

Organic Carbon/Elemental Carbon Analyser (OCEC)

The Organic Carbon/Elemental Carbon Analyzer analyzes aerosol particles collected on quartz-fiber filters for both organic carbon and elemental carbon (OCEC). This instrument employs a flame ionization detector (FID) and has excellent sensitivity.

Samples should be collected on quartz-fiber filters of 47mm or 37mm although similar sized sections of Hi-Vol filters can also be used. Filters must be pre-fired in air (700 °C for 1 hr) to remove residual carbon. A 1.0 x 1.5 cm punch is required for the analysis and at least two repeats are necessary.

Samples are heated over four temperature ramps to remove all organic carbon and convert it to carbon dioxide. This carbon dioxide is then reduced to methane which is detected using the FID. Known volumes of methane are then used to calibrate to a known quantity of carbon. From the response from the FID detector and the laser transmission data, the quantity of organic and elemental carbon in a sample can be determined.

Detection limits are in the range 5 to 400 μg per cm^2 for organic carbon (OC) and 1 to 15 μg per cm^2 for elemental carbon. Lower detection limits are of the order of 0.2 μg per cm^2 of filter for OC and EC.

