



Standard Test Method for Measurement of Gaseous Chlorides and Fluorides from Mineral Calcining Exhaust Sources—Impinger Method¹

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INTRODUCTION

The bias and precision statements included in Section 14 of this test method are based on field test measurements at limestone calcining sources. Procedures for assessing the test-specific bias and the precision at each source are included in the body of the method.

Additional optional procedures are included in [Appendix X1](#) that can be used to demonstrate the bias and precision of the method for specific source categories. These procedures were used to develop the bias and precision statements included in Section 14 and may be applied when using the method at sources where no previous test data have been acquired.

1. Scope

1.1 This method will measure the concentration of gaseous hydrochloric and hydrofluoric acids, and other gaseous chlorides and fluorides that pass through a particulate matter filter maintained at 177°C (350°F). This method is specific for sampling combustion effluent from mineral calcining industries and other stationary sources where the reactive/adsorptive nature of the particulate matter may affect measurements.

1.2 This method utilizes ion chromatography to quantify the aqueous samples, and thus measures only the Cl^- and F^- ions.

1.3 Based on a one-hour sampling run, the method will provide results of known accuracy and precision for chloride and fluoride in-stack concentrations of 0.5 ppm (v) dry or greater. Extending the run duration and sampling a greater volume of effluent will extend the range to lower concentrations.

1.4 This method includes optional post-test quality assurance procedures to assess the bias of the test results, and optional paired sample train runs to assess the precision of test results.

2. Referenced Documents

2.1 ASTM Standards:²

[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[D2986 Practice for Evaluation of Air Assay Media by the Monodisperse DOP \(Diocetyl Phthalate\) Smoke Test \(Withdrawn 2004\)](#)³

[D3195 Practice for Rotameter Calibration](#)

[D6348 Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared \(FTIR\) Spectroscopy](#)

2.2 EPA Standards:⁴

[Method 1—Sample and Velocity Traverses for Stationary Sources](#)

[Method 2—Determination of Stack Gas Velocity and Volumetric Flow Rate \(Type S Pitot Tube\)](#)

[Method 3—Gas Analysis for Carbon Dioxide, Oxygen, Excess Air, and Dry Molecular Weight](#)

[Method 4—Determination of Moisture Content in Stack Gases](#)

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

⁴ United States Environmental Protection Agency Code of Federal Regulations, 40 CFR Parts 60 and 63, available from the Government Printing Office, Washington, DC.