



Designation: D7773 – 19

Standard Test Method for Determination of Volatile Inorganic Acids (HCl, HBr, and HNO₃) Using Filter Sampling and Suppressed Ion Chromatography¹

This standard is issued under the fixed designation D7773; 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 method is intended for use in the determination of the time-weighted average mass concentration of hydrogen chloride gas and hydrochloric acid mist, hydrogen bromide vapor and hydrobromic acid mist, and nitric acid vapor and mist in workplace air. The samples are collected on an alkali-impregnated quartz fiber filter and analyzed by ion chromatography. This test method is also appropriate for measuring short term exposures.

1.2 This test method assumes that air samples are collected using appropriate and applicable ASTM International standards for sampling of workplace air.

1.3 The procedure is targeted for occupational and environmental hygiene monitoring purposes.

1.4 No detailed operating instructions are provided because of differences among various makes and models of suitable instruments. Instead, the analyst shall follow the instructions provided by the manufacturer of the particular instrument. This standard does not address comparative accuracy of different devices or the precision between instruments of the same make and model.

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 test method contains notes, which are explanatory and not part of mandatory requirements of the standard.

1.7 *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.*

1.8 *This international standard was developed in accordance with internationally recognized principles on standard-*

ization 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:²

D882 Test Method for Tensile Properties of Thin Plastic Sheeting

D1193 Specification for Reagent Water

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D4840 Guide for Sample Chain-of-Custody Procedures

D5337 Practice for Flow Rate Adjustment of Personal Sampling Pumps

D7035 Test Method for Determination of Metals and Metalloids in Airborne Particulate Matter by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)

E1370 Guide for Air Sampling Strategies for Worker and Workplace Protection

2.2 ISO Standards:³

ISO 648 Laboratory Glassware — Single-Volume Pipettes

ISO 1042 Laboratory Glassware — One-Mark Volumetric Flasks

ISO 7708 Air Quality — Particle Size Fraction Definitions for Health-Related Sampling

ISO 20581 Workplace Air — General Requirements for the Performance of Procedures for the Measurement of Chemical Agents

ISO 22065 Workplace Air — Gases and Vapours — Requirements for Evaluation of Measuring Procedures Using Pumped Samplers

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>.