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Manual # UVS1R2MD

Introduction to UV

Ultraviolet radiation (UV) comes naturally from the sun. There are also some manmade lamps and tools (welding tools, for instance) that can produce UV radiation. For most of us, however, the sun is the primary source of UV. UV is divided into at least three different categories based on wavelength:

UVA wavelengths (320-400 nm) are only slightly affected by ozone levels. Most UVA radiation is able to reach the earth's surface and can contribute to tanning, skin aging, eye damage, and immune suppression.

UVB wavelengths (280-320 nm) are strongly affected by ozone levels. Decreases in stratospheric ozone mean that more UVB radiation can reach the earth's surface, causing sunburns, snow blindness, immune suppression, and a variety of skin problems including skin cancer and premature aging.

UVC wavelengths (100-280 nm) are very strongly affected by ozone levels, so that the levels of UVC radiation reaching the earth's surface are relatively small. This is also known as Germicidal UV. ILAB's Ultra V Cleaner series of products use the 254nm UV-C range of ultraviolet light.

All UV radiation can be damaging. Studies have shown that increased UV radiation can cause significant damage, particularly to small animals and plants. Phytoplankton, fish eggs, and young plants with developing leaves are particularly susceptible to damage from overexposure to UV.

UV sterilization is widely used to treat air and water in hospitals, aquariums, ponds, commercial buildings, food processing plants, home water treatment, pet care and other areas requiring sterilization. It has been widely used to kill bacteria, fungi, mold spores, cysts , yeasts , eliminate water borne algae, and prevent the spread of disease. UV Sterilization is a proven, dependable and effective method that alters or disrupts the DNA and RNA of target organisms, and eradicates effectively without any harmful residuals.

Germicidal UV is primarily intended for the destruction of bacteria and other microorganisms in the air or on exposed surfaces. In order for ultraviolet light to kill bacteria, the rays must directly strike the microorganism. Germs floating in the air or on an outer surface may easily be reached by the ultraviolet rays and, therefore, are readily destroyed. If the bacteria or mold spores are hidden below the surfaces of a material or are not in the direct path of the rays, they will not be destroyed.

Applications

Commercial
Doctor's offices , waiting rooms, patient care rooms
Dentist offices, waiting rooms, patient care rooms
Hospitals, waiting rooms, patient care rooms
Mail and package virus and bacteria elimination
Restaurant kitchen counter tops
Restaurant tables
Cutting boards

Industrial
Fish processing
Meat processing
Mail and package virus and bacteria elimination

Residential
Kitchen counter tops
Cutting boards
Baby's room
Bathrooms
Mail and package virus and bacteria elimination

iLAB's Ultra V Cleaner series provides fast and effective sterilization of germs, viruses, algae and mold.

Our Ultra V Cleaner series products are designed with personal and public protection in mind. The UVS-1 Instant Surface Sterilizer is ideal for fast sterilization of surfaces such as desks, reception counters, tables and other surfaces.

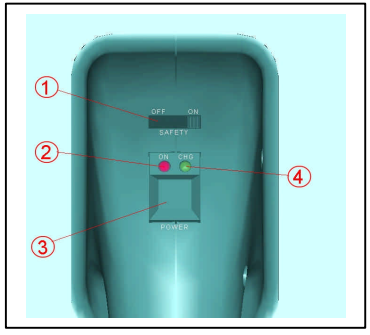
Use it to help protect your staff, patients, customers and visitors by keeping a UVS-1 near these surfaces for fast and easy periodic sterilization.

The iLAB Ultra V Cleaner UVS-1, is safe and effective and does not leave behind any chemical residue because it uses no chemicals or additives. **However, do not expose any person or living thing to the UVS-1's light. The light is harmful, this is how it destroys microorganisms.**

The UVS-1 is lightweight and designed for a variety of applications. It has an intensive germicidal effect that effectively kills micro-organisms, such as viruses, bacteria, fungi and yeasts by rendering them incapable of reproducing.

Sliding the UVS-1 across surfaces allows the UVS-1 to focus its UV light onto the viruses, bacteria, fungi and yeasts underneath as it passes over. The multiple contact switches on the bottom of the UVS-1 provide a safety mechanism so that if the unit is lifted off of the surface, the UVS-1 will automatically turn off. The UVS-1 is cordless, and can be plugged into its external battery charger after use.

Never look at the UVS-1 bulb while it's on, or shine the UVS-1 light onto any part of your body.



① Safety On/Off
② Power to Bulb On
③ Power on/off switch
④ Battery charging indicator

Pressing the power switch for 1 minute before use yields the best results. Use between 1 and 12 minutes for optimum results.

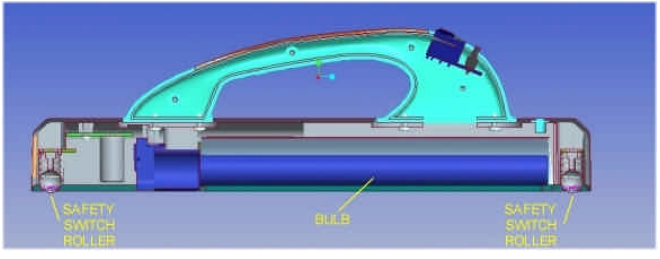
The exposure to UV necessary to kill microorganisms is the product of time and intensity. High intensities for a short period of time, or low intensities for a long period are fundamentally equal in lethal action on microorganisms disregarding the life cycle of the microorganisms.

UV will not penetrate most substances. Meat, cloth and food will not be sterilized by exposing to UV because the rays do not go beneath the surface. Even ordinary glass is too opaque for UV. Among the very few exceptions to this rule are clear water, which does permit some penetration, certain plastic films and specialty glass such as quartz glass.
Do not expose any person or living thing to the UVS-1's light. The light is harmful, this is how it destroys microorganisms.

The UVS-1 is not a toy, do not let children access it. Only allow qualified adults who have read this manual to operate it.

Using the UVS-1

To use the UVS-1, place it flat on the surface as pictured on the right. Press the power switch ③ and slide across surface. The slower you move, the more effective the sterilizing power is.



Place on a surface to be sterilized.

Press the power button and slide across the surface in a wiping motion.

As it passes over an area, the area shown in yellow is sterilized.

Repeat as necessary to cover all surfaces.

Using the UVS-1 on uneven surfaces

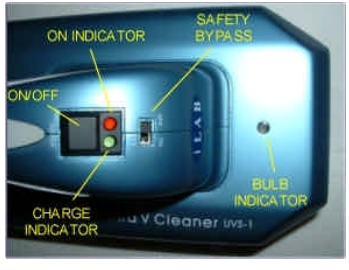
The safety switch ① should be normally in the "On" position.

But in order to use the UVS-1 on uneven surfaces where the two contact rollers don't depress, like the edges of a cutting board or table, computer keyboards, etc. , the safety can be turned off by setting the safety switch ① to the "Off" position. Caution should be used to ensure that the light doesn't shine directly on to anyone or reflect off of objects, glass, mirrors, metal, etc. The light is harmful to humans as well as microorganisms.

Is it working ?

With the safety switch ① "On", the UVS-1 will not operate unless both rollers are depressed by laying the UVS-1 on a flat surface.

To see if the bulb is working, look to see if the clear round window (bulb indicator) on the top front of the UVS-1 lights up in a bright blue color when the power switch is pressed. You will see a distinctive blue light when the UVS-1 is working.
Never turn the UVS-1 over and look at the bulb. This can cause damage to your eyes. Always point the UVS-1 away from you.



Recharging the batteries

The safety switch ① must be in the "On" position.
Place the UVS-1 on a flat surface and connect the external battery charger to the DC in connector on the side of the UVS-1 and plug the external battery charger in.

Leave the UVS-1 plugged in for 1 hr to fully recharge the batteries. The charge LED ④ will light when the batteries are being charged or if the unit is being operated while the external battery charger is plugged in.

Using the UVS-1 on low batteries

When the batteries are low, the distinctive blue light will be dim or go out. You can plug the UVS-1 into it's external battery charger and use it while the external battery charger is plugged in.

The charge LED ④ will light when the batteries are being charged or if the unit is being operated while the external battery charger is plugged in.

RECYCLING NICKEL METAL-HYDRIDE BATTERIES
Nickel Metal-Hydride (Ni-MH) batteries are recyclable. ILAB America asks you to help preserve our environment and recycle any unwanted Ni-MH batteries at your nearest recycling facility for proper disposal.
Caution: Do not handle damaged or leaking batteries.

Replacing the bulb

The bulb should be replaced after 1,000 hrs of use, regardless if it is still operating. This is due the UV output of the bulb normally degrading over time. The light might appear to be operating by looking at the bulb indicator, but you can't see the UV light.

The safety switch ① must be in the "On" position.

Unplug the External battery charger.

Place the UVS-1 on its side, and be sure not to press the ③ power switch. Also, be careful that the Power switch and Safety switch can't be accidentally pressed.

Remove the screws from the bottom plate and remove the bottom plate.

Pull the bulb out of the bulb socket with a slight up/down motion.

Insert the new bulb and secure the bottom plate. Be sure it is fully seated in the socket.

Turn the UVS-1 so that the bottom is on a flat surface for normal operation and test.

Troubleshooting

The power switch is pressed, but I don't see any light.

1) Set the UVS-1 on a flat surface, and try again. See if the power LED ② lights and you see a distinctive blue light. If it works, then in the future, be sure to set the UVS-1 on flat surfaces where the rollers make good contact.

2) If it still doesn't light, set the safety switch to "Off" and try again. If the power LED ② lights and you see a distinctive blue light, then in the future, be sure to set the UVS-1 on flat surfaces where the rollers make good contact

3) If it still doesn't light, connect the external battery charger to the DC in connector on the side of the UVS-1 and plug the external battery charger in. Try the power switch again. If it works, then the batteries must be recharged. Leave the UVS-1 plugged in for 1 hr to fully recharge the batteries.

4) If it still doesn't light, then the bulb is defective. Replace the bulb only with iLAB's UVS-1 replacement bulbs. Ordinary bulbs will not work.

Blackening at Ends of Fluorescent Tubes

This is a common with most fluorescent tubes as they are used.

Frequent or repeated starting can accelerate the process.

The black areas don't affect operation except to slightly reduce the amount of light output at the blackened area.

Bacteria, Mold, Algae, Virus, Cyst, and Yeast chart

The following chart shows various Bacteria, Mold, Algae, Virus, Cyst, and Yeast and the amount of UV-C energy required to eliminate it by rendering it incapable of reproducing.

The amounts listed are by 1 second doses. This means that if for example it takes 6,600 to eliminate Influenza, and the unit outputs 3,700, then it will take 1 3/4 seconds to effectively eliminate Influenza. The dosage can be added too, so for example, passing over 2 times at 1 second each yields 2 x 3,700.

Bacteria, Mold, Algae, Virus, Cyst, and Yeast	Commonly called:	UV energy required
BACTERIA		
Bacillus anthracia	Anthrax Virus (not spores)	8,700
Bacillus anthracia	Anthrax Spore	40,000
Agrobacterium tumefaciens	Crown Gall Disease (plants)	8,500
Bacillus Megatherium	Wet wood Disease	5,200
Bacillus subtilis	(vegetative)	11,000
Clostridium Tetani	Tetanus/Lockjaw	23,000
Corynebacterium diphtheria	Diphtheria	6,500
Escherichia coli	Coli	7,000
Legionella bozemanii	Pontiac Fever	3,500
Legionella dumoffii	Pontiac/Legionnaires	5,500
Legionella gormanii	Pontiac/Legionnaires	4,900
Legionella micdadei	Pontiac/Legionnaires	3,100
Legionella longbeachae	Pontiac/Legionnaires	2,900
Legionella pneumophila	Legionnaires Disease	3,800
Leptospira interrogans	Infectious Jaundice & Leptospirosis	6,000

Bacteria, Mold, Algae, Virus, Cyst, and Yeast	Commonly called:	UV energy required
BACTERIA		
Moraxella catarrhalis	Meningitis, Endocarditis, Pneumonia, Bronchitis, Otitis Media, Sinusitis, Bactoremia	8,500
Mycobacterium tuberculosis	Pulmonary Tuberculosis	10,000
Proteus vulgaris	Urinary Tract Infection, Bacteremia, Pneumonia and Focal Lesions	6,600
Pseudomonas aeruginosa	Laboratory Strain	3,900
Pseudomonas aeruginosa	Environmental Strain UT I, Septic Arthritis, Conjunctivitis, Endocarditis, Meningitis	10,500
Rhodospirillum rub rum	Bacterium	6,200
Salmonella enteritidis	Gastroenteritis, Enteric Fever, Osteomyelitis	7,200
Salmonella paratyphi	Para-Typhoid Fever, Enlargement of Spleen	6,100
Moraxella catarrhalis	Meningitis, Endocarditis, Pneumonia, Bronchitis, Otitis Media, Sinusitis, Bactoremia	8,500
Proteus vulgaris	Urinary Tract Infection, Bacteremia, Pneumonia and Focal Lesions	6,600
Pseudomonas aeruginosa	Laboratory Strain	3,900
Pseudomonas aeruginosa	Environmental Strain UT I, Septic Arthritis, Conjunctivitis, Endocarditis, Meningitis	10,500

Bacteria, Mold, Algae, Virus, Cyst, and Yeast	Commonly called:	UV energy required
BACTERIA		
Pseudomonas aeruginosa	Environmental Strain UT I, Septic Arthritis, Conjunctivitis, Endocarditis, Meningitis	10,500
Rhodospirillum rub rum	Bacterium	6,200
Salmonella enteritidis	Gastroenteritis, Enteric Fever, Osteomyelitis	7,200
Salmonella paratyphi	Para-Typhoid Fever, Enlargement of Spleen	6,100
Salmonella typhimurium	Gastroenteritis	15,200
Salmonella typhose	Typhoid fever, Enteric fever, Typhus Abdominales	6,000
Sacina lutea	Reproductive Problems	26,400
Serratia marcescent	Septicaemia, Abscesses, Burn Infections, Osteomyelitis	6,200
Shigella dysenteriae	Dysentery - Enteric Infection	4,200
Shigella flexNeri	Dysentery	3,400
Shigella sonnei	Enteric Infection	7,000
Staphylococcus opidermidis	Bacteraemia, Wound Infection, Endocarditis, Catheter-Related Sepsis ,Toxic Shock Syndrome, Osteomyelitis	5,800

Bacteria, Mold, Algae, Virus, Cyst, and Yeast	Commonly called:	UV energy required
BACTERIA		
Staphylococcus aureus	Staphylococcal Diseases, Impetigo, Toxic Shock Syndrome, Food Poisoning, Intoxication	7,000
Enterococcus faecalis	Urinary Tract Infection and Bacterial Endocarditis	10,000
Streptococcus hemolyticus	Various Infections	5,500
Streptococcus lactic	Various Infections	8,000
Viridans streptococci	Invasive Infections	3,800
Vibrio cholera	Cholera	6,500
MOLD SPORES		
Mucor ramosissimus	Sinuses, Brain, Eyes, Lungs, & Skin Infections	35,200
Penicillium expansum	Blue Mold	22,000
Penicillium roqueforti	Fungi	26,400
ALGAE		
Chlorella vulgaris	Green Algae	22,000
CYSTS		
Giardia Lamblia	Giardiasis	5,000 - 10,000
Chryptosporidium	Diarrheal Disease	5,000 - 10,000

Bacteria, Mold, Algae, Virus, Cyst, and Yeast	Commonly called:	UV energy required
VIRUSES		
Bacteriophage	E. Coli / Bloody Diarrhea / Hemorrhagic Colitis	6,600
Hepatitis Virus	Hepatitis	8,000
Influenza Virus	Influenza	6,600
Polio virus	Polio	21,000
Rota virus	Rota Virus	24,000
Small Pox Virus	Small Pox	9,000
Severe Acute Respiratory Syndrome	SARS	unkown
YEASTS		
Trichosporon	Bakers Yeast	8,800
Brewers yeast	Brewers Yeast	6,600
Common yeast cake	Yeast Cake	13,200
Saccharomyces var. ellipsoideus	Saccharomyces	13,200
Saccharomyces sp	Saccharomyces	17,600</tbody>

Technical Specifications

Size: 12"L x 3.5"H x 4"W

Spectrum: Primary UV-C Wavelength 254 nm

Power Output : 3,700 uW/cm2 (iLAB # IL-18WTUV)

Power Requirements: NiMH,internal rechargeable batteries

External Battery Charger / DC supply 13.5VDC @ 1A

Temperature: 5-45 degrees Celsius , natural convection cooling
0-90% relative humidity (non-condensing)
External Cooling Fins: 30 degrees Celsius maximum operating from batteries, 60 degrees Celsius maximum operating from external battery charger supply.

Complies with FCC Part 15 , class A digital device.

Model : IL-UVS1-R2

Bulb : IL-18WTUV

Warranty
1 year (the bulb is not covered under warranty)

iLAB America warrants to the original purchaser of a new product that is not sold "as is" that this product will be free from defects in workmanship and materials, under normal use, for a period of one (1) year which starts at the original purchase date.

EXCLUSIONS
This limited warranty ONLY COVERS failures due to defects in materials and workmanship, and DOES NOT COVER normal wear and tear, cosmetic damage, or the bulb. The limited warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the Company, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, introduction of sand, humidity or liquids, or service by anyone other than a Company Authorized Servicer, or damage that is attributable to acts of God. THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED HEREIN.

WARRANTIES EXCLUSIVE
The foregoing warranties and remedies are exclusive and in lieu of all other warranties, express or implied, including warranties of merchantability, fitness for a particular purpose, correspondence with description, and non-infringement, all of which are expressly disclaimed by iLAB America and its suppliers.

LIMITATION OF LIABILITY
Neither iLAB America nor its suppliers shall be liable for incidental, consequential, indirect, special, or punitive damages of any kind, or financial loss arising out of or in connection with the sale or use of this product, whether based in contract, tort (including negligence) or any other theory, even if iLAB America has been advised of the possibility of such damages.
The extent of the company's liability under this warranty is limited to the repair or replacement provided above and, in no event, shall the company's liability exceed the purchase price paid by the customer for the product.