



Standard Test Method for Determination of Mass Concentration of Particulate Matter from Stationary Sources at Low Concentrations (Manual Gravimetric Method)¹

This standard is issued under the fixed designation D6331; 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 This test method² covers a method for the measurement of particulate matter (dust) concentration in emission gases in the concentrations below 20 mg/m³ standard conditions, with special emphasis around 5 mg/m³.

1.2 To meet the requirements of this test method, the particulate sample is weighed to a specified level of accuracy. At low dust concentrations, this is achieved by:

- 1.2.1 Precise and repeatable weighing procedures,
- 1.2.2 Using low tare weight weighing dishes,
- 1.2.3 Extending the sampling time at conventional sampling rates, or
- 1.2.4 Sampling at higher rates at conventional sampling times (high-volume sampling).

1.3 This test method differs from Test Method **D3685/D3685M** by requiring the mass measurement of filter blanks, specifying weighing procedures, and requiring monitoring of the flue gas flow variability over the testing period. It requires that the particulate matter collected on the sample filter have a mass at least five times a positive mass difference on the filter blank. High volume sampling techniques or an extension of the sampling time may be employed to satisfy this requirement. This test method has tightened requirements on sampling temperature fluctuations and isokinetic sampling deviation. This test method has eliminated the in-stack filtration technique.

1.4 This test method may be used for calibration of automated monitoring systems (AMS). If the emission gas contains unstable, reactive, or semi-volatile substances, the measurement will depend on the filtration temperature.

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

1.6 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:³

- D1193** Specification for Reagent Water
- D1356** Terminology Relating to Sampling and Analysis of Atmospheres
- D2986** Practice for Evaluation of Air Assay Media by the Monodisperse DOP (Diocetyl Phthalate) Smoke Test (Withdrawn 2004)⁴
- D3154** Test Method for Average Velocity in a Duct (Pitot Tube Method)
- D3631** Test Methods for Measuring Surface Atmospheric Pressure
- D3670** Guide for Determination of Precision and Bias of Methods of Committee D22
- D3685/D3685M** Test Methods for Sampling and Determination of Particulate Matter in Stack Gases
- D3796** Practice for Calibration of Type S Pitot Tubes
- E1** Specification for ASTM Liquid-in-Glass Thermometers
- E2251** Specification for Liquid-in-Glass ASTM Thermometers with Low-Hazard Precision Liquids

2.2 ISO Standards:⁵

- ISO 5725** Precision of test methods—Determination of repeatability and reproducibility by inter-laboratory tests

¹ This test method is under the jurisdiction of ASTM Committee **D22** on Air Quality and is the direct responsibility of Subcommittee **D22.03** on Ambient Atmospheres and Source Emissions.

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² This test method was originally based on ISO/CD 12141.3, “Stationary Source Emissions—Determination of Mass Concentration of Particulate Matter (Dust) at Low Concentrations—Manual Gravimetric Method”, available from International Organization for Standardization, Casa Postale 56, CH-1211, Geneva Switzerland.

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.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

⁵ Available from International Organization for Standardization (ISO), ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <http://www.iso.org>.