

HealthyAir® patented air purification systems couple advanced eHEPA® technology with proven Enhanced Carbon Catalytic Filtration to treat contaminated air in a multi-stage process that captures and removes harmful molecular air pollutants and microscopic airborne particles, including volatile organic compounds (VOCs), other hazardous gases and particulate, bacteria, virus, mold, fungi and odors.

Innovatively integrating a high energy field with traditional HEPA filtration, eHEPA® technology successfully overcomes limitations and inefficiencies associated with standard filters. The result is a truly effective air purification process that collects particles of the smallest size, including microorganisms, with high efficiency and at low pressure drop.

Furthermore, by applying a high energy field that generates active species that permeate through the filter media, eHEPA® not only captures but also destroys microorganisms at extremely high kill rates, thereby preventing the reproduction of these unwanted microbes on the filter surface which leads to recontamination of the airflow.

eHEPA™ and HEPA Compared

	eHEPA		Standard HEPA	
Particle Capture				
Efficient at 0.3 microns	✓	YES	✗	NO
Captured Pollutants				
Dust	✓	YES	✓	YES
Pollens	✓	YES	✓	YES
Pet Dander	✓	YES	✓	YES
Dust Mite By-Products	✓	YES	✗	NO
Micro Organisms				
Viruses	✓	YES	✗	NO
Bacteria	✓	YES	✗	NO
Mold & Fungi Spores	✓	YES	✗	NO
Airborne Germs	✓	YES	✗	NO

With the use of Enhanced Carbon Catalytic Filtration following the eHEPA® energization process, capture efficiency is further increased and oxidation of gaseous compounds, such as VOCs, eliminates the presence of these toxic gases and the odor associated with them.

Low Air Flow Restriction

Less dense than other HEPA filters, the eHEPA® main filter is initially 85% efficient at 0.3 micron particle size. However, with the application of the systems high energy field, filtration efficiency is effectively raised to 99% at 0.3 micron particle size.

Because of its lower media density, the eHEPA® filter does not restrict airflow like traditional HEPA filters.

By enabling higher airflow, the overall eHEPA® filtration process is more efficient.

An additional benefit of this design feature is that the lower pressure drop enables the machine to operate more quietly, as the motor and blower do not have to work as hard to push the air through the filter media.

Higher Filter Loading Capacity

The lower relative density of the eHEPA® filter media results in it having 4x greater loading capacity than similarly sized conventional HEPA filters.

With true filter monitoring by pressure indication of when the filter has reached its maximum loading capacity is accurate.

The eHEPA® main filter incorporates Spun Sealed Technology, ensuring that every filter is 100% sealed and that the entire systems functions to deliver optimal and reliable performance.

High Air Flow Restriction

True or Absolute HEPA is a very dense paper media with filter efficiency of 99.97% at .3 micron. This is great for efficiency however it can result in poor air cleaner performance, due to reduced airflow. While a filter can be highly efficient if little air is moved through it the purification process is actually ineffective.

Many manufacturers make the claim of silent HEPA filtration, yet the physics behind mechanical filtration do not support this assertion. Given the density of the media, a powerful motor and blower would be required to truly push air through the filter, which would naturally result in a system that produces noise.

In most cases manufacturers are pushing little air through their machines, on low or medium speed, and claiming their products operate silently or quietly. This may be true, yet in these cases it is also true that their systems are not effectively cleaning air either. On high speed HEPA systems are providing clean air at 99.97% efficiency at .3 microns, but they make considerable noise.

Lower Filter Loading Capacity

As a result of the high density characteristic, conventional HEPA filter media tend to load with particulate rather quickly.

Once the loading capacity has been reached, these filters are ineffective and need to be changed.

Because most HEPA systems operate with timers, they do not accurately indicate when the filters actually need to be changed.

Captures and Kills Microorganism

Developed with a focus on capturing and killing microorganisms, eHEPA® solves a problem that is common in conventional HEPA systems.

While other systems effectively capture microorganisms they do not kill them, thereby enabling these species to reproduce and proliferate while contained in the system.

By applying 18kv of energy to the filter media, eHEPA® technology creates an uninhabitable environment for microorganisms and eliminates the possibility of reproduction.

Fails to Prevent Reproduction of Microorganisms

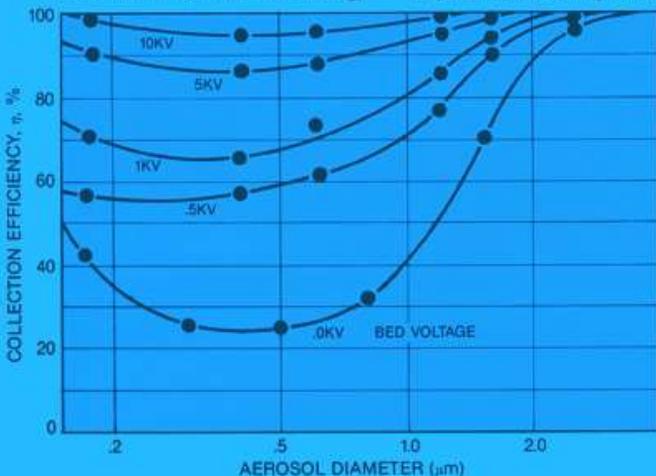
When conventional HEPA filters become coated they tend to create a breeding ground for microorganisms.

As moisture builds up in the filter, bacteria, viruses, and fungi often remain alive and reproduce.

As a result, if filters are not changed in a timely manner, microorganisms may breed and re-enter the environment.

The enhancement of media capture efficiency with exposure to a high energy field is illustrated below by extensive laboratory testing at MIT.

LABORATORY DATA — EFB COLLECTION OF DOP AEROSOLS
Massachusetts Institute of Technology Dept. of Electrical Engineering



eHEPA Technology

The same energetic principle is utilized in eHEPA® technology, whereby a specially designed HEPA filter is sandwiched between an active and passive electrode that applies an energy field that bombards the filter with active species, which permeate the filter to polarize the smallest fibers in the filter media. This effect significantly enhances the capture efficiency of the filter for the smallest particles and microorganisms, and the energy field also effectively destroys and kills microorganisms, as indicated by independent laboratory testing and experiments.

Have Questions? Contact us!

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