



Standard Test Method for Separation and Collection of Particulate and Gaseous Fluorides in the Atmosphere (Sodium Bicarbonate-Coated Glass Tube and Particulate Filter Method)^{1,2}

This standard is issued under the fixed designation D 3268; 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.

This standard has been approved for use by agencies of the Department of Defense.

^{ε1} NOTE—Editorial corrections were made throughout in March 2000.

1. Scope

1.1 The sodium bicarbonate-coated glass tube and membrane filter method provides a means for the separation and collection of gaseous atmospheric forms of fluoride reactive with sodium bicarbonate and particulate forms of fluoride which are collected by a filter. The test method is applicable to 12-h sampling periods, collecting 1 to 500 µg of gaseous fluoride at a 15 L/min (0.5 ft³/min) sampling rate or about 0.1 to 50 µg/m³. The length of the sampling period can therefore be adjusted so that the amount of fluoride collected will fall within this range. The actual lower limit of the test method will depend upon the sensitivity of the analytical method employed and the quality of reagents used in tube preparation and analysis. It is recommended that the lower limit of detection should be considered as two times the standard deviation of the monthly arithmetic mean blank value. Any values greater than the blank by less than this amount should be reported as “blank value.”

1.2 The values stated in SI units are to be regarded as standard. The inch-pound units in parentheses may be approximate.

1.3 *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.*

¹ This test method is under the jurisdiction of ASTM Committee D-22 on Sampling and Analysis of Atmospheres 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 editorially adapted from the Intersociety Committee Method 42222-01-72T; 12202-03-72T, “Health Laboratory Science” Vol 9, No. 4, 1972, pp. 308–313. This revision has been adapted from “Methods of Air Sampling and Analysis,” Intersociety Committee, James P. Lodge, Jr., ed., 3rd ed., Lewis Publishers, Inc., 1989, pp. 347–351.

2. Referenced Documents

2.1 ASTM Standards:

D 1193 Specification for Reagent Water³

D 1356 Terminology Relating to Sampling and Analysis of Atmospheres⁴

D 1357 Practice for Planning the Sampling of the Ambient Atmosphere⁴

D 3266 Test Method for Automated Separation and Collection of Particulate and Acidic Gaseous Fluoride in the Atmosphere (Double Paper Tape Sampler Method)⁴

D 3267 Test Method for Separation and Collection of Particulate and Water-Soluble Gaseous Fluorides in the Atmosphere (Filter and Impinger Method)⁴

D 3269 Test Methods for Analysis for Fluoride Content of the Atmosphere and Plant Tissues (Manual Procedures)⁴

D 3270 Test Methods for Analysis for Fluoride Content of the Atmosphere and Plant Tissues (Semiautomated Method)⁴

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method refer to Terminology D 1356.

4. Summary of Test Method

4.1 Gaseous fluorides are removed from the air stream by reaction with sodium bicarbonate coated on the inside wall of a borosilicate glass tube (Note 1). Particulate fluorides are collected on a filter following the tube. The fluoride collected by the tube is eluted with water or buffer and analyzed for fluoride. The particulate matter collected by the filter is eluted with acid and analyzed for fluoride **(1-4)**⁵. The results are

³ *Annual Book of ASTM Standards*, Vol. 11.01.

⁴ *Annual Book of ASTM Standards*, Vol. 11.03.

⁵ The boldface numbers in parentheses refer to references at the end of this test method.

