

Aethalometer[®]

SootScan[™] Model OT21

Optical Transmissometer



Measurement Principle

Optical transmission absorption due to aerosol collected onto sample filter.

Analytical Method

Combination optical absorption of sampled particles onto filter media at 880nm and 370nm wavelengths.

Interpretation

Measurement result at 880nm designated as Black (or Elemental) Carbon and 370nm result is interpreted as indicator of aromatic organic compounds such as those found in biomass combustion – wood smoke, etc.

Specificity

No other aerosol species has optical absorption even 0.001 times that of Black Carbon in the visible range.

Intercomparison

Optical absorption measurements can be converted to the equivalent of a variety of Thermal EC analysis programs.

Sensitivity

+/- 0.050 µg BC/m³ over 24 hrs @ 16.7 lpm (1.2 µg total BC mass).

Measurement Range

0-9 µg BC/m³ over 24 hrs @ 16.7 lpm (180 µg total BC mass).

Reference Filter

Filter blanks are analyzed to provide 'zero' reference.

Sampling Medium

Quartz fiber, T60 Teflon coated borosilicate glass fiber, or Teflon membrane. Other substrates may be used; contact Magee Scientific for discussion.

Sample Analysis Area

The OT21 accommodates 25mm, 37mm, and 47mm diameter filter media. Contact Magee Scientific for discussion of using other sizes.

Sample Retention

OT21 analysis is non-destructive; subsequent laboratory chemical analysis can be performed.

Calibration/Verification

NIST-traceable neutral density filter kit.

Internal Control

All functions controlled by embedded microprocessor. Program and operating parameters stored in non-volatile RAM.

Data Output

Digital data is transmitted from rear COM port via USB.

Display and Interface

2-line display screen with keypad for menu selection entries.

Periodic Maintenance

We recommend cleaning the optical analysis chamber once per year.

Dimensions and Weight

12" W x 5" H x 14" D; 10 lb (4 kg).

Power Requirement

110/200 VAC.

Operation Environment

Designed for typical indoor conditions.

Temperature

0 ~ 40 °C operating. Electronics have active temperature stabilization.

Initialization

Approximately 15 minutes required from power-up to valid data.

Specifications are subject to change without notice.



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