

# 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.

## 工作原理

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

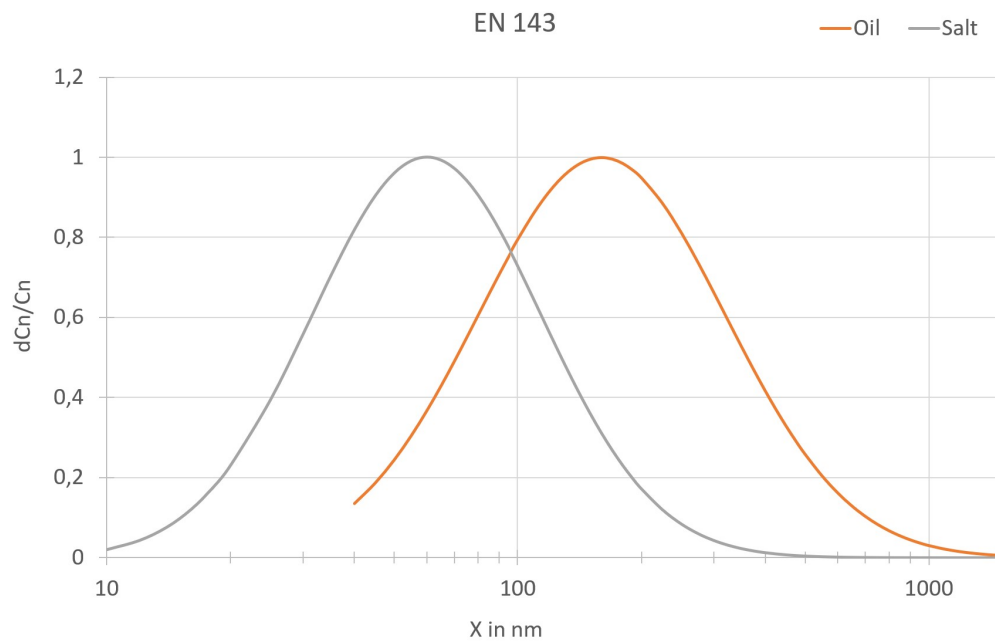
The measurement of total and particle size-dependent penetration is carried out using the high-precision aerosol photometer Promo® LED 2300. An automatic measurement switch allows efficiency measurement without dilution up to 99.9995% at higher particle concentrations in the raw gas.

The size distribution of the test aerosol is as follows:

EN 143

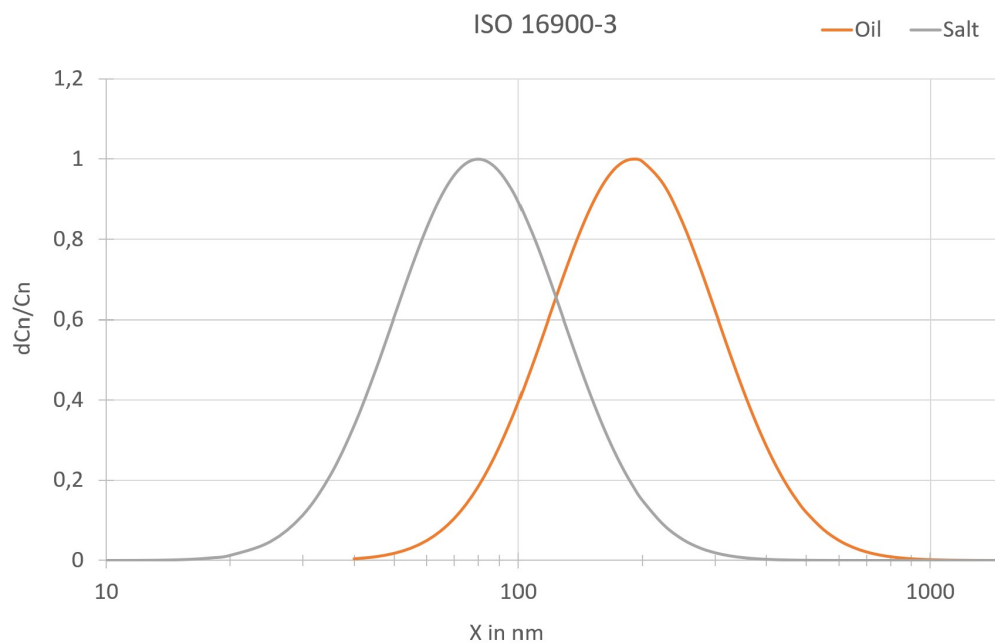
Oil: Median diameter 160 nm | Geom. standard deviation ~ 2

Salt: Median diameter 60 nm | Geom. standard deviation ~ 1,9



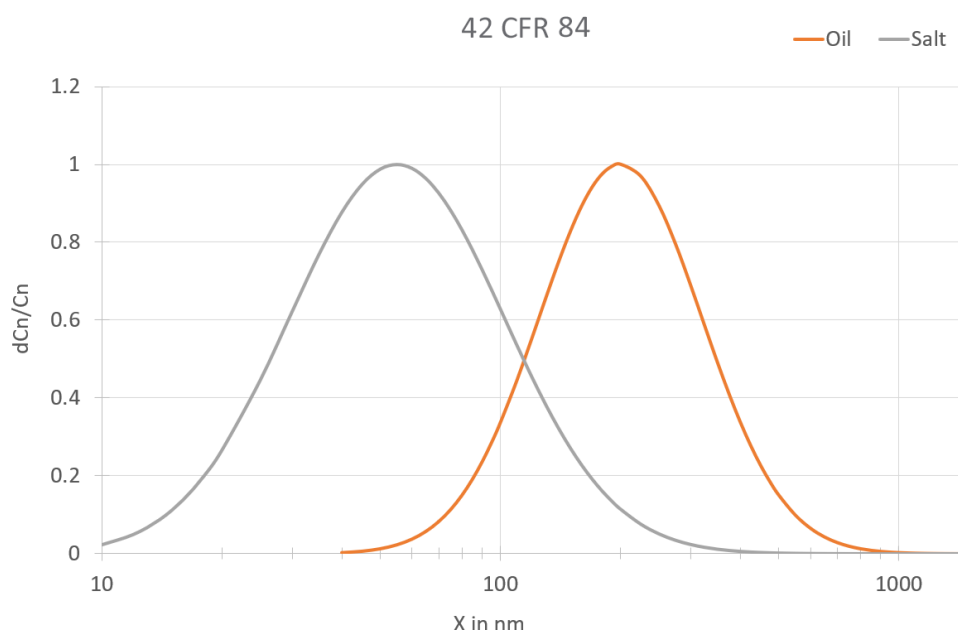
#### ISO 16900-3

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



#### 42 CFR 84

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



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
<b>Aerosol</b>	NaCl	PaO	NaCl	PaO	NaCl	DOP
<b>Average diameter</b>	ca. 0,06 $\mu\text{m}$	ca. 0,16 $\mu\text{m}$	0,06 – 0,1 $\mu\text{m}$	0,16 – 0,21 $\mu\text{m}$	0,055 – 0,095 $\mu\text{m}$	0,165 – 0,205 $\mu\text{m}$
<b>Standard deviation</b>	ca. 1,9	ca. 2	1,4 – 1,8	1,4 – 1,8	< 1,86 (through additional software module)	< 1,6 (through additional software module)
<b>Concentration</b>	4 – 12 $\text{mg}/\text{m}^3$	15 – 35 $\text{mg}/\text{m}^3$	8 – 35 $\text{mg}/\text{m}^3$	15 – 35 $\text{mg}/\text{m}^3$	< 200 $\text{mg}/\text{m}^3$	< 200 $\text{mg}/\text{m}^3$
<b>Discharge</b>	necessary	-	necessary	-	necessary	necessary
<b>Airflow</b>	95 l/min	95 l/min	still to be defined	still to be defined	85 $\pm$ 4 l/min	85 $\pm$ 4 l/min
<b>Temperature</b>	22 $\pm$ 3 $^{\circ}\text{C}$	24 $\pm$ 8 $^{\circ}\text{C}$	22 $\pm$ 3 $^{\circ}\text{C}$	24 $\pm$ 8 $^{\circ}\text{C}$	25 $\pm$ 5 $^{\circ}\text{C}$	25 $\pm$ 5 $^{\circ}\text{C}$
<b>Rel. humidity &lt; 40 %</b>	< 40 %	20 - 80 %	< 40 %	20 – 80 %	20 – 40 % (with compressed air)	20 – 40 % (with compressed air)
<b>Measuring device</b>	Sodium flame photometer	Light scattering photometer	Sodium flame photometer	Light scattering photometer	Light scattering photometer	Light scattering photometer
<b>Measuring time</b>	30 s	30 s	30 s	30 s	lowest charging efficiency	lowest charging efficiency
<b>Break time</b>	180 s	180 s	180 s	180 s	lowest charging efficiency	lowest charging efficiency
<b>Exposition</b>	120 mg	120 mg	150 mg	150 mg	200 $\pm$ 5 mg	200 $\pm$ 5 mg
<b>PMFT Remarks</b>	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.

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

Extensions/Accessories

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.

## 优势

- Test bench performance exceeds EN 143, ISO 16900-3, 42 CFR 84, EN 149, 13274-7, and GB 2626
- Determination of total photometric penetration for the size range according to standard
- Supplied with two aerosol generators for NaCl and oil
- Integrated corona discharge with CD 2000 A
- Testing of fractional efficiency, e.g., efficiency across the entire size range from 145 nm to 5  $\mu\text{m}$
- Accurate analysis of filter and filter mask efficiency for SARS-CoV-2 (size approx. 120 nm to 160 nm). Efficiency analysis at 145 nm
- Future-proof: Works with any type of aerosol without adjustments
- Additional measurement of the differential pressure, e.g. also at different flow velocities to simulate breathing resistance
- Flow velocity adjustable between 1.5 and 70 cm/s
- Product for rapid quality assurance **and** continuous optimization in R&D (Representation of size distribution)
- Can be used with standard filter fittings according to EN 148-1
- Measurement of filter efficiencies up to 99.9995%

## 标准和证书

CCF (Covid Certified Filter), EN 149, EN 13274-7, GB 2626, 42 CFR 84

## 技术数据

气溶胶	Salts (e.g. KCl, NaCl), liquid aerosols (e.g. DEHS), latex particles (PSL)
滤材测试面积	100 cm <sup>2</sup>
测量范围(总穿透率)	0.0005 - 100 %
测量范围(粒径)	0.145 – 40 µm
体积流量	1 – 27 m <sup>3</sup> /h - pressurized operation
电源	115 – 230 V, 50/60 Hz
Installation conditions	+10 – +40 °C
Differential pressure measurement	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 standard	+19 – +23 °C
Dimensions	Approx. 1,800 • 600 • 900 mm (H • W • D)

## 应用领域

- 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/zh/product/pmft-1000-f>