PALL Medical

To whom it may concern

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SARS-CoV-2 Viral Retention of Pall Breathing System Filters

Since early 2020 the pandemic SARS-CoV-2 virus has infected more than 45 million people and claimed the lives of 1.2 million worldwide. As 2020 draws to its end COVID-19 has swept in with a second wave around the world, challenging the health care systems and economics of many countries.

Despite tremendous efforts worldwide it seems unlikely that a vaccine against the SARS-CoV-2 virus will be available before 2021 and currently no approved anti-viral treatments for this disease are at hand. Non-pharmacologic interventions (NPI) are so far the most effective measures against SARS-CoV-2.[1] As the virus spreads via aerosolized respiratory secretions, filtration technology can be used to control the viral spread.
We have therefore been asked the question whether Pall Breathing System Filters can provide protection against the spread of SARS-CoV-2 in the hospital environment.

Pall Breathing System Filters were developed to act as a barrier against bacterial and viral contamination between the patient and the breathing system. We have not specifically validated our Breathing System Filters for the removal of the SARS-CoV-2. However, Pall Breathing System Filters incorporate a proprietary pleated hydrophobic membrane, which is sealed into the filter housing by means of an ultrasonic welding technology. Numerous clinical publications have shown that our Breathing System Filters, consistently and reliably, prevent the potential risks of cross contamination and cross infection via breathing systems[2,3]. They serve as a complete barrier (100% retention) to contaminated body fluids and have been validated to remove liquid borne contamination of a range of clinically relevant bacteria and viruses, including, but not limited to HIV, Hepatitis C virus and *Staphylococcus aureus*.[4,5,6].We expect that our Breathing System Filters will also protect against SARS-CoV-2, if present in patient's airway secretions. During the 2002 SARS outbreak several researchers and infection control organizations, recommended to use a hydrophobic breathing system filter[7,8,9], or even more specifically a Pall Breathing System Filter[10,11,12].

In addition to the liquid borne route of transmission, airborne infection may play a major role in the spread of the disease. There is for example a high likelihood of generating aerosols during procedures related to mechanical ventilation, such as airway aspiration or bronchoscopy. Pall Breathing System Filters have been extensively documented to have an airborne bacterial and viral removal efficiency of at least 99.999% when tested with *Brevundimonas diminuta* and MS2 Bacteriophage. Coronavirus species have a single stranded RNA and their size ranges from 120 nm to 160 nm which is considerably larger than the 27 nm MS2 Bacteriophage. Bacterial and viral removal efficiency has also been demonstrated with human pathogens such as Influenza A virus[13] (H1N1, size range 80 – 120 nm), and *Mycobacterium tuberculosis*[14]. Based on the testing carried out with MS2 Bacteriophage and Influenza A virus we expect that the Pall Breathing System Filters would remove aerosolized SARS-CoV-2, arising from a patient's airway, with a high efficiency.

We hope you found this information useful. For further information about the Pall range of Breathing System Filters, please contact us on https://medical.pall.com/en/mechanical-ventilation/coronavirus.html.

Kind regards,

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