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.

Designation: D7536 – 20

Standard Test Method for Chlorine in Aromatics by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry[1]

This standard is issued under the fixed designation D7536; 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 covers the determination of chlorine by monochromatic wavelength-dispersive X-ray fluorescence (MWDXRF) spectrometry in aromatic hydrocarbons, their derivatives, and related chemicals.

1.2 This test method is applicable to samples with chlorine concentrations to 10 mg/kg. Higher chlorine concentrations can be determined by quantitatively diluting the sample with a suitable solvent. The limit of detection (LOD) is 0.2 mg/kg and the limit of quantitation is 0.7 mg/kg. With careful analytical technique or the measurement of replicates, or both, this method can be used to successfully analyze concentrations below the LOD.

NOTE 1—The maximum is the highest concentration from the interlaboratory study (ILS) and the LOD and LOQ were calculated from Performance Testing Program (PTP) data. See Table 3.

1.3 In determining the conformance of the test results using this method to applicable specifications, results shall be rounded off in accordance with the rounding-off method of Practice E29.

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. For specific hazard information, see Section 9.*

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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D3437 Practice for Sampling and Handling Liquid Cyclic Products

D4790 Terminology of Aromatic Hydrocarbons and Related Chemicals

D6809 Guide for Quality Control and Quality Assurance Procedures for Aromatic Hydrocarbons and Related Materials

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 *Other Documents:*[3]

OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200

3. Terminology

3.1 See Terminology D4790 for definitions of terms used in this test method.

4. Summary of Test Method

4.1 A monochromatic X-ray beam with a wavelength suitable to excite the K-shell electrons of chlorine is focused onto a test specimen contained in a sample cell (see Fig. 1). The fluorescent Kα radiation at 0.473 nm (4.73Å) emitted by chlorine is collected by a fixed monochromator (analyzer). The intensity (counts per second) of the chlorine X-rays is measured using a suitable detector and converted to the concentration of chlorine (mg/kg) in a test specimen using a calibration equation. Excitation by monochromatic X-rays reduces background, simplifies matrix correction and increases the

[1] This test method is under the jurisdiction of ASTM Committee D16 on Aromatic, Industrial, Specialty and Related Chemicals and is the direct responsibility of Subcommittee D16.04 on Instrumental Analysis.

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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 U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.

*A Summary of Changes section appears at the end of this standard

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