



Knowledge Beyond Measure.

# Certitest® Automated Filter Tester

**Model 8130A**



## Complies with commercial respirator standards around the globe!

The Automated Filter Tester 8130A continues to be the best solution for testing particulate respirator filters, disposable filtering face pieces, and a wide assortment of filter media. Based on TSI's established model 8130, the world's most-used filter tester, model 8130A now offers higher sensitivity and resolution at a lower cost of ownership due to the new serviceable photometers inside. Just one unit is needed to test your product to:

- US 42 CFR 84, GB2626, JMOL
- ISO 16900-3, EN 143
- ISO 23328-1 (and more)

For more than 20 years, TSI's Automated Filter Testers have been used in quality control and manufacturing. They are used by the leading filter and filter media manufacturers and test centers around the world due to their proven durability and reliability, which is valued in demanding manufacturing environments and QA/QC laboratories.

The new serviceable photometers enable proactive scheduling of maintenance of the full filter tester so there is minimal impact to production schedules. When looking for a stand-alone tester to determine penetration or filter efficiency and pressure drop of your media, filter cartridges, filters, and respiratory masks the model 8130A is up to the challenge.

Specifically designed aerosol generators and laser photometers enable highly repeatable and reproducible filter-efficiency measurements at up to six 9's of efficiency with oil. In addition, the model 8130A features a high degree of automation and self-diagnostics that greatly simplifies operation, increases throughput, and improves overall measurement performance. Test sequences can be customized quickly to fit the ever-changing needs of different standards.

### Features and Benefits

- Complies to more standards than any other filter tester
- Salt and oil testing in one unit
- Higher sensitivity and resolution
- Highly consistent test results
- Excellent comparability with results from models 8130 and 8127
- New user-interface and data recording options
- Customizable fully automated testing sequences
- Ergonomic design
- Reduced cost of ownership with new serviceable photometers
- Worldwide service and support



## Operation

The operation of the Automated Filter Tester 8130A is simple, fast, and highly automated. The operator, places a filter on the lower half of the filter holder. The test is initiated by pressing the dual start buttons. A pneumatic cylinder quickly lowers the top half of the filter holder and aerosol is passed through the filter. Two light-scattering laser photometers simultaneously measure the upstream and downstream aerosol concentration levels at a constant flow that is reported with the TSI® Mass Flow Meter 4045. The particle penetration value is determined from the ratio of these two readings. By using two laser photometers, instead of one, measurement cycle time is reduced and measurement accuracy is increased.

A highly accurate electronic pressure transducer determines filter resistance. Pressure transducer and photometer readings are taken between every test to determine the new pressure offset and photometer background values. The microprocessor automatically compensates for these values when computing test results. This fully automatic zeroing greatly improves measurement accuracy.

When the test is complete, the filter holder opens automatically. All test data is displayed and available for printer or serial output. If a PASS level is selected, a PASS or FAIL message is displayed and provided with all outputs.

## Serviceable Photometers

One of the most important new features of the 8130A is a significantly reduced downtime due to user- serviceable photometers. Instead of sending the photometers in for service they can be maintained by the user in less than one hour. This allows preemptive scheduling which ultimately minimizes downtime, reduces the cost of ownership, and results in more profitable filter testing.

## Accessories

TSI® offers a variety of optional accessories to diversify the capability and applicability of the model 8130A. Please contact us for any special requirements.

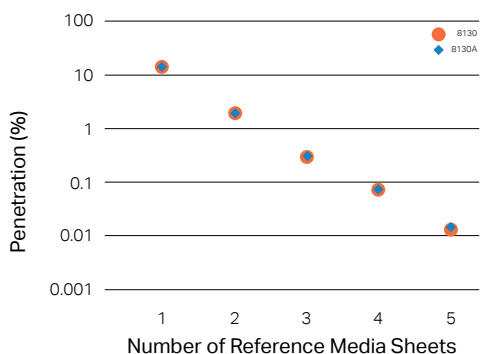
## Custom Filter Holders

TSI® has an experienced design team and a fully equipped machine shop to address the special needs of our customers. Over the years, TSI has designed and built more than 100 custom filter holders to accommodate testing filters of different shapes and sizes.

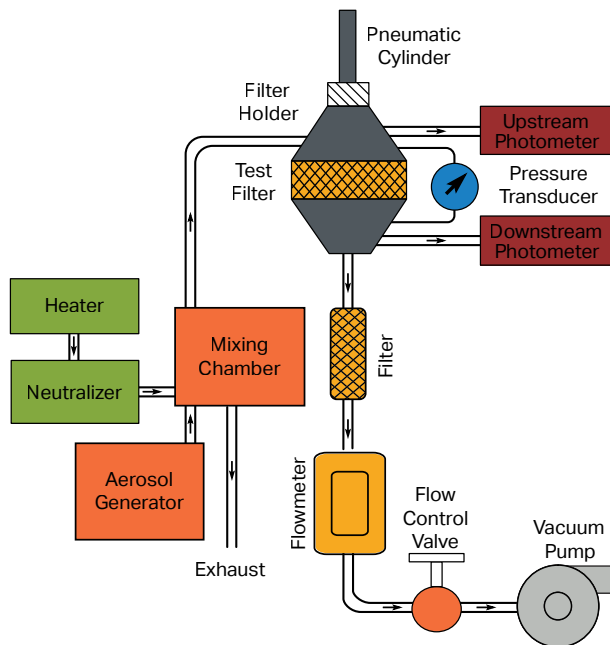
## Results Comparison with Model 8130

Since the model 8130A is replacing the model 8130 filter tester, it is important to verify that the results obtained from both testers are comparable. TSI has verified this numerous times for salt and oil testing.

Filter Tester Comparison with Oil Aerosol at 32 L/min



As shown in this example, the two tester models agree very well for penetration testing of flat sheet media. An increasing number of sheets is used to cover a wide range of measured penetrations.



Features	Benefits					
	Meets Requirements	Repeatability and Reproducibility	Reliability	Ease of Use	Low Operating Cost	High Throughput
<b>Compliance with Regulations</b>						
42 CFR part 84 certification testing*	■					
GB2626, JMOL and related standards testing*	■					
ISO 16900-3, EN 143 and related standards testing*	■ **					
ISO 23328-1 and related standards testing*	■					
Quality control testing	■	■	■			
<b>Simple, Fast and Automated Operation</b>						
User-friendly, menu driven color touch screen				■		■
Dual photometers for increased accuracy and speed		■	■	■		■
Self-check diagnostics		■	■	■	■	■
Unattended operation for prolonged loading tests				■	■	
Customizable fully automated test sequences				■		■
<b>Highly Consistent Test Results</b>						
Produces stable aerosol (oil or salt) of known size distribution	■	■	■			
Measures penetration down to 0.0001% (efficiencies up to 99.9999%***)	■	■				■
Automatic zeroing before every test	■	■	■			
<b>Designed for Manufacturing Environments</b>						
Able to test more than 5 filters per minute				■		■
Operates with minimal maintenance			■	■	■	
Serviceable photometers inside			■	■	■	
Can be integrated with automated production lines						■
<b>Service and Support</b>						
Installation and startup and on-site service*			■	■		
Customized filter holders				■		
Worldwide coverage with TSI® specialists and trusted partners				■		

- \* Consult your TSI® representative for more details.  
 \*\* Model 8130A-EN meets requirements for testing with oil aerosol and provides test standard equivalent results for salt aerosol  
 \*\*\* Realized with oil at concentrations of 200 mg/m<sup>3</sup>. Will be less for salt or at lower concentrations. For significantly higher sensitivities see <http://www.tsi.com> model 3160 filter tester

## Specifications for Respirator Standards

	EN 143:2007	ISO 16900-3	42CFR part 84	GB 2626
Oil Test	Paraffin	Paraffin	DOP	Paraffin or DOP
Equipment	Atomizer	Atomizer	Atomizer	Atomizer
	Light scattering photometer (scattering at 45 °)	Light scattering photometer (forward scattering, max 45 °)	Suitable light scattering photometer or equivalent instrumentation	Defined by concentration range and precision accuracy
Test Flow Rate	95 L/min	To be recorded in report	85 ± 4 L/min (42.5 ± 2 L/min if used in pairs)	85 ± 4 L/min
Aerosol Concentration	20 ± 5 mg/m <sup>3</sup>	15 to 35 mg/m <sup>3</sup>	≤ 200 mg/m <sup>3</sup>	50 - 200 mg/m <sup>3</sup>
Count Median Diameter	0.16 µm	0.16 to 0.21 µm	0.185 ± 0.020 µm	0.185 ± 0.020 µm
Geometric Std. Deviation	≤ 2	≤ 1.4 to 1.8	≤ 1.60	≤ 1.60
Temperature	Ambient (24 ± 8 °C)	Ambient (16 to 32 °C)	Ambient (25 ± 5 °C)	Ambient (25 ± 5 °C)
Humidity (rH)	Not defined	50 ± 30 %	30 ± 10 %	30 ± 10 %
	EN 143:2007	ISO 16900-3	42CFR part 84	GB 2626
Equipment	Atomizer	Atomizer	Atomizer	Atomizer
	Flame scattering photometer (equivalency shown for 8130)	Flame scattering photometer (equivalency shown for 8130)	Suitable light scattering photometer or equivalent instrumentation	Defined by concentration range and precision accuracy
Test Flow Rate	95 L/min	To be recorded in report	85 ± 4 L/min (42.5 ± 2 L/min if used in pairs)	85 ± 4 L/min
Aerosol Concentration	8 ± 4 mg/m <sup>3</sup>	8 to 35 mg/m <sup>3</sup>	≤ 200 mg/m <sup>3</sup>	≤ 200 mg/m <sup>3</sup>
Count Median Diameter	0.06 µm	0.06 to 0.1 µm	0.075 ± 0.020 µm	0.075 ± 0.020 µm
Geometric Std. Deviation	1.9	≤ 1.4 to 1.8	≤ 1.86	≤ 1.86
Humidity (rH)	60%	<40 % at 23 °C (± 3 °C)	30 ± 10 %	30 ± 10 %

## Specifications

# Certitest® Automated Filter Tester Model 8130A

### Operating Range

Ambient Pressure	75 to 110 kPa (absolute)
Ambient Temperature	10°C to 35°C
Operating Humidity	0% to 95%, non-condensing

### Aerosol Detection

Technique	Light-scattering, laser photometer
Dynamic Range	1.0 µg/m³ to >200 mg/m³

### Aerosol Flow

Volumetric Flow	TSI® Mass Flow Meter 4045 with pressure and temperature
Flow Rate through Media	Adjustable from 10 to 110 L/min
Accuracy	±2% of reading

### Pressure Measurement

Technique	Electronic pressure transducer
Range	0 to 250 mm H <sub>2</sub> O (0 to 2500 Pa)
Accuracy	±1% of full scale

### Efficiencies

Operating Range	Measures particle penetrations to up to 99.9999% with oil at concentrations of 200 mg/m³. Sensitivity for salt aerosol is less.
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### Outputs

Color touch screen, RS-232

### Built-in Internal Pump

Included

### Filter Holder for Flat Sheet Media

Included

### Utility Requirements

Power	90 VAC to 250 VAC, 50 Hz to 60 Hz, 5.5 A continuous
Compressed Air	80 psig, 7 scfm (550 kPa, 198 std. L/min)
Dimensions (L x W x H)	70 cm x 70 cm x 147 cm (28 in. x 28 in. x 58 in.)
Weight	150 kg (330 lb)

Specifications are subject to change without notice.

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### Aerosol Generators used within Filter Tester

Tester Model	8130A		8130A-EN	
Aerosol Generator Model #	1081414R	8118A	1081414R-EN	8118A-EN
Aerosol Type	DOP (or other oils)*	NaCl*	Paraffin Oil**	NaCl**
Count Median Diameter	0.185 µm ± 0.02	0.075 µm ± 0.02	0.16 µm	0.06 µm
Mass Mean Diameter	0.33 µm	0.26 µm	0.4 µm	0.18 µm
Geometric Std. Deviation	≤ 1.6	≤ 1.86	~ 2	~ 1.9
Concentration	50 — 200 mg/m³	12 — 25 mg/m³	20 ± 5 mg/m³	8 ± 4 mg/m³

Aerosol particle size and geometric standard deviation determined using the TSI® Model 3936 Scanning Mobility Particle Sizer™ (SMPS™) Spectrometers.

\* Values shown are typical using standard setting for oil (DOP or Emery 3004) and 2% salt.

\*\* Values shown are typical using EN setting for Paraffin Oil and 2% salt.

## To Order

### Automated Filter Testing

Specify	Description
8130A	Automated Filter Tester with Salt and Oil Aerosol Generators
8130A-EN	Automated Filter Tester EN version for testing to EN 143 requirements

The 8130A/8130A-EN includes a color touch screen, dual laser photometers, built-in vacuum pump, and a pneumatically operated filter holder for flat sheet media. In addition, it includes test media sheets and a gravimetric filter holder.

### Accessories

8118A	Salt Aerosol Generator
1081414R	Oil Aerosol Generator
8134-xx	Custom Filter Holder

### Service and Support

(Contact your TSI® representative for more details)

- Field Installation and Training (subject to location)
- Training for user-serviceable photometer on-site/at TSI
- Service Contracts
- Field Service



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