PMFT 1000 F





The PMFT 1000 F tests particle filters for full-face masks better than the standards EN 143, ISO 16900-3, and NIOSH 42 CFR 84, with additional precise analysis of filter mask efficiency for SARS-CoV-2 (size approx. 120 nm to 160 nm). Furthermore, the testing of face masks based on the standards EN 149/EN 13274-7 and GB 2626 is possible. The tests measure the photometric total penetration and the fractional separation efficiency, i.e., the efficiency based on particle size and the particle size-dependent penetration.

OPERATION PRINCIPLE

PMFT 1000 F AS AN ALL-ROUNDER IN TESTING OF NEARLY ALL MASK AND FILTER TYPES

The measurement of total and particle size-dependent penetration is carried out using the high-precision aerosol photometer Promo® LED 2300. An automatic measurement switch allows efficiency measurement without dilution up to 99.9995% at higher particle concentrations in the raw gas.

The size distribution of the test aerosol is as follows:

EN 143

Oil: Median diameter 160 nm | Geom. standard deviation ~ 2 Salt: Median diameter 60 nm | Geom. standard deviation ~ 1.9



ISO 16900-3

Oil: Median diameter 190 nm | Geom. standard deviation 1,4 - 1,8 Salz: Median diameter 80 nm | Geom. standard deviation 1,4 - 1,8



42 CFR 84

Oil: Median diameter 200 nm | Geom. standard deviation <1,6 Salz: Median diameter 55 nm | Geom. standard deviation <1,86 ALAS



Based on the measurement of particle penetration via particle size, the PMFT 1000 F can also be used to consider the tolerances in the particle size distribution according to EN 13274-7 as a min. / max. penetration value.

	EN 143	EN 143	ISO 16900-3	ISO 16900-3	42 CFR 84	42 CFR 84
Aerosol	NaCl	PaO	NaCl	PaO	NaCl	DOP
Average diame- ter	ca. 0,06 µm	ca. 0,16 <i>µ</i> m	0,06 – 0,1 μm	0,16 – 0,21 μm	0,055 – 0,095 µm	0,165 – 0,205 μm
Standard devia- tion	ca. 1,9	ca. 2	1,4 – 1,8	1,4 – 1,8	< 1,86 (through additional soft- ware module)	< 1,6 (through additional soft- ware module)
Concentration	4 –12 mg/m ³	15 – 35 mg/m ³	8 – 35 mg/m ³	15 – 35 mg/m ³	< 200 mg/m ³	< 200 mg/m ³
Discharge	necessary	-	necessary	-	necessary	necessary
Airflow	95 l/min	95 l/min	still to be defined	still to be defined	$85 \pm 4 l/min$	$85 \pm 4 \text{ l/min}$
Temperature	22 ± 3 °C	24 ± 8 °C	22 ± 3 °C	24 ± 8 °C	25 ± 5 °C	25 ± 5 °C
Rel. humidity < 40 %	< 40 %	20 - 80 %	< 40 %	20 – 80 %	20 – 40 % (with compressed air)	20 – 40 % (with compressed air)
Measuring devi- ce	Sodium flame photometer	Light scattering photometer	Sodium flame photometer	Light scattering photometer	Light scattering photometer	Light scattering photometer
Measuring time	30 s	30 s	30 s	30 s	lowest charging efficiency	lowest charging efficiency
Break time	180 s	180 s	180 s	180 s	lowest charging efficiency	lowest charging efficiency
Exposition	120 mg	120 mg	150 mg	150 mg	200 ± 5 mg	200 ± 5 mg
PMFT Remarks	О.К.	О.К.	О.К.	О.К.	О.К.	О.К.

Tabelle 2: Overview of standards for filter testing of full-face masks

Extensions/Accessories

ALAS



The PMFT 1000 F is equipped with aerosol generators for measuring penetration with oil and salt. Measurement procedures for quick quality control (short test) or for testing according to standards (exposure test) are included. A corona discharge test with the CD 2000 A is integrated.

Operation and automatic printing of the measurement results are therefore easy, even for inexperienced users.

PALAS

BENEFITS

- Test rig working principle better than EN 143, ISO 16900-3, 42 CFR 84, EN 149, EN 13274-7 and GB 2626
- Determination of photometric total penetration for the size range according to standard
- Includes two aerosol generators for NaCl and for oil
- Integrated corona discharger CD 2000 A
- Testing of fractional efficiency, e.g., efficiency in whole size range of 145 nm up to 40 μm
- Exact analysis of filter and filter mask efficiency for SARS-CoV-2 (size approx. 120 nm up to 160 nm). Efficiency also displayed at 145 nm
- Future proof: Works with any kind of aerosol without adjustments
- Further measurement of differential pressure, e.g., as well within different face velocities to simulate test of breathing resistance
- Face velocity adjustable between 1.5 70 cm/s
- Product for fast quality assurance and continuous optimization in R&D (display of size distribution)
- Attractive two years maintenance package for availability of test rig
- Can be operated with standard filter threads according to EN 148-1
- Measurement of filter efficiencies up to 99.9995 %

PALAS

DATASHEET

Aerosols	Salts (e.g. KCl, NaCl), liquid aerosols (e.g. DEHS), latex particles (PSL)			
Test area of the medium	100 cm ²			
Measuring range (total penetrati- on)	0.0005 - 100 %			
Measurement range (size)	0.145 – 40 μm			
Volume flow	$1 - 27 \text{ m}^3/\text{h}$ - pressurized operation			
Power supply	115 – 230 V, 50/60 Hz			
Installation conditions	+10 - +40 °C			
Differential pressure measure- ment	0 – 1,200 Pa			
Inflow velocity	1.5 – 70 cm/s (others on request)			
Compressed air supply	6 – 8 bar			
Dilution factor	1:27/1:700			
Test conditions according to stan- dard	+19 – +23 °C			
Dimensions	Approx. 1,800 • 600 • 900 mm (H • W • D)			



APPLICATIONS

- Testing of full face mask filters for use with standard filter fittings according to EN 148-1
- Measurement of total penetration of respirators
- Exact analysis of filter mask efficiency, e.g. coronavirus
- Media test for HEPA quality



Mehr Informationen: https://www.palas.de/product/pmft-1000-f