whether there are any required modifications to plumbing or electrical connections. Any necessary modifications to plumbing and electrical connections are the responsibility of the customer and must be done before the installation of the os3 system. Necessary specifications and guidelines will be supplied. The Orbio Authorized Distributor, the end-user or Tennant Service will then connect the components, ensure it is operating correctly and provide training for the site operators, managers, etc.

2. What is needed for installation? (power, water flow, drainage, etc.)

The os3 Generator can be installed in most locations with the following:

- A standard AC power outlet in 120V/60 Hz or 240V, 50/60 Hz
- A water supply with a minimum of 3 gpm/11 Lpm flow and a minimum of 30 psi/2 bar pressure
- A drain that can accept a minimum 2.0 gpm/ 7.6 Lpm

The os3 Satellite System without a water softener only requires a water supply with a minimum of 3 gpm/11.4 Lpm flow and a minimum of 30 psi/2 bar pressure and maximum of 85 psi/6 bar pressure.



Complete instructions and guidance for installation will be supplied.

3. Can hot water be supplied to the os3 unit?

No. High water temperatures do not electrolyze properly and can cause potential damage to the various plastic and other components in the generator and water softener. Cold or room temperature water must be used as a supply.

4. Where is the unit typically installed in a facility?

The best location for the Orbio[®] os3 Generator is typically where the cleaning machines are filled today. The best location for the os3 Satellite System is typically where spray bottles or buckets are most often filled today.

CONSUMABLES AND MAINTENANCE

1. What consumables are needed to keep the unit operating?

The only consumable that needs to be added to the water softener is standard water softener salt pellets.



2. Is special salt required?

Standard water softener salt pellets (typically 1"/25mm x 3/4"/18mm) used in residential or commercial water softeners that are made from solar or evaporated methods are required. Rock salt, ice melt, table salt or salt other than salt pellets cannot be used.

3. What other maintenance is required?

The Orbio os3 Generator has three wear components — a pH probe, e-Cell and Manifold. The os3 Generator displays the "status" of the life of each of these components through a screen on the display. When the expected life of the component(s) is nearing its end, the unit will begin to display an icon on the "Home" screen, indicating to the operator or site manager that replacement of the component is nearing.

4. Who services and maintains the os3?

Planned maintenance and service programs are available through Tennant Service and through Authorized Orbio Distributors. Alternately, customers may elect to maintain and service the os3 themselves.

TESTING AND THIRD PARTY VERIFICATIONS

1. What hard surface cleaning tests were done with the MultiSurface Cleaner?



In third-party testing conducted by TURI (Toxic Use Reduction Institute), the MultiSurface Cleaner worked as well as two comparative products using manual cleaning for all purpose soils and worked as well as two comparative products for glass soil removal using manual wiping. This third-party test report as well as a Test Summary Sheet is available.

2. What carpet cleaning tests were performed and what listing does the MultiSurface Cleaner have?



The MultiSurface Cleaner is part of a Deep Cleaning System that has CRI (Carpet and Rug Institute) Platinum Level Seal of Approval. The Seal of Approval can be viewed at www.carpet-rug.org. A one page certificate is also available.



The MultiSurface Cleaner is a WOOLSAFE approved environmentally preferred product for use on wool and advanced generation synthetic carpets and rugs. A one-page Green WOOLSAFE certificate is available.

3. What other listings or approvals does the MultiSurface Cleaner have?



The National Floor Safety Institute (NFSI), a not-for-profit group dedicated to reducing slip-and-fall accidents, has certified the MultiSurface Cleaner as a high-traction product. NFSI certified products must pass a two-phase wet slip resistance process and have been shown to reduce the potential for slip-and-fall accidents. A one-page certificate and letter of conformance is available.



The MultiSurface Cleaner is registered by NSF International (NSF) as acceptable for use as a general cleaner, floor and wall cleaner in and around food process areas where it is not intended for direct-food contact. A one-page certificate and letter of registration is available.



The MultiSurface Cleaner is acceptable for use in food processing facilities as a non-food chemical product by the Canadian Food Inspection Agency (CFIA). A two-page acknowledgement letter is available.