



TORONTECH



FACE MASK PM PROTECTIVE EFFECT TESTER

Face Mask PM Protective Effect Tester ToronFM™ PET designed to evaluate the efficiency of daily protective masks and other types of masks against particulate matter. Suitable for use in medical device testing centers, safety and protection labs, occupational safety testing facilities, pharmaceutical testing centers, public health organizations, textile testing facilities, hospitals, and mask and respirator manufacturers.

APPLICATIONS

The Torontech ToronFM™ PET is engineered to determine the overall protective effect of daily-use face masks against airborne particulate matter (PM). Unlike simple filter media tests, this system evaluates the mask's performance *as worn* on a standard head form, providing a realistic measure of its ability to reduce a wearer's exposure to harmful pollutants like PM2.5 by accounting for both filter penetration and face seal leakage.

This holistic protective effect testing is essential for ensuring public safety in:

- **Consumer & Daily Mask Manufacturing:** As an essential quality control and certification tool for manufacturers to validate that their products meet the protective performance standards for the consumer market, particularly for use in urban or polluted environments.
- **Third-Party Testing & Consumer Advocacy:** For independent laboratories and consumer protection agencies to verify the PM2.5 protection claims made by mask manufacturers, ensuring public safety and market transparency.
- **Textile & Non-Woven R&D:** As a critical tool for developing new materials for consumer face coverings, allowing for the evaluation of a fabric's performance within a finished product, balancing filtration with the crucial factors of fit and breathability.
- **Public Health & Environmental Agencies:** To conduct research and provide evidence-based guidance to the public on the effectiveness of different types of masks for protection against air pollution from sources like wildfire smoke, industrial emissions, and urban smog.

FEATURES

- The cold-generated aerosol generator continuously produces stable aerosol particles and allows convenient solution injection.
- A high-precision PM2.5 sensor measures aerosol concentration accurately.
 - The system includes a particle leakage prevention design to ensure the safety of the operator.
 - Two aerosol generators are provided: one for salt particulate aerosols and another for oil particulate aerosols.
 - An electrostatic charge neutralization device for aerosol particles is included.
 - A temperature and humidity sensor is integrated, displaying real-time ambient conditions (requirements: 25°C ± 5°C, 30% RH ± 10% RH).
 - A laser dust particle counter is included for precise measurement.
 - The test door features a high-protection design with excellent sealing and integrated gloves for easy mask replacement.
 - A standard head mold is used to simulate realistic conditions for protective mask testing.
 - Protective aerosol particles: The test chamber offers an adjustable concentration range of 20–30 mg/m³ with less than ±10% fluctuation. The aerosol generator produces particles with a size distribution of 0.02–2 μm, with a median mass diameter of 0.6 μm for salt particles and 0.3 μm for oil particles.

TECHNICAL SPECIFICATIONS

Feature	Description
Protective Effect Aerosol Concentration Detection Device	Gas sampling flow: (1-2) L/min Sampling frequency: 20 times/min (1-9999 times/min can be set arbitrarily) Dynamic detection: (0.001-100) mg/m ³ Accuracy: 1%
Protective Effect	The sampling tube for inhaled gas is positioned directly under the nose (or in the mouth).

Feature	Description
Respiratory Simulator	Sinusoidal airflow, frequency: 20 times/min Respiratory flow control: (30 ± 1) L/min Respirator flow range: 0-40 L/min
Instrument Accuracy Level	Accuracy level: 1
Control System	Computer-controlled test process with automatic data collection. Includes a special computer and test software configuration.
Computer Automatic Test and Display	Medium concentration in the warehouse, medium concentration in the inhaled gas, background concentration Automatic calculation: Protective effect Can save, output, query, print test data.
Voltage	AC220V 50Hz (110V is also available)



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