

The study in brief

QleanAir air cleaners remove over 95% of viruses in 10 minutes

On behalf of QleanAir Japan, Sendai Medical Center in Japan has investigated the difference an air cleaner makes to the air quality of a room. In a safe test environment, indoor air was contaminated with active influenza viruses of approximately the same particle size as SARS-CoV-2, the virus that causes COVID-19. The air quality was evaluated over time, both with and without the help of an air cleaner from QleanAir. Two different filter combinations were tested, and the results show that over 95 % of the virus particles were removed in 10 minutes with the QleanAir air cleaner.

Background for the study

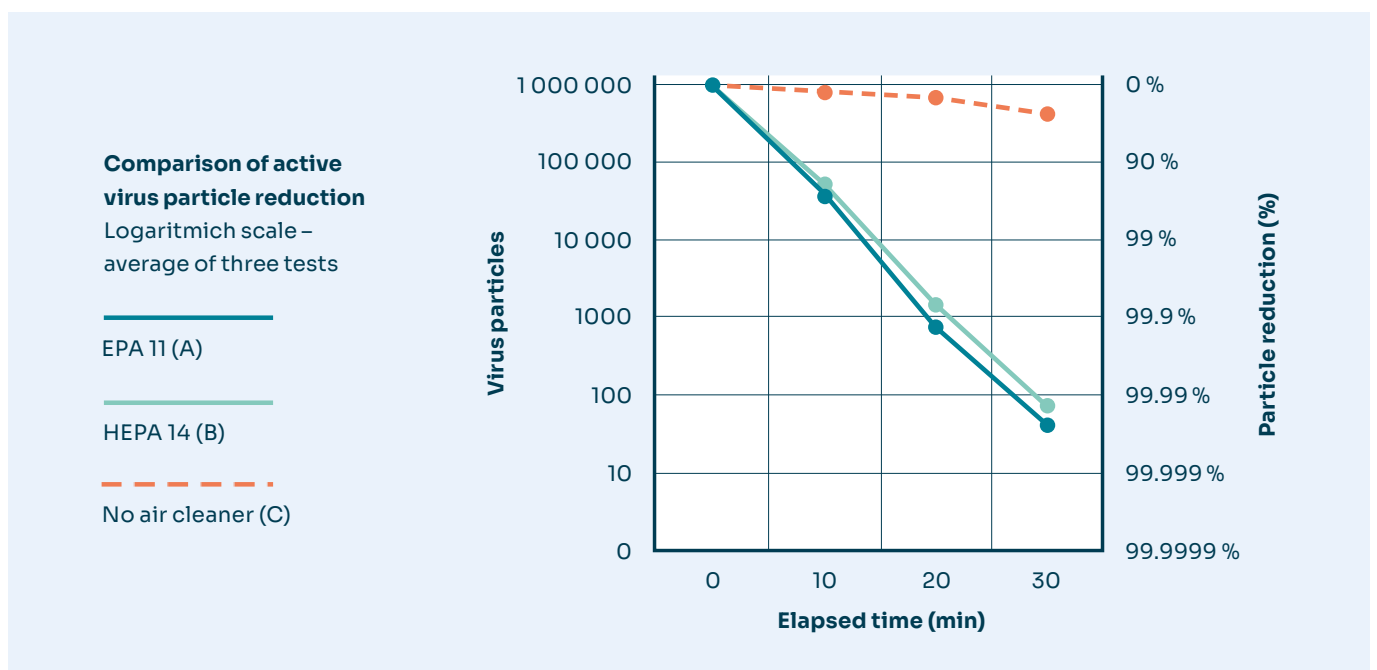
It was a joint study conducted by QleanAir Japan and the Virus Research Center, Clinical Research Division, Sendai Medical Center in Japan. The study aimed to investigate how quickly an air cleaner would remove the airborne virus particles.

Results

- The study shows that it takes only 10 minutes to remove over 95 percent of the airborne virus particles from a 25 m³ room with the mobile air cleaner QleanAir FS 30 with both the HEPA 14 and the EPA 11 filters. As a comparison,

the reduction requirement from the German engineer organization VDI is 90 percent in 30 minutes in a 30 m³ room. Without air cleaner, the particle reduction was only 16,9%.

- After 20 minutes, approximately 99.9% of the particles were removed. The QleanAir FS30 equipped with EPA 11 filter removed 99,93% and the one equipped with a HEPA 14 filter 99,86%. Without air cleaner, the particle reduction was only 34,2%.
- After 30 minutes, the air cleaners had removed over 99,99% of the particles. The HEPA 14 equipped unit had captured 99.993% of the particles after 30 minutes. The corresponding result for the EPA 11 filter was 99.996%. After 30 minutes without an air cleaner, the particle reduction was only 57,2 %.
- The study also compared the difference between a HEPA 14 and an EPA 11 filter. The results show that both filter combinations are highly effective. The device equipped with the EPA 11 filter reached 99,9% and 99,99% slightly faster because of its higher air flow.



Method

The test environment imitated an indoor environment contaminated with the SARS-CoV-2 virus, the virus that causes COVID-19:

- The study was conducted in a closed bio-safety chamber of 25 m³.
- A nebulizer, also known as an aerosol generator, was used to contaminate the air with active influenza viruses of almost the same particle size as that of SARS-CoV-2, the virus that causes COVID-19.
- The aerosol haze was distributed in the room using an electric air circulator.
- A QleanAir FS 30 air cleaner was placed in the room equipped with either of two different filters, HEPA 14 or EPA 11, and operated at maximum power.
- Thereafter, reduction of the concentration of airborne particles and active viruses in the chamber were measured for three different settings, as illustrated below as A), B), and C), at the time points of 10, 20 and 30 minutes from the start of air purifying.
- The results show an average of three tests.

High efficiency, low noise level in a small footprint

QleanAir FS 30 has an air flow of 800 – 1000 m³/h, measures 545 × 1 225 × 455 mm and cleans the air at a sound level of only 19–45 dB(A). As far as we know, it is the highest air flow at the lowest sound level in the smallest footprint on the market.

About the filters

HEPA 14 and EPA 11 filters are specified in the European standards EN 1822. High-Efficiency Particulate Air (HEPA) 14 filters capture more than 99.995% of Maximum Permeable Particle Size (MPPS) particles, and Efficient Particulate Air (EPA) 11 filters capture at least 95% of MPPS particles.

Reference

Hidekazu NISHIMURA, Seiji OHNO: Comparison of airborne virus reduction efficiencies between air purifiers with HEPA and EPA filters, *Eurozoru Kenkyu*, 37, 1-7 (2022) doi: 10.11203/jar.37. (in Japanese)

Three comparative tests of virus reduction

- A) With QleanAir FS 30 equipped with EPA 11 filter at maximum power
- B) With QleanAir FS 30 equipped with HEPA 14 filter at maximum power
- C) Without air cleaner

