



Standard Test Methods for Bromate, Bromide, Chlorate, and Chlorite in Drinking Water by Suppressed Ion Chromatography¹

This standard is issued under the fixed designation D6581; 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 These multi-test methods cover the determination of the oxyhalides—chlorite, bromate, and chlorate, and bromide, in raw water, finished drinking water and bottled (non-carbonated) water by chemically and electrolytically suppressed ion chromatography. The ranges tested using these test methods for each analyte were as follows:

	Range	Sections
Test Method A: Chemically Suppressed Ion Chromatography		8 to 20
Chlorite	5 to 500 $\mu\text{g/L}$	
Bromate	1 to 25 $\mu\text{g/L}$	
Bromide	5 to 250 $\mu\text{g/L}$	
Chlorate	5 to 500 $\mu\text{g/L}$	
Test Method B: Electrolytically Suppressed Ion Chromatography		21 to 31
Chlorite	20 to 1000 $\mu\text{g/L}$	
Bromate	1 to 30 $\mu\text{g/L}$	
Bromide	20 to 200 $\mu\text{g/L}$	
Chlorate	20 to 1000 $\mu\text{g/L}$	

1.1.1 The upper limits may be extended by appropriate sample dilution or by the use of a smaller injection volume. Other ions of interest, such as fluoride, chloride, nitrite, nitrate, phosphate, and sulfate may also be determined using these test methods. However, analysis of these ions is not the object of these test methods.

1.2 It is the user's responsibility to ensure the validity of these test methods for waters of untested matrices.

1.3 These test methods are technically equivalent with Part B of U.S. EPA Method 300.1,² titled "The Determination of Inorganic Anions in Drinking Water by Ion Chromatography."

1.4 The values stated in either SI or inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

¹ These test methods are under the jurisdiction of ASTM Committee D19 on Water and are the direct responsibility of Subcommittee D19.05 on Inorganic Constituents in Water.

Current edition approved March 1, 2012. Published April 2012. Originally approved in 2000. Last previous edition approved in 2008 as D6581 – 08. DOI: 10.1520/D6581-12.

² U.S. EPA 300.1, Cincinnati, OH, 1997.

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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:³

D1129 Terminology Relating to Water
D1193 Specification for Reagent Water
D2777 Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water
D3370 Practices for Sampling Water from Closed Conduits
D3856 Guide for Management Systems in Laboratories Engaged in Analysis of Water
D5810 Guide for Spiking into Aqueous Samples
D5847 Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis

3. Terminology

3.1 *Definitions*—For definitions of terms used in the test methods, refer to Terminology D1129.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *analytical column*—the ion exchange column used to separate the ions of interest according to their retention characteristics prior to detection.

3.2.2 *analytical column set*—a combination of one or more guard columns, followed by one or more analytical columns used to separate the ions of interest. All of the columns in series then contribute to the overall capacity and resolution of the analytical column set.

3.2.3 *eluent*—the ionic mobile phase used to transport the sample through the chromatographic system.

3.2.4 *guard column*—a column used before the analytical column to protect it from contaminants, such as particulates or irreversibly retained material.

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.