

What bacteria and virus can be removed by the air purifier?

Most users may always ask a question: What bacteria and virus the machine can effectively remove? Firstly we should know despite how strong, powerful or harmful of the bacteria and virus e.g. SARS or Avian Flu etc... bacteria normally structured from multiple cells and virus structured by single cell, their cell membrane (Protein) is very weak that easy be penetrated by UV light or destroyed by outside energy e.g. High Temperature or High Voltage Electrostatic. Or if the bacteria or virus size is $> 0.3\mu\text{m}$, they are also be trapped by a HEPA filter.

There are many different kinds of bacteria and virus survive around us, air purifier manufacturer may impossible to test all of them. A manufacturer can provide one test for a specific bacteria or virus, not means they're also effective or not effective for another kind of bacteria or virus. E.g. Ultraviolet UVC can penetrate the bacteria and virus cell to destroy their DNA and make them can not reproduction, then we may consider the different cell thickness may need different time leads under UV light exposure. Or HEPA can mechanically filter out bacteria and virus, then we may consider their size if smaller than $0.3\mu\text{m}$ etc... Actually, most Biologist may always test a bacteria and virus with "Temperature", they will test out how the temperature level will kill up or slow down the specific bacteria or virus activity. They believe high temperature may always effective for bacteria and virus kill and low temperature may always slow down their activity. Although most people may know that theory, we can not find out a reliable air purifier on market that with sufficient support to proof their effectiveness on bacteria and virus under

actual environment especially for the area with air conditioning system. Although there is a brand "Airfrxx" claim their high temp, 2xx Deg.C can kill up bacteria and virus, but how we can image a "Passive Type" machine (functioned by Filtering) can provide sufficient clean air in a room BUT the machine without fan inside? Normal office HVAC system are designed with 3 – 5 ACH, "Airfrxx" may provide less than 1 ACH only. Means that the machine will not have enough time to kill up the bacteria or virus in the area before they are re-circulated back to the AC system or we have breathed.

So, a machine with high voltage electrostatic theory may be the most effective method for bacteria and virus kill till now, despite how thick of their cell structure, how small of their size or how harmful for us. Such electrostatic filtering chamber can combine with a power fan and provide large volume of clean air into the area finally, bacteria and virus will be immediately killed "Electric Shocks" by One Pass with totally be "Carbonized".

For ref: Total Bacteria Count (TBC) cfu/m³ is the recommend parameter by EPD to determine the airborne bacteria level in indoor now.

