

Stockholm 23/03/2020

**Dear Customer:**

**Information about Pharma Systems Viral filters and the protection of the Corona Virus**

Understandably there are different enquiries regarding the above Pharma Systems Filters and Corona virus disease Covid -19.

The purpose of this letter is to address these inquiries.

Please be advised that no Pharma Systems (or any other equivalent) filters has been tested to the human pathogen Covid -19. Today one does not test on human pathogens for this kind of filters.

However, the below Pharma Systems filters have undergone bench testing with independent third party laboratories against different sizes of bacteria's and viruses. This includes sizes of bacteria's, viruses and particles larger than, smaller than or equal to the Corona virus that is similar to 0.1-0.2 micron.

Specifically, the viruses and other pathogens for which our filter material type has been validated for are identified below:

<b>Pharma Systems – Pharma Mini (combined HME/Filter)</b>	
Part Number Ref: 6100, 6120, 6121, 6130, 6126	<ul style="list-style-type: none"> <li>Staphylococcus Aureus (bacteria size 0.8 microns)</li> <li>Mycobacterium Tuberculosis (bacteria size 0.3-0.6 microns*)</li> <li>Phi X 174 Phage (virus size 0.027 microns)</li> <li>Viruses tested are smaller than Corona, HIV and Hepatitis C</li> <li>Bacterial Efficiency &gt;99,99%, Viral Efficiency &gt;99,99%</li> </ul>

\*Filter equivalent type material tested

<b>Pharma Systems – Bact HME Midi (combined HME/Filter)</b>	
Part Number Ref: 6310, 6320	<ul style="list-style-type: none"> <li>Staphylococcus Aureus (bacteria size 0.8 microns)</li> <li>Mycobacterium Tuberculosis (bacteria size 0.3-0.6 microns*)</li> <li>Phi X 174 Phage (virus size 0.027 microns)</li> <li>Viruses tested are smaller than Corona, HIV and Hepatitis C</li> <li>Bacterial Efficiency &gt;99,99%, Viral Efficiency &gt;99,99%</li> </ul>

\*Filter equivalent type material tested

<b>Pharma Systems – Bact HME (combined HME/Filter)</b>	
Part Number Ref: 6000, 6020	<ul style="list-style-type: none"> <li>Staphylococcus Aureus (bacteria size 0.8 microns)</li> <li>Mycobacterium Tuberculosis (bacteria size 0.3-0.6 microns)</li> <li>Phi X 174 Phage (virus size 0.027 microns)</li> <li>Viruses tested are smaller than Corona, HIV and Hepatitis C</li> <li>Bacterial Efficiency &gt;99,999%, Viral Efficiency &gt;99,99%</li> </ul>

**Pharma Systems Bact-Trap™ Mini (Bacterial/Viral Filter)**

Part Number Ref: 7050, 7061, 7054, 7056	<ul style="list-style-type: none"> <li>Staphylococcus Aureus (bacteria size 0.8 microns)</li> <li>Mycobacterium Tuberculosis (bacteria size 0.3-0.6 microns*)</li> <li>Phi X 174 Phage (virus size 0.027 microns)</li> <li>Viruses tested are smaller than Corona, HIV and Hepatitis C</li> <li>Bacterial Efficiency &gt;99,9%, Viral Efficiency &gt;99,9%</li> </ul>

\*Filter equivalent type material tested

**Pharma Systems Bact-Trap™ Midi (Bacterial/Viral Filter)**

Part Number Ref: 7110, 7120	<ul style="list-style-type: none"> <li>Staphylococcus Aureus (bacteria size 0.8 microns)</li> <li>Mycobacterium Tuberculosis (bacteria size 0.3-0.6 microns*)</li> <li>Phi X 174 Phage (virus size 0.027 microns)</li> <li>Viruses tested are smaller than Corona, HIV and Hepatitis C</li> <li>Bacterial Efficiency &gt;99,99%, Viral Efficiency &gt;99,99%</li> </ul>

\*Filter equivalent type material tested

**Pharma Systems – Bact-Trap™ (Bacterial/Viral Filter)**

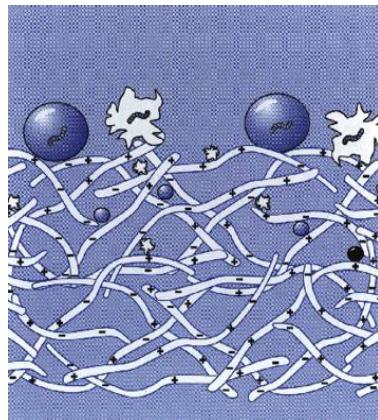
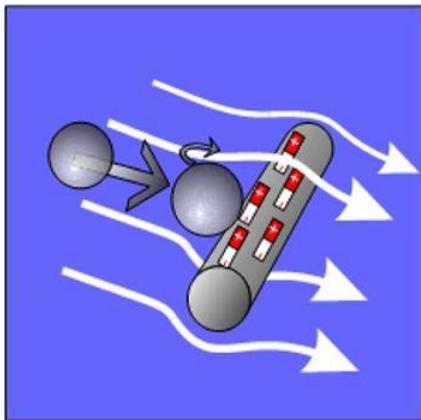
Part Number Ref: 7010, 7011	<ul style="list-style-type: none"> <li>Staphylococcus Aureus (bacteria size 0.8 microns)</li> <li>Mycobacterium Tuberculosis (bacteria size 0.3-0.6 microns)</li> <li>Phi X 174 Phage (virus size 0.027 microns)</li> <li>Viruses tested are smaller than Corona, HIV and Hepatitis C</li> <li>Bacterial Efficiency &gt;99,999%, Viral Efficiency &gt;99,99%</li> </ul>

Regarding the question about one of the test methods, the *ISO23328-1\* Breathing system filters for anaesthetic and respiratory use - Part 1: Salt test method to assess filtration performance*, these type of filters are normally not tested in this test.

\*replaces earlier EN13328-1

This is because these filters are technically built up to catch different sizes of particles, due to it's electrostatical technique. The most important is to **clinically** "catch" everything that they are challenged to.

And this is efficiently done through the negative and positive charges in the filter fibres, catching all different kinds of sizes. Everything that travels in the air is either positive or negative and is therefore easily stopped/catched by this filtration material.



The Pharma System filters are also **hydrophobic**, which is especially important in the case of the Corona virus, as it is transmitted through drip infection.

With this official letter we would like to confirm that the Pharma Systems Bacterial & Viral air filters have been thoroughly tested in independent laboratories i.e. Nelson Lab in US.

These tests cover both bacteria's and viruses in different sizes, commonly tested for air filters worldwide.

Our filters have been used for over 30 years in more than 60 countries globally and there has never been reported any incident where they have not been performing as above.

Also to be added, is that the product above includes also Passive Humidifiers, that keeps the human respiratory system intact, which supports the condition of the patients to improve.

Sincerely

Your Pharma Systems Team

*Pharma Systems products are friendly to the environment.  
After incineration they turn into CO<sub>2</sub> and water.  
The company has an environmental policy.*

