RPAMS CCV (Ultraviolet-C) UVC Air Scrubber

A force multiplier in the fight to protect against COVID

EPA EST. NO. 97050-OR-1. RESTRICTED USE PESTICIDE/GERMICIDAL UVC

COMBATTING COVID

Coronavirus infections can be caused by contact with contaminated surfaces and then touching facial areas (less common than person-to-person, but still an issue). Minimizing this risk is key because the COVID virus can live on plastic, steel and other common `touch´ surfaces for days. Normal cleaning and disinfection may leave behind some residual contamination, which UVC can treat suggesting that a multiple disinfectant approach is effective and smart.

RPAMS Air Scrubber

Based on the latest data from the CDC and FDA, RPAMS has refocused it's efforts to develop an all-new UVC Air Scrubber device. The air scrubber is designed to collect ambient air (room/facility), expose the air to significant UVC for disinfection, pass the air through a multi-stage filter chamber (see below) before releasing the treated air back to the ambient environment.

The RPAMS Air Scrubber Construction:

PRIMARY CASE

- All high-grade aluminum construction for durability and light weight.
- Vortex generators to disrupt and reduce air velocity to ensure UVC exposure
- 254nm UVC emitter

FAN

- An electric fan integrated into the filtration module is used to pull air through the case and UVC chamber. The fan consists of a small electric motor with polymer fan blades attached to the motor's power take-off. Powerful - 161 sq ft²/15 m² per .5 hours at speed Level 3. The CADR (clean air delivery rate) is 50 CFM
- Velocity units airflow is .31ft/min and volume units 50 CFM.
- UVC exposure at 6000 µWSec/cm2 minimum assured based on disrupted (vortex) airflow

FILTERS

- HEPA
- Foam Filter and Granular Activated Carbon Filter
- Mesh prescreen

RP-CCV-008: Includes: Aluminum construction, Vortex generators, 254 nm emitter, 50 CFM fan, filters: HEPA, foam/activated carbon, mesh prescreen.

MSRP* $795.00 USD

**Suggested price does not include shipping, handling, export fee or taxes applicable to each state or destination country.*

Airborne Coronavirus Explained

The EPA has provided the spread of COVID-19 occurs via airborne particles and droplets. People who are infected with COVID can release particles and droplets of respiratory fluids that contain the SARS CoV-2 virus into the air when they exhale (e.g., quiet breathing, speaking, singing, exercise, coughing, sneezing).

The droplets or aerosol particles vary across a wide range of sizes – from visible to microscopic. Once infectious droplets and particles are exhaled, they move outward from the person (the source). These droplets carry the virus and transmit infection. Indoors, the very fine droplets and particles will continue to spread through the air in the room or space and can accumulate.

Since COVID-19 is transmitted through contact with respiratory fluids carrying the infectious SARS-CoV-2 virus, a person can be exposed by an infected person coughing or speaking near them. They can also be exposed by inhaling aerosol particles that are spreading away from the infected person.

Transmission of COVID-19 from inhalation of virus in the air can occur at distances greater than six feet. Particles from an infected person can move throughout an entire room or indoor space. The particles can also linger in the air after a person has left the room – they can remain airborne for hours in some cases. Someone can also be exposed via splashes and sprays of respiratory fluids directly onto their mucous membranes. Spread may also sometimes occur through contact with contaminated surfaces. [1]

"HEPA" stands for "high-efficiency particulate air" (filter). HEPA air filters are incredibly effective at capturing almost every size of particle. They can capture viruses, bacteria, pollen, PM2.5, allergens, and more. HEPA air filters are the most important component of any air purifier.

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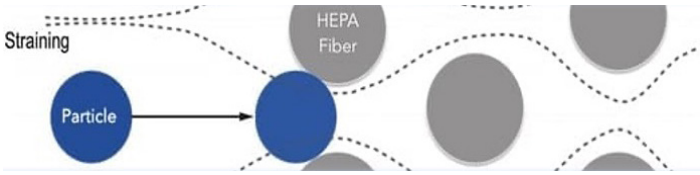
HEPA filters are able to capture pollen, viruses, bacteria, pet allergens, smoke, dust, etc. HEPA filters have a strict set of requirements. In Europe, HEPA filters must remove 99.95% (ISO) of particles. In the US, they must remove 99.97% of particles.

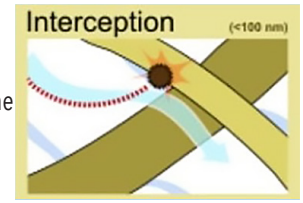
HEPA Filter Method 1: Large Particles

That intuition is true for big particles. By "big," we're talking typically larger than 1 micron. For comparison, a human hair is about 50 microns wide. So 1 micron is actually quite small. But these "large" particles fly into a HEPA filter, they're too big to get through, so they get stuck. Scientists have a name for that. When particles get stuck between two fibers, they call it "straining."



HEPA Filter Method 2: Smaller Particles

What happens for particles smaller than 1 micron? Let's look at the next size range down: 0.3 – 1 microns. We're talking about the size of a bacteria. Particles this size can fit between the gaps in the filter. But they have a problem. They'll try to follow the air around a HEPA filter fiber, but they are a bit heavy. So some of them don't move fast enough and thus end up getting stuck. Scientists call this "interception."

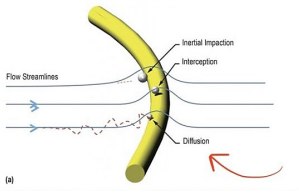


HEPA Filter Method 3: Really Small Particles

OK, so do the particles below that size get through? For the really small particles (less than 0.3 microns), the science gets weirder. These particles that small have so little mass that they actually get bounced around like a pinball when they hit gas molecules (that's called Brownian Motion). So they move in random zigzag patterns.

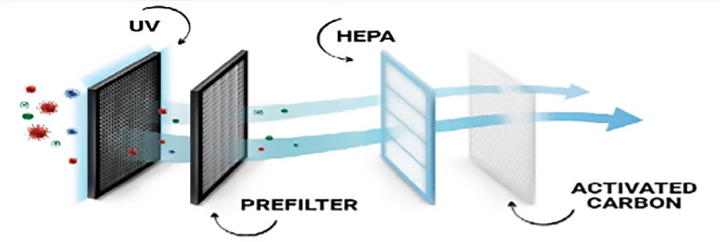
These particles are so small they could easily fit through HEPA filters. But sadly (for their freedom) and happily (for our lungs), they don't fly in straight lines. Because they fly in zigzag patterns, they end up hitting the fibers and getting stuck. Scientists call that diffusion.

And here's how the three different mechanics work for different particles sizes. Straining and impact capture large particles; interception captures medium particles; and diffusion captures the smallest particles.



Activated Carbon filtering is a method of filtering that uses a bed of activated carbon to remove impurities from a fluid using adsorption.

Carbon filtering works by adsorption, in which pollutants in the fluid to be treated are trapped inside the pore structure of a carbon substrate. The substrate is made of many carbon granules, each of which is itself highly porous. As a result, the substrate has a large surface area within which contaminants can be trapped. Activated carbon is typically used in filters, as it has been treated to have a much higher surface area than non treated carbon. One gram of activated carbon has a surface area in excess of 3,000 m2 (32,000 sq. ft.).



(1) Source for technicial information:

Science and Technical Resources related to Indoor Air and Coronavirus (COVID-19)
https://www.epa.gov/coronavirus/science-and-technical-resources-related-indoor-air-and-coronavirus-covid-19

Indoor Air and COVID-19 Key References and Publications
https://www.epa.gov/coronavirus/indoor-air-and-covid-19-key-references-and-publications

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