STERYBOX FAQ

(FREQUENTLY ASKED QUESTIONS)

Sterybox is very effective on bacteria, spores, etc. What is the reason Sterybox is also very effective in killing the viruses ?

Bacteria are stronger than viruses when exposed to UVC irradiation, and spores are over 10 times stronger than bacteria. This way, as STERYBOX is able to denature the DNA of the spores and bacteria, it is evidenced that its action is also very effective on viruses.

Ultraviolet dosage required for 99.9% destruction of various organisms		
Required UVGI at 254 nanometer	**µW/sec/cm2**	**Sterybox Test**
Escherichia coli (bacteria)	**7.000**	**PASSED**
Pseudomonas aeruginosa (bacteria)	**10.500**	**PASSED**
Salmonella bony (bacteria)	**8.000**	**PASSED**
Staphylococcus aureus (bacteria)	**7.000**	**PASSED**
Vibrio cholerae (bacteria)	**6.500**	THEORIC
Candida Albicans (mold spores)	**290.000**	**PASSED**
Aspergillus niger (mold spores)	**330.000**	**PASSED**
Bacteriophage (E. coli) virus	**6.600**	THEORIC
Rotavirus (SARS)	**24.000**	THEORIC
Hepatitis virus	**8.000**	THEORIC
Influenza virus	**7.000**	THEORIC
Polio virus	**6.000**	THEORIC

UV ENERGY IN MICROWATT-SECONDS PER SQUARE CENTIMETER REQUIRED FOR THE GENETIC INACTIVATION OF THE FOLLOWING MICROORGANISMS

BACTERIA	
Agrobacterium tumefaciens	8500
Bacillus anthraci	8700
Bacillus megaterium (vegetative)	2500
Bacillus subtilis (vegetative)	11000
Clostridium tetani	22000
Corynebacterium diphtheriae	6500
Escherichia coli	7000
Legionella bozemanii	3500
Legionella dumoffii	5500
Legionella gormanii	4900
Legionella micdadei	3100
Legionella longbeachae	2900
Legionella pneumophila (Legionnaires disease)	3800
Leptospira interrogans (Infectious Jaundice)	6000
Mycobacterium tuberculosis	8500
Neisseria catarrhalis	10000
Proteus vulgaris	6600

Pseudomonas aeruginosa (laboratory strain)	3900
Pseudomonas aeruginosa (environmental strain)	10500
Rhodospirilium rubrum	6200
Salmonella enteritidis	7600
Salmonella paratyphi (Enteric fever)	6100
Salmonella typhimurium	15200
Salmonella typhosa (Thyphoid fever)	6000
Sarcina lutea	26400
Serratia marcescens	6200
Shigella dysenteriae (Dysentery)	4200
Shigella flexneri (Dysentery)	3400
Shigella sonnei	7000
Staphylococcus opidermidis	5800
Staphylococcuc aureus	7000
Streptococcus faecalis	10000
Streptococcus hemolyticus	5500
Streptococcus lactis	8000
Viridans streptococci	3800
Vibrio cholerae (Cholera)	6500
MOLD SPORES	
Mucor ramosissimus (white gray)	35200
Penicillum expensum	22000
Penicillum roqueforti (green)	26400
ALGAE	
Chlorella vulgaris	22000
VIRUSES	
Bacteriophage (E. coli.)	6600
Hepatitis virus	8000
Influenza virus	6600
Poliovirus	21000
Rotavirus	24000
YEAST	
Baker's yeast	8800
Brewer's yeast	6600
Common yeast cake	13200
Saccharomyces var.ellipsoideus	13200
Saccharomyces sp	17600

Since SARS is not an airborne disease, is STERYBOX effective ?

SARS is a virus that is transported by dust and water molecola, it goes in the air joint with them. In an environment protected by STERYBOX the air and all suspended particles are exposed to its action. Performed tests have shown its efficacy with bacteria and spores carried by nebulized water (aerosol).

What about the noise level of STERYBOX ?

STERYBOX has positively passed “noise emissions tests” conducted by a specialistic independent laboratory. It has been evidenced that STERYBOX has a very low noise level perfectly in conformity, and even lower, with the international regulations on this subject.

How does STERYBOX eliminate micro-organisms in the air?

The air is aspirated by the device through two noiseless axial fans and it is subjected to an intense germicidal UV-C radiation field (254 nanometres) inside the device, through a WORLDWIDE PATENTED (WO 02/076517) coil system; the sterilized air is then ready to be safely released into the room. Thanks to a continuous change of air, we can have a total disinfection of the room air with 2 complete air changes per hour.

What is so special or unique about your patented coil system?

The term “coil” can be misleading. Rather, it is the design of the device that allows the air to flow in a “coiled” manner. In the system, five lamps of 25 watts each are arranged in a multi-stadium horizontal way and each completely covered in mirrored stainless steel labyrinth panel system, through which the air flows, to increase reflection of up to 4 times the initial generated UV-C rays. That is to say that the output or intensity of the light is amplified 4 times. The layout of the 5 lamps ensures and enables the air to flow through 2.5 m (8 feet) of UV-C Light. This design also increases the statistic possibility of the air stream flowing in contact with at least one lamp. The combination of these factors results in elimination of up to 99.99% of viruses and bacteria present in the air - longer exposure of the air with the lamps, increased intensity/reflection of the UV-C Light of up to 4 times the original and increased possibility of the air being in contact with at least one lamp.

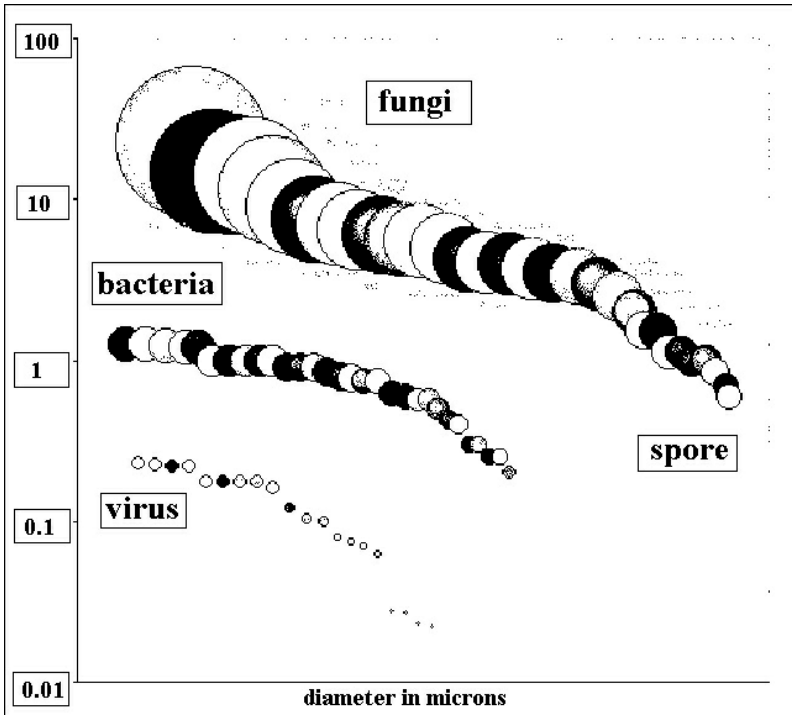
There are other UV-C Airborne Disinfection Devices in the market. In terms of the “killing power”, how does STERYBOX stand out from the rest?

The difference is in the amount of the UVC irradiation as mentioned in (2). Other devices in the market are standard linear flow systems. Whereas Sterybox uses the new UV-CHRIS patented system - UltraViolet High Reflecting Coil Irradiation System which delivers a concentration of ultraviolet radiations of up to 400% times higher as compared to the standard linear flow devices available in the market. Furthermore, Sterybox is the only device with official microbiological decontamination results, and with a dedicated scientifical documentation performed by indipendent laboratories. The installation of hundreds of unit per year in the hospitals' clean rooms and operating theaters is a guarantee itself.

Some devices uses the combination of a filter and UV-C irradiation in their system. Isn’t this more effective than STERYBOX which doesn’t employ filters?

No, in fact the reverse is true. Most of the units are little apparatus with filters, and with one or more lamps delivering a poor UVC-Output (it is indipendent from the lamp watts - the UVC Output factor depends from the quality of the UVC lamps). The filter becomes a "retentive grid" in which the big sized organisms (some germs, most spores and fungi) are stopped and remain alive. Otherwise, the small sized organism (viruses and some bacteria) can both pass thru the filter and be delivered outside alive or, more dangerours, join with resident 'big sized' organism and increase togheter in number, resistance and form. In some equipment, the lamp makes its action on the filters, trying to kill the bacteria, but it is an indirect action with an high probability not to be efficient at all (tissue filters have a thickness which is enourmos compared with the size of a bacteria or a virus). It is only effective for the microrganisms trapped in the first layer of the filter tissue, but the others in the internal layers of the filter may remain active for a very long time. By the way, most of the viruses can escape outside because they are up to 100 smaller in size than bacteria. The lamp(s), being linear in design, have a shorter exposure time for the viruses that filtered through, rendering it very much less effective on viruses.

Moreover, for STERYBOX, there is no risky handling or replacing of contaminated filters which are also troublesome to maintain.



If there are no filters in STERYBOX, where do all the particles (dusts, virus, bacteria, spores, moulds, germs) go to? Will they accumulate in the box and therefore require regular maintenance/cleaning?

The particles flow rapidly into the "tunnel" and goes out with the air stream without stopping inside. The germs, viruses, bacteria, etc. do not exist anymore. They just become dead organisms (as ash). After 8000 hours of use, during the changing of the lamps, the internal stainless steel panel can be easily cleaned with detergent.

Does STERYBOX consume much energy? What is the energy consumption rate of STERYBOX?

The consumption is very low: 180 watt only.

If there are two air changes per hour as mentioned above, wouldn't the device have to be switched on for at least half an hour before we can use the room, disrupting our work schedule?

Automatic starting and stopping of the device can be set using an electronic timer (hour/day) control switch. Operations for the setting are easy and rapid thanks to an user-friendly system with LCD display and multilenguage step-by-step instructions.

Is there any danger of UVC exposure? Is STERYBOX safe to use?

This is a CE marked product, absolutely safe and respects the international regulations. The manufacturing company is also certified by the TUV- Germany quality institution for a foultless and homogeneous production. Each device is also tested singularly (not with the standard CST 'casual sample test' process 1:10 or 1:50) for the EMC 'electrical and electromagnetical compatibility' to avoid interferences with the other sophisticated devices installed and used in the operating theaters. There are two levels of protections. Firstly, STERYBOX is safely closed by

means of various panels. The germicidal radiation remains only inside the unit, and the operators can work absolutely safe in the room when Sterybox is on. Secondly, there is also a safety anti-opening switch control that switches off the UV Light in the event that the box is accidentally opened. Therefore, the spreading of the UV-C light in the room is prevented and it eliminates any danger.

Can STERYBOX be used 24 hours a day?

On/Off cycles are completely automatic, and can also be easily programmed for 24 hours a day use. STERYBOX can work 24 hours a day in the presence of people. Thanks to its design and thecnical features, no fraction of the germicidal radiation can strike the eyes and skin directly. Each component which have a continue operative stress (fans, timer) and each component subject to exposition at the agressive UVC rays (connectors, wires) is designed and engineered to work continuosly for years.

Does the UV-C lamps in STERYBOX create ozone like most of the standard UV-C lamps?

First af all, the Ozone concentration created by most of the standard UVC lamps is really dangerous for the human health. Sterybox does not create ozone for a total operative safety. Sterybox uses special lamps and has passed the Ozone tests with a "No Ozone Traceability". The 'Ozone Free' report is included in each device and it has been performed by an indipendent laboratory. The report also includes the worldwide Ozone limit concentration parameters (restricted by the law) for public/working facilities. The special lamps of Sterybox do NOT contain Lead neither Mercury neither other heavy metals.

How do I know if any of the lamps (bulbs) is not working?

There is an indicator panel on the box that shows the conditions of the bulbs. If a certain light is not working, its corresponding indicator light will be off. In this way, you can be sure that its germicidal radiation is optimum and effective.

Does STERYBOX require much maintenance?

Maintenance is minimal: a change of lamps every 8,000 hours, with an average duration of 2 years for a day use and of 1 year for a continuous day/night use. Lamps are easily replaced in a few minutes. Each component of the device is under warranty for 12 months (only the lamps are subjects to technical verification prior warranty application).

What is the size of STERYBOX?

STERYBOX combines optimal performances with an incredibly small size: width 50 cm (1’ 8’’), height 60 cm (2’), thickness 15 cm (6”). Its weight is 25 Kgs.

Why is it that STERYBOX is designed to be mounted on the wall rather than as a portable floor unit?

The Sterybox goal is to prevent aerial cross infections in dangerous areas. It can be also moved by different locations or temporary positioned on a bench or strong trolley, but the correct installation on the wall will deliver the same results of the performed microbiogical tests.

How many Steryboxes do I need for my room?

STERYBOX sterilizes the air in a room of up to 20 sqm with a 2.5m high ceiling (200 sq ft with a 9 ft high ceiling). In the case of bigger rooms, place two units or more on different walls.

Instead of having more than one unit of Sterybox in one room, why not have bigger boxes designed for bigger rooms?

The concept to make bigger machines for bigger rooms is wrong. More machines in different positions is right. This concept of multi-devices is better then one only bigger device in size because it increases the air changing ratio with a better optimization of the air flows in the room. In short, with a bigger device, located in a square room, you may have static areas in which the air is not influenced by flow pressure. In this case the viruses and small bacteria can become resident on surfaces carried by the powder particles. The Sterybox has the sterilized air exit on the lateral side of the body: in a square room two or more devices installed on the opposite walls create a 'circle continuos air flow' which reduces the possibility to have 'static areas'. The air-intake is from the upper part of the device: the sterilized delivered air, after its circle flowing, goes up to the ceiling for the heating (conditioning, humans, equipment, sun rays through windows, etc.) and, reached the ceiling, becomes attracted by the negative pressure created by the Sterybox.

Do you have scientific proof on the effectiveness of STERYBOX?

Yes, Sterybox has passed strict controls that prove its effectiveness both in microbiology laboratories and in medical, dental and veterinarian surgeries, and guarantee its full functionality and utility.

Who carried out the test?

Tests were carried out by external laboratories recognized by Governament Health Institutions and they were accredited by the competent bodies (ISO 9001 BVQI (Bureau Veritas Quality International Italia Srl - SINAL EN 45001 (Sistema Nazionale per l'accreditamento dei Laboratori - Authorization by the Italian Health Ministry to perform laboratory tests under GLP and GMP rules - Authorization by the Italian Health Ministry to release the CE certification mark under the 93/42/CEE - The effectiveness of the sterilization through exposure to UV-C rays is proven also by several researches in prestigious institutes and Universities worldwide and published in several scientific journals, available from every ordinary source of medical information (Pubmed); a collection of these articles to explain the universal known effects of UVC and the specific scientific documentation for the device is inside each device or delivered upon request. Sterybox is produced in Italy in accordance with EU laws with 12-month warranty.

How do you sum up STERYBOX?

STERYBOX is a professional unit dedicated to hospitals, operating theaters, sterilization rooms. It has the widest functional tests documentation available. If the need is "sterilization of the air in a room", STERYBOX is the only equipment with a reliable scientific documentation. Most of the other machines on market are sold without a system concept or functional results from microbiological tests performed by independent and recognized institutions". Potential customers should understand that we do not have competitors at all because all other UVC sterilizers models in the market still do NOT show significant tests performed by independent laboratories with an independent test protocol. Some of them have very poor and not reliable scientifical reports, some of them performed only efficacy tests with one kind of popular bacteria as Escherichia Coli (this test shows the efficacy of UVC against bacteria, not the real decontamination of the air contained into a room with passing of people), and the others have no documentation at all. At this moment Sterybox is the only device with efficacy tests performed in operative conditions with animals and humans.