



Designation: D7614 – 20

Standard Test Method for Determination of Total Suspended Particulate (TSP) Hexavalent Chromium in Ambient Air Analyzed by Ion Chromatography (IC) and Spectrophotometric Measurements¹

This standard is issued under the fixed designation D7614; 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 specifies a procedure for the sampling and analysis of airborne particulate matter for hexavalent chromium in ambient air samples.

1.2 This method is applicable to the determination of masses of 0.40 to 20.0 ng of hexavalent chromium per sample without dilution. Detection limits vary by instrumentation. Some laboratories may be able to achieve lower detection limits. The lower limit of applicability for this method was determined in a 2019 multi-laboratory detection limit study (1).²

1.3 This method is applicable to hexavalent chromium measurement in the atmosphere from 0.019 to 0.926 ng/m³ assuming a 21.6 m³ sample volume. The lower range may be decreased with longer sampling times. The upper range can be increased using appropriate dilutions.

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 *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.*

1.6 *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 Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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 The boldface numbers in parentheses refer to a list of references at the end of this standard.

2. Referenced Documents

2.1 ASTM Standards:³

D1193 Specification for Reagent Water

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D1357 Practice for Planning the Sampling of the Ambient Atmosphere

D3195 Practice for Rotameter Calibration

D4840 Guide for Sample Chain-of-Custody Procedures

E288 Specification for Laboratory Glass Volumetric Flasks

E438 Specification for Glasses in Laboratory Apparatus

E1154 Specification for Piston or Plunger Operated Volumetric Apparatus

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this test method, refer to Terminology D1356.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *acid hardened filters*, *n*—cellulose filters which have been acid-washed and solvent-rinsed by the manufacturer.

3.2.2 *cassette*, *n*—a cartridge designed to contain a filter through which air is pulled during sample collection. Cassettes may be specific to a brand or model of sampler.

3.2.3 *chain of custody (COC)*, *n*—a document that provides for the traceable transfer of field samples to the analytical laboratory.

3.2.4 *eluent*, *n*—the mobile phase used to transport the sample through the ion chromatograph (IC) system, to include the UV/Vis detector.

3.2.5 *field data sheet*, *n*—a record that provides a reference document for information directly related to the sample collection event, including pre- and post-calibration data.

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.