

Anti-Viral and Anti-Bacterial Respirator



Technology Overview

This technology relates to a respirator providing protection against airborne contaminants, pollutants and harmful micro-organisms. By employing a novel combination of air filtering, antiviral coating and germicidal irradiation techniques, the respirator achieves superior air-cleansing performance. The unique system engineering design also yields optimal portability and energy-efficiency, hence offering positive user experience.

Features & Specifications

This technology has been realized in a personal wearable respirator prototype with the key features/specifications shown below:

- Key Performance: Block/inactivate about 99% of viruses belonging to the family MERS-CoV and Influenza A, and up to 95% of particulates in the range of 0.3 to 10.0 microns.
- Weight: 910g*
- Dimensions: 20cm x 15cm x 7.5cm*
- Air Flow Rate: 4.5L/min to 12.0L/min (dynamically adjustable to fit user's breathing patterns)
- Noise Level: 40-48dB at 1m
- Operating Duration: 3.5 hour to 5.0 hours** (using a battery pack of 2250mAh)
- User Maintenance: Detachable mouth-piece, hose & bag allow exterior surfaces of these parts to be cleaned easily with antiseptic wipes

Note: * Excluding accessory items i.e. hose, mouth-piece & bag

** Higher operating duration can be achieved with external battery (e.g. 5-V power bank with $\geq 2A$ output, Xiaomi YDDYP01: 12.7Ah 2.1A, can last for 14–20 hrs)

Customer Benefits

The respirator offers the following benefits:

- Superior anti-viral and anti-bacterial performance
- Effectively blocking common air pollutants and contaminants
- Lightweight and compact
- Long operating duration
- Adaptive control of airflow rate to suit user's breathing patterns

Potential Applications

The respirator can be used by the following user groups during a pandemic or outbreak of diseases such as SARS or severe influenza:

- Front-line custom officers, security and healthcare personnel who are interacting with potentially infected foreign visitors and patients.
- Travellers - People who need to take risk to travel on a plane to or to live in countries where a SARS epidemic occurs.
- General public who visit higher risk places such as hospitals.

This technology can be flexibly configured to yield alternative devices (besides the respirator) suitable for air-cleansing applications in less challenging environment.

