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: D7823 – 18

Standard Test Method for Determination of Low Level Phthalates in Poly (Vinyl Chloride) Plastics by Thermal Desorption—Gas Chromatography/Mass Spectrometry[1]

This standard is issued under the fixed designation D7823; 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 provides a procedure to identify and quantify phthalates by thermal desorption (TD) gas chromatography (GC) mass spectrometry (MS). Six phthalates are used to demonstrate the use of the procedure: BBP, DBP, DEHP, DNOP, DINP and DIDP.

1.2 Within the context of this method, "low level" is defined as 1000 ppm.

1.3 The values in SI units are to be regarded as standard.

1.4 This test method includes references, notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in the tables and figures) shall not be considered as requirements of this method.

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.*

NOTE 1—The method can be extended to include other ortho-phthalates in a number of polymeric substrates.

NOTE 2—There is no known ISO equivalent to this standard.

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]

D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics

D3465 Test Method for Purity of Monomeric Plasticizers by Gas Chromatography

D7083 Practice for Determination of Monomeric Plasticizers in Poly (Vinyl Chloride) (PVC) by Gas Chromatography

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E355 Practice for Gas Chromatography Terms and Relationships

E594 Practice for Testing Flame Ionization Detectors Used in Gas or Supercritical Fluid Chromatography

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

IEEE/ASTM SI-10 Practice for Use of the International System of Units (SI), the Modernized Metric System

2.2 *ASTM Adjuncts:*

Adjunct to D7823 Vinyl Plasticizer Library—Total Ion Chromatograms and Mass Spectra[3]

3. Terminology

3.1 *Definitions*—For definition of plastic terms used in this test method, see Terminologies D883 and D1600.

3.2 For units, symbols, and abbreviations used in this test method refer to Practices E594, E355, or SI10.

3.3 *Compounds and Instrumentation:*

3.3.1 *(DOA) Hexanedioic acid, 1,6-bis(2-ethylhexyl) ester* CAS #103-23-1

3.3.2 *(DINCH) 1,2-Cyclohexanedicarboxylic acid, dinonyl ester, branched and linear* CAS #474919-59-0

3.3.3 *(DBP) 1,2-Benzenedicarboxylic acid, 1,2-di-n-butyl ester* CAS #84-74-2

3.3.4 *(BBP) Benzyl butyl phthalate* CAS #85-68-7

3.3.5 *(DEHP) Bis(2-ethyhexyl) phthalate* CAS #117-81-7

3.3.6 *(DNOP) Di(n-octyl) phthalate* CAS #117-84-0

[1] This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.70 on Analytical Methods.

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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 ASTM International Headquarters. Order Adjunct No. ADJD7823S-EA. Original adjunct produced in 2016.

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

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