

Personal Protective Equipment Testing Capabilities

Comparable Standard Testing Methods*


- 42 CFR Part 84, Subpart K: Non-Powered Air-Purifying Particulate Respirator Performance
- ASTM International Standard Test Methods
 - ASTM F2299/F2299M-03: Standard Test Method for Determining the Initial Efficiency of Materials Used in Medical Face Masks to Penetration by Particulates Using Latex Spheres
 - ASTM F2101-19: Standard Test Method for Evaluating the Bacterial Filtration Efficiency (BFE) of Medical Face Mask Materials, Using a Biological Aerosol of *Staphylococcus aureus*
- Test Operations Procedure (TOP) 08-2-501A: Permeation Testing of Materials with Chemical Agents or Simulants (Swatch Testing)

* RTI can provide quantitative evaluation of a material or mask according to these standard testing methods. RTI is not a certified laboratory for standard testing methods but will provide comparative test data for research use only.

Experience

Our team of experts specializes in the following areas:

- Performance of materials for filtering facepiece respirators (FFR), including new/novel products
- Performance of filter cartridges and masks, including cleaned or decontaminated respirators
- Efficacy of room air cleaners for removing bioaerosol



RTI International has formed a response team to support the rapid production of personal protective equipment (PPE) during the coronavirus disease 2019 (COVID-19) pandemic. RTI has been conducting aerosol research for nearly 40 years, and our experts are ideally suited to support performance evaluation of new and alternative PPE materials and products. Our team has the experience, facilities, and test procedures for evaluating aerosol and bioaerosol measurement, filtration efficiency, exposure, and contaminant transport. We are working to rapidly and efficiently support PPE development to help reduce the spread of COVID-19.

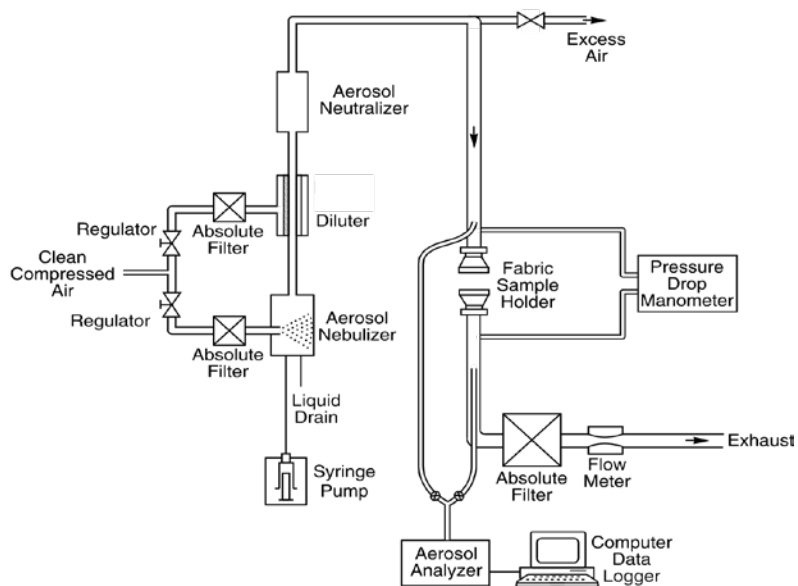
Capabilities

Aerosol filtration and particle penetration testing rig

- Filtration efficiency as a function of particle size and air permeability
- Particle size ranges: 0.015–10 μm
- Test aerosol: Liquid phase (oleic acid) and solid phase (KCl, NaCl, PSL, BSL-1 organisms)
- Test conditions: Control of T, RH, and electrostatic charge

Aerosol exposure chambers for performance evaluation of

- Filter cartridges
- Mask protection and fitting with mannequins
- Bioaerosol room air cleaners using a modified clean air delivery rate method



System for filtration efficiency and pressure drop measurements for novel materials

Output and Results

RTI will provide a detailed test report, including material or product test results, compared to standard testing methods. Data are provided for research purposes only and may include the following:

- Particle penetration as a function of particle size
- Comparison of upstream to downstream particle counts
- Pressure drop as a function of particle load
- Face velocity

Evaluation

The following must be provided for evaluation:

- For fabric swatch samples
 - A 12" x 12" piece is the preferred minimum
 - A minimum of three pieces is preferred, with the face side of the material sample identified
- For FFRs, provide a minimum of three pieces.

More Information

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Please inquire about our additional testing and evaluation capabilities:

- Efficacy of new cleaning agents, typically for surfaces
- Environmental/personal exposure testing
- Contaminant control and transfer risk reduction technologies

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RTI International is an independent, nonprofit research institute dedicated to improving the human condition. Clients rely on us to answer questions that demand an objective and multidisciplinary approach—one that integrates expertise across the social and laboratory sciences, engineering, and international development. We believe in the promise of science, and we are inspired every day to deliver on that promise for the good of people, communities, and businesses around the world. For more information, visit www.rti.org.

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RTI 13490 R1 0520