



Orbio[®] os3 MultiMicro[™] Overview, United States EPA Standards

Summary: MultiMicro *Concentrate*, diluted to a ready-to-use (RTU) solution called MultiMicro *200*, is effective as a one-step cleaner-disinfectant (broad-spectrum and hospital-grade) with a contact time of 10 minutes, a food contact surface sanitizer with a contact time of one minute, and a non-food contact surface sanitizer with a contact time of five minutes. One solution meets the United States EPA standards for efficacy in all three categories at the same concentration – 200 ppm free available chlorine (FAC). Produced as a concentrate by the Orbio os3 generator and diluted to its RTU format by the os3 dispenser or an Orbio satellite dispensing system, the solution is effective against a wide variety of microorganisms, including bacteria, antibiotic-resistant bacteria, viruses, and fungi.

Efficacy Claims

MultiMicro *200* is an effective food contact and non-food contact surface sanitizer as well as a one-step cleaner-disinfectant at the same 200 ppm FAC concentration. Efficacy testing has been performed using the procedures in accordance with EPA-registered disinfectants and sanitizers. Testing of MultiMicro *200* has been performed by a third party laboratory under good laboratory practice (GLP) regulations¹.

In order to establish efficacy claims as a one-step cleaner-disinfectant, a defined amount of organic soil must be incorporated into the test protocols. All disinfectant efficacy tests were passed in the presence of 5% organic soil, supporting the claim of MultiMicro *200* as a cleaner-disinfectant under EPA regulatory guidelines.

Stability Overview

Independent testing has established the length of time that MultiMicro *200* solution remains effective after it is dispensed from the os3 system or an Orbio satellite system. When held in a closed container at the RTU concentration of 200 ppm FAC, MultiMicro *200* solution has a shelf life of seven days. All closed containers should be emptied after seven days and refilled from the os3 system or Orbio satellite system.

The os3 generator creates and holds a concentrated form of solution called MultiMicro *Concentrate*. MultiMicro *Concentrate* is held in the os3 generator until it is dispensed in RTU form or transferred into Orbio transport containers for use with the Orbio satellite system.

The MultiMicro *Concentrate* was tested separately for stability, and found to remain stable for a period of 30 days inside the os3 generator tank or in transport containers. To ensure proper concentration levels,

¹ At 200 ppm FAC, MultiMicro *200* is effective as a broad-spectrum and hospital-grade cleaner-disinfectant on hard non-porous surfaces based on EPA-approved AOAC methods 955.15, 964.02, and 955.14. In addition, MultiMicro *200* satisfied the testing requirements for claims of sanitization of food contact and non-food contact surfaces using AOAC-approved methods that most closely approximate the intended use of MultiMicro *200*, e.g. applications that include delivery by a coarse spray, mop and bucket and other appropriate systems.

the MultiMicro™ tank in the os3 generator must be evacuated at least every 30 days. The os3 system will automatically generate new solution.

If a transport container of MultiMicro *Concentrate* is not completely used within 30 days, the Orbio satellite system dispenser should be used to empty the transport container, and the solution should be discarded down a standard drain. The container can then be filled with fresh MultiMicro *Concentrate* from the os3 generator.

os3 System Overview

The os3 system², from Orbio Technologies, a Tennant Company group, includes a generator, water softener, and dispenser. It can be expanded with the addition of optional Orbio satellite systems that allow MultiMicro *Concentrate* to be transported to remote locations within a facility, diluted, and dispensed using processes that are very similar to those used to distribute conventional chemical concentrates throughout a facility.

Through electrolysis, the os3 generator uses salt, softened water and electricity to produce two solutions – free available chlorine, in the form of hypochlorous acid (HOCl), and sodium hydroxide (NaOH). During the electrolytic process, softened tap water and a salt brine solution are passed into two chambers of an electrolytic cell, separated by an ion exchange membrane. A low voltage is applied to an anode (positive) and a cathode (negative) in the cell. Positive ions Na⁺ and H⁺ are attracted to the cathode, creating NaOH, an effective cleaning solution. Negative ions Cl⁻ and OH⁻ are attracted to the anode, creating HOCl, an effective antimicrobial solution. These concentrated solutions are held inside separate tanks in the os3 generator until they are diluted with softened water and dispensed as RTU solutions through the os3 dispenser. Throughout the process, critical characteristics such as current, voltage, pH, flow rates, etc., are monitored to produce a consistent output.

MultiMicro 200, the HOCl solution produced by the os3 system, is a single solution that can be used as both a cleaner-disinfectant with a 10-minute contact time as well as a surface sanitizer (food contact, one-minute contact time, and non-food contact, five-minute contact time) on hard non-porous surfaces such as glass, metal, ceramic, laminate painted and other surfaces. MultiMicro 200 can be delivered as a coarse spray through spray bottles, or used in mop buckets, flat microfiber mop systems and other equipment.

The NaOH solution produced by the os3 system, called MultiSurface *Cleaner* in its RTU form, is an effective cleaner of organic fats and soils on a wide range of surfaces including glass, metal, sealed concrete and stone, ceramic, laminate, plastic, various hard floor surfaces, and carpets including wool and advanced-generation synthetic carpets. It can replace conventional all-purpose cleaners, stainless steel cleaners, glass cleaners in spray bottles, mop buckets, flat microfiber mop systems, and chemicals used in automatic floor and carpet cleaning equipment.

² The os3 system is regulated as a pesticide device manufactured at EPA establishment number 090643-KY-0001.

