



Measurement Principle

Analysis by measuring the absorption of transmitted light due to aerosol deposit previously collected on filter.

Interpretation

Light absorption measurement at 880 nm interpreted as Black Carbon ('BC', also called 'Elemental Carbon - EC'). Measurement at 370 nm designated as 'UVPM', interpreted as an indicator of aromatic organic compounds such as are found in tobacco smoke, wood and biomass-burning smoke, etc.

Data Format

Light absorption expressed as Attenuation ($100 * \ln[I_0/I]$) in 'ATN units' at two wavelengths.

Specificity

No other aerosol species absorbs light even 0.001 times as much as Black Carbon in the visible range.

Intercomparison

Light absorption measurements can be converted to BC or EC equivalents.

Sensitivity

1 ATN unit, equivalent to $0.06 \mu\text{g}/\text{cm}^2$ BC on filter. If collected on a 47 mm diameter filter at a 16.7 LPM flow rate for 24 hours, this represents a BC concentration of $0.14 \mu\text{g}/\text{m}^3$.

Measurement Range

0-125 ATN units optimal, equivalent to 0-18 $\mu\text{g}/\text{m}^3$ BC on filter if collected on a 47 mm diameter filter at a 16.7 LPM flow rate for 24 hours. Instrument will operate to higher values of ATN but linearity may be impaired.

Reference Filter

Filter blanks are analyzed to provide 'zero' reference.

Sample Medium

Quartz fiber, T60 Teflon coated borosilicate glass fiber, or Teflon membrane filters may be analyzed. For the use of other substrates contact Magee Scientific.

Sample Analysis Area

Accommodates 25 mm, 37 mm, and 47 mm diameter filter media.

Sample Retention

Analysis is non-destructive and subsequent laboratory analysis can be performed.

Validation

NIST-traceable neutral density filter kit option available.

Data Output

Digital data available via rear RS-232 (COM) and USB ports.

Display and Interface

2-line display screen with keypad.

Dimensions

Instrument constructed in portable chassis with handle: 5 in (127 mm) H x 12 in (305 mm) W x 14 in (356 mm) D

Weight

Approximately 10 lb (4.5 kg).

Power

100~240 VAC 50/60 Hz, autoswitching.

Temperature

0 ~ 40 °C operating, non-condensing.

Initialization

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

Specifications are subject to change without notice.