



Designation: D8358 – 21

Standard Guide for Assessment and Inclusion of Wall Deposits in the Analysis of Single-Stage Samplers for Airborne Particulate Matter¹

This standard is issued under the fixed designation D8358; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 Many methods for sampling airborne particulate matter entail aerosol collection on a substrate (typically a filter) housed within a container (or holder), the whole apparatus being referred to as an aerosol sampler. In operation, the sampler allows a vacuum (pressure below ambient or room air pressure) to be applied to the rear of the substrate so that sampled air will pass through the substrate, leaving collected particles on the substrate for subsequent analysis. The sampler may also protect the substrate, while the opening (orifice) of the container may further play some role in determining what size range(s) of particles approach the collection substrate (size-selective sampling).

1.2 All particles entering the container orifice are considered part of the sample, unless stated otherwise in the method, but not all particles are necessarily found on the substrate after sampling (1).² Particles may be deposited on the inner walls of the sampler during sampling or may be deposited on the inside walls of the sampler or on the orifice plug or cap following transportation (2). These particles are often loosely referred to as wall deposits. This guide presents background on the importance of these wall deposits and offers procedures by which these deposits can be assessed and included in the sample.

1.3 Wall deposits may also occur in multi-stage samplers (for example, cascade impactors), but this guide does not cover such samplers.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

¹ This guide is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.04 on Workplace Air Quality. Current edition approved Jan. 1, 2021. Published February 2021. DOI: 10.1520/D8358-21.

² The boldface numbers in parentheses refer to a list of references at the end of this standard.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:³

- D1356 Terminology Relating to Sampling and Analysis of Atmospheres
- D4185 Test Method for Measurement of Metals in Workplace Atmospheres by Flame Atomic Absorption Spectrophotometry
- D4532 Test Method for Respirable Dust in Workplace Atmospheres Using Cyclone Samplers
- D6061 Practice for Evaluating the Performance of Respirable Aerosol Samplers
- D6062 Guide for Personal Samplers of Health-Related Aerosol Fractions
- D6552 Practice for Controlling and Characterizing Errors in Weighing Collected Aerosols
- D6785 Test Method for Determination of Lead in Workplace Air Using Flame or Graphite Furnace Atomic Absorption Spectrometry
- D7035 Test Method for Determination of Metals and Metalloids in Airborne Particulate Matter by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)
- D7439 Test Method for Determination of Elements in Airborne Particulate Matter by Inductively Coupled Plasma–Mass Spectrometry
- D7948 Test Method for Measurement of Respirable Crystalline Silica in Workplace Air by Infrared Spectrometry

NOTE 1—Other standards under the jurisdiction of ASTM Committee D22 on Air Quality, including standards that are not the direct responsibility of Subcommittee D22.04 on Workplace Air Quality, may also be affected by this guide and should be considered on a case-by-case basis.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.