



Designation: D4856 – 23

Standard Test Method for Determination of Sulfuric Acid Mist in Workplace Atmospheres Collected on Mixed Cellulose Ester Filters (Ion Chromatographic Analysis)¹

This standard is issued under the fixed designation D4856; 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 ion chromatographic test method describes the determination of sulfuric acid mist in air samples collected from workplace atmospheres on a mixed cellulose ester (MCE) filter.

NOTE 1—Other filter types such as quartz fiber, polytetrafluoroethylene (PTFE), and polyvinyl chloride (PVC) filters are also suitable.

1.2 The lower detection limit of this test method is 0.001 mg/sample or 0.017 mg/m³ of sulfuric acid (H₂SO₄) mist in 60 L of air sampled at 1 L/min.

1.3 This test method is subject to interference from soluble and partially soluble sulfate salts. Other sulfur-containing compounds can be oxidized to sulfate and also interfere.

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 No detailed instrument operating instructions are provided because of differences among various makes and models of ion chromatography (IC) systems. Instead, the analyst shall follow the instructions provided by the manufacturer of the particular instrument, analytical column, and suppressors used.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see Section 9.

1.7 *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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:²

- D1193 Specification for Reagent Water
- D1356 Terminology Relating to Sampling and Analysis of Atmospheres
- D1914 Practice for Conversion Units and Factors Relating to Sampling and Analysis of Atmospheres
- D4327 Test Method for Anions in Water by Suppressed Ion Chromatography
- D4840 Guide for Sample Chain-of-Custody Procedures
- D5337 Practice for Setting and Verifying the Flow Rate of Personal Sampling Pumps
- D8358 Guide for Assessment and Inclusion of Wall Deposits in the Analysis of Single-Stage Samplers for Airborne Particulate Matter
- E200 Practice for Preparation, Standardization, and Storage of Standard and Reagent Solutions for Chemical Analysis
- E288 Specification for Laboratory Glass Volumetric Flasks
- E1154 Specification for Piston or Plunger Operated Volumetric Apparatus and Operator Qualification

2.2 ISO and European Standards:

- ISO 648 Laboratory glassware — Single-volume pipettes³
- ISO 7708 Air quality — Particle size fraction definitions for health-related sampling³
- ISO 18158 Workplace air — Terminology³
- ISO 20581 Workplace air — General requirements for the performance of procedures for the measurement of chemical agents³
- ISO 21438-1 Workplace atmospheres — Determination of inorganic acids by ion chromatography — Part 1: Non-volatile acids (sulfuric acid and phosphoric acid)³

¹ This test method is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.04 on Workplace Air Quality.

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² 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.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.