

**Reference Material (RM) 8785 Air Particulate Matter on Filter Media  
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Combustion aerosol has a major influence on air quality and is known to have a direct and indirect impact on the Earth's radiative forcing. For the most part, man's activities are linked to these emissions and account for a significant amount of the total carbon aerosol found in the atmosphere. To assess impacts and distinguish sources of combustion aerosol, numerous methods exist to quantify the amount of organic and black (soot) carbon, important in addressing air quality issues and estimating the warming and cooling effects of aerosol on our climate system. However, all these analytical methods are method dependent and result in various definitions of what constitutes black carbon.



SRI Dust Generation and Collection System

Researchers in the Analytical Microscopy Group (CSTL) and the Statistical Modeling and Analysis Group (ITL) have collaborated with SRI International (Menlo Park, CA) to produce Reference Material (RM) 8785 Air Particulate Matter (PM) on Filter Media. RM 8785 was produced by resuspending SRM 1649a Urban Dust, sampling its' fine fraction ( $< 2.5 \mu\text{m}$  aerodynamic diameter) and filtering the  $\text{PM}_{2.5}$  onto nearly 2000 quartz-fiber filters. Filter ID number and the gravimetrically determined mass of fine SRM 1649a uniquely identify each filter. RM 8785 is

intended primarily for use in the evaluation of analytical methods used to characterize the carbon composition of atmospheric  $\text{PM}_{2.5}$  for national ambient air quality standards (NAAQS) monitoring programs. Additionally, RM 8785 will provide the atmospheric chemistry and ocean-sciences community with a means to intercompare methods and laboratories for the measurement of black carbon.



Through an inter-laboratory and -method comparison involving NIST, Desert Research Institute (Reno, NV) and Sunset Laboratories Inc. (Tigard, OR), concentrations of total carbon, black carbon and organic carbon were measured and values were assigned. Measurements were performed using two widely used thermal-optical methods: the Interagency Monitoring of Protected Visual Environments (IMPROVE) and the Speciation Trends Network-National Institute of Occupational Safety and Health (STN-NIOSH). RM 8785 has been assigned a reference value for total carbon concentration and information values for black and organic carbon concentrations corresponding to each method.

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