

Reducing Airborne Virus Exposure Using In-Vehicle Air Filtration

The AirBubbl[®] by AirLabs[®] can reduce exposure to airborne COVID-19 and is one of several measures that can be taken to help protect passengers and drivers inside a vehicle.

The AirBubbl[®] by AirLabs[®] is an in-vehicle air filtration unit designed to provide clean air to vehicle occupants, free of particles and toxic gases. It provides an extra layer of protection, in critical environments, by removing airborne virions and contaminated particulate matter that are known pathways of virus transmission.

It has been confirmed that one of the modes of transmission of COVID-19 is via fine airborne particles produced when an infected person coughs, talks or breathes. Research has shown that airborne virions can remain suspended and alive in air for hours, allowing transmission even after the departure of the host. This includes single virions, which have a diameter of 0.05 micrometers (μm) - 0.2 μm ¹.

While the ability of a filter to remove airborne particles is critical, so too is the amount of clean air that the system can produce. The Clean Air Delivery Rate (CADR) combines both the filtration efficiency and the air flow rate. To be effective, an air filtration system needs to be able to produce enough clean air into the vehicle to outperform the sources of contamination.

The AirBubbl removes more than 95% of all particles less than 5 μm on a single pass through its filter. With a single person exhaling 500 litres of potentially contaminated air every hour and the AirBubbl producing over 30,000 litres of filtered clean air every hour, the airborne virus load in the vehicle is significantly reduced and as a result so too is the risk of exposure.

Vehicle environments where more than one person are in close proximity are at risk from contaminated air; emergency vehicles, waste disposal trucks, taxis, private hire cars and public transport can all benefit from air filtration.

The AirBubbl can be used in two ways in vehicles:

1. To clean the air within an enclosed space during the time between occupation by different groups of people.
2. To reduce the levels of airborne SARS-CoV-2 within a vehicle cabin, while it is occupied, to help protect drivers and passengers

The AirBubbl is a plug and play product that requires no changes to the vehicle's ventilation system or interior configuration. In a standard configuration (attachment to a seat headrest) it is installed easily within minutes and for non-standard installations there are multiple mounting options that can be easily deployed.

The AirBubbl is powered via a 2.1 A USB port by using a 12V socket (cigarette lighter), 3 Pin adaptor or power bank, and is highly intuitive to operate. Air is drawn into the AirBubbl, cleaned, and then specifically directed to where the vehicle occupants will be breathing. The filter element is completely user serviceable and takes a matter of minutes to replace. They typically last for 1000 hours of use.

Institute of Energy and Environmental Technology Performance Certification

The AirBubbl has been independently tested by the Institute of Energy and Environmental Technology (IUTA). The testing carried out in their lab in Germany proves that the device removes more than 95% of particles, of the relevant size for the airborne coronavirus, and that it delivers 30m³/hr of clean air.

The testing was carried out using a wide range of aerosol particles which are all of interest when it comes to virus transmission. At the low end, particles with a diameter of 0.05 µm - 0.2 µm correspond to the size of individual viruses. The CADR for 0.1 µm size particles represents removal of these individual viruses.

Larger particles, for example those up to 2.5 µm in diameter may be mostly water, and have a non-organic core, but are capable of carrying a large number of viruses in them. The PM2.5 removal on the certificate demonstrates removal of the total mass of particles 2.5 µm in diameter or less.

About AirLabs

AirLabs is a leading pioneer in clean air technology. With more than 90% of the world's population exposed to unsafe levels of air pollution, AirLabs' mission is to deliver measuring, monitoring and cleaning solutions that provide valuable insight, enable action and clean polluted air to make it safe for people to breathe.

Its international team of atmospheric chemistry scientists, airflow engineers and sensor specialists has developed cutting edge and scientifically proven solutions for use by government, business and individuals to tackle the growing problem of urban air pollution.

AirLabs is headquartered in London, has its R&D labs in Copenhagen and also operates from offices in Santa Monica, Boca Raton and Singapore.

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