ASTM F2101 / EN 14683

Mask Bacterial Filtration Efficiency Tester

KP-1000 Product Catalogue

Laboratory BFE test equipment with controlled biological aerosol generation, dual 28.3 L/min sampling routes, two six-stage Andersen cascade impactors and negative-pressure operation.

DUAL SAMPLING | SIX-STAGE | BFE SYSTEM

Standards
ASTM F2101 / EN 14683 / YY 0469

Test Object
Medical face masks and applicable materials

Sampling
Two routes at 28.3 L/min

Collection
Two six-stage Andersen impactors

Product Overview and Test Architecture

The KP-1000 is a laboratory Mask Bacterial Filtration Efficiency Tester designed around the complete BFE workflow. It supports aerosol challenge generation, specimen exposure, comparative viable-particle sampling and operating-data retention within one integrated system.

Standard-oriented BFE scope

Referenced for ASTM F2101, EN 14683 and YY 0469-related BFE procedures. The exact edition and applicable clause should be confirmed before quotation.

Dual sampling architecture

Route A and Route B each operate at a nominal 28.3 L/min for coordinated control and downstream collection.

Six-stage viable collection

Two Andersen cascade impactors collect viable aerosol particles across defined aerodynamic particle-size ranges.

Negative-pressure laboratory control

Integrated cabinet ventilation, HEPA filtration, pressure monitoring, touchscreen control and USB data storage support controlled operation.

KP-1000

Medical Face Mask BFE Tester

CONTROLLED AEROSOL

DUAL ROUTE SAMPLING

DATA STORAGE

Functional Test Flow

1. **Prepare System** — Check chamber, routes and plates
2. **Generate Aerosol** — Set spray and liquid-feed conditions
3. **Expose Specimen** — Install mask or material specimen
4. **Collect Samples** — Use dual six-stage sampling
5. **Incubate & Evaluate** — Count colonies and calculate BFE

Detailed Technical Specifications

The following values summarize the catalogue-level KP-1000 configuration. Final parameters, verification scope and documentation should be confirmed in the technical agreement.

Sampling and Aerosol Parameters

Parameter	Specification	Resolution / Error
Route A sampling flow	28.3 L/min	0.1 L/min / ±2.5%
Route B sampling flow	28.3 L/min	0.1 L/min / ±2.5%
Spray flow	8-10 L/min	0.1 L/min / ±5.0%
Peristaltic-pump flow	0.006-3.0 mL/min	0.001 mL/min / ±2.5%
Positive-control total count	2,200 ±500 CFU	-
Aerosol mean particle diameter	3.0 ±0.3 μm	GSD ≤1.5

System and Installation Data

Parameter	Specification
Working temperature	0-50 °C
Cabinet negative pressure	-50 to -200 Pa
Cabinet ventilation	≥5 m³/min
HEPA filtration	≥99.99% for particles >0.3 μm
Main unit dimensions	1180 x 650 x 1300 mm
Support frame dimensions	1180 x 650 x 600 mm
Data storage	More than 100,000 data groups
Noise / weight	<65 dB(A) / approx. 250 kg
Power	<1500 W; AC 220 V ±10%, 50 Hz

Pressure Control and Six-Stage Collection

Parameter	Specification	Resolution / Error
Pressure before flowmeter A	-20 to 0 kPa	0.01 kPa / ±2.5%
Pressure before flowmeter B	-20 to 0 kPa	0.01 kPa / ±2.5%
Pressure before spray flowmeter	0-300 kPa	0.1 kPa / ±2.5%
Negative test-chamber pressure	-90 to -120 Pa	0.1 Pa / ±2.0%
Stage I	>7 μm	
Stage II	4.7-7 μm	
Stage III	3.3-4.7 μm	
Stage IV	2.1-3.3 μm	
Stage V	1.1-2.1 μm	
Stage VI	0.6-1.1 μm	

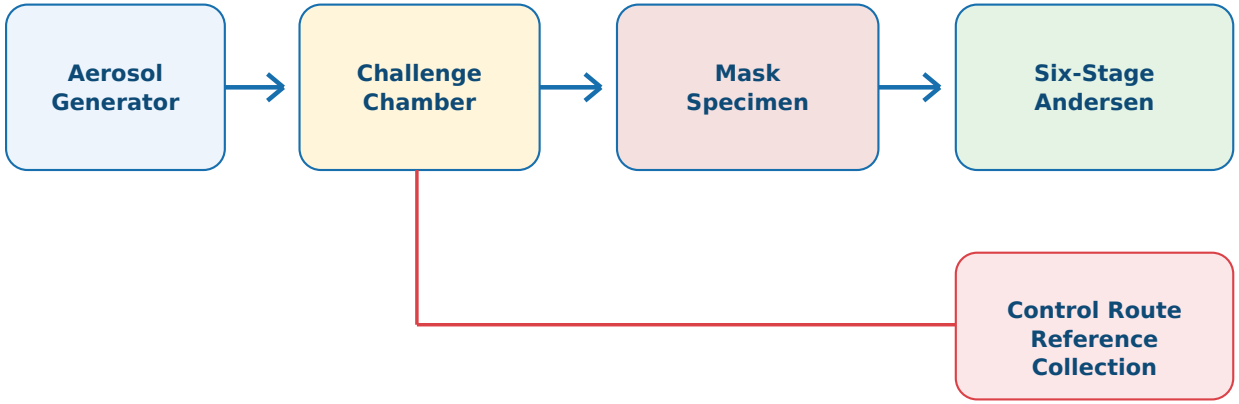
Technical Note

The product model is KP-1000. ZR100 identifies an equipment type in the technical materials and is not a second product model. Culture media, bacterial strains, collection plates, incubation equipment, sterilization equipment and colony-counting equipment are not identified as standard supply in the original packing information.

BFE Test Principle and Laboratory Workflow

The system establishes a controlled biological aerosol challenge, directs it through the test specimen and compares viable particle collection under control and

Comparative BFE Sampling Concept



Dual-route sampling supports comparison between the positive-control aerosol and the residual aerosol collected after passage through the specimen.

Core Method Conditions

- Nominal sampling flow: 28.3 L/min per route
- Positive-control total count: 2,200 ±500 CFU
- Mean aerosol particle diameter: 3.0 ±0.3 μm
- Six-stage viable particle collection
- Required standard edition and procedure must be confirmed

Laboratory Responsibilities

Culture preparation, incubation, colony counting, calculation, decontamination, biological waste treatment and final reporting remain part of the laboratory's validated microbiological procedure.

1 Prepare System — 2 Generate Aerosol — 3 Install Specimen — 4 Collect Samples — 5 Incubate & Count — 6 Calculate BFE

Standards, Compliance and Verification

The KP-1000 is intended for BFE testing associated with the referenced methods below. Final suitability depends on the required standard edition, test clause, complete laboratory arrangement and validated microbiological procedure.

ASTM F2101

Quantitative BFE test method for medical face mask materials using a biological aerosol challenge and comparative viable-particle collection.

ASTM F2100

Medical face mask performance specification. BFE is one requirement; differential pressure, particulate filtration, synthetic blood penetration and flammability require separate methods.

EN 14683

Medical face mask requirements and test methods. The applicable BFE procedure and standard edition should be confirmed for each project.

YY 0469 / Q/0212 ZRB003-2015

YY 0469-2011 Appendix B is referenced for BFE testing; Q/0212 ZRB003-2015 is identified as the equipment execution standard.

Verification Guidance

- Confirm the applicable standard edition and test clause before formal testing.
- Verify sampling flow, pressure, aerosol conditions and collection-system integrity as part of routine quality control.
- Maintain calibration-related records, factory inspection documents, operating instructions and traceability information as required.

Applications, Biosafety and Product Scope

Typical Users

- Medical face mask manufacturers
- Third-party and inspection laboratories
- Medical-device quality-control teams
- Universities and research institutes

Typical Applications

- Medical face mask product development
- Incoming filtration-material inspection
- Process and supplier-change verification
- Comparative porous-material studies

Operation and Biosafety

- Operate in a controlled microbiology laboratory
- Confirm local biosafety and waste-treatment requirements
- Follow validated cleaning and decontamination procedures
- The equipment enclosure does not replace laboratory biosafety controls

Left oblique view

Right oblique view

Rear installation view

The Mask Bacterial Filtration Efficiency Tester does not directly evaluate respirator fit, total inward leakage, differential pressure, particle filtration efficiency, viral filtration efficiency, synthetic blood penetration, flammability or finished-mask microbial cleanliness. Dedicated equipment is required for these separate tests.

Technical Inquiry and Expert Support

KingPo supplies the KP-1000 Mask Bacterial Filtration Efficiency Tester for laboratory BFE evaluation of medical face mask materials. Our engineering team can review the applicable standard, specimen type, microbiological workflow, supporting equipment and documentation requirements.

Please Provide the Following Information

- Applicable standard: ASTM F2101, EN 14683, YY 0469 or customer test procedure, including the required edition and clause.
- Specimen information: Finished mask or material specimen, mask type, layer structure, dimensions, test direction and expected daily throughput.
- BFE test requirements: Positive-control range, aerosol particle-size conditions, sampling method, data-storage needs and reporting expectations.
- Laboratory facilities: Power supply, microbiology laboratory, incubation, sterilization, colony counting, ventilation and biological waste treatment.
- Documentation: Datasheet, operation manual, factory inspection report, flow and pressure verification records, calibration-related documents and equipment certificate.
- Installation and training: Destination, site conditions, operator training and acceptance requirements.

Product Page

Scan the QR code to open the online product page.

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