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: D7881 – 19

Standard Test Method for Determination of 4-Carboxybenzaldehyde and *p*-Toluic Acid in Purified Terephthalic Acid by Capillary Electrophoresis with Reverse Voltage Mode[1]

This standard is issued under the fixed designation D7881; 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[2] covers the determination of 4-carboxybenzaldehyde (4-CBA) and *p*-toluic acid (*p*-TOL) in purified terephthalic acid (PTA) by capillary electrophoresis (CE) with reverse voltage mode and UV detection. It is applicable for 4-CBA from 3 to 400 mg/kg and for *p*-TOL from 8 to 400 mg/kg, respectively.

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

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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.*

1.5 *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:*[3]

D1193 Specification for Reagent Water

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 *ISO Documents:*[4]

EN ISO 8213 Chemical Products for Industrial Use—Sampling Techniques—Solid Chemical Products in the Form of Particles Varying from Powders to Coarse Lumps

2.3 *Other Document:*[5]

OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200

3. Terminology

3.1 *Definitions of Terms Specific to Reverse Voltage Mode in this Standard:*

3.1.1 *capillary electrophoresis, n*—an electrophoretic technique in which a sample is introduced into a 50 µm to 100 µm i. d. fused-silica capillary filled with electrolyte solution and subjected to high voltage for separation.

3.1.1.1 *Discussion*—Reverse voltage, with the cathode on the injection side and the anode on the detection side, is applied across the capillary causing electrolyte and analytes to migrate towards the anode and through the capillary's UV detector

[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 D16.02 on Oxygenated Aromatics.

Current edition approved Nov. 1, 2019. Published December 2019. Originally approved in 2013. Last previous edition approved in 2013 as D7881 – 13. DOI: 10.1520/D7881-19.

[2] This standard is based on SH/T 1687–2000 Purified terephthalic acid for industrial use—determination of 4-Carboxybenzaldehyde and *p*-Toluic Acid-High performance capillary electrophoresis (HPCE), copyright SINOPEC, 22 Chaoyangmen North Street, Chaoyang District, Beijing, China 100728. A copy of SH/T 1687–2000 may be obtained from China Petrochemical Press, www.sinopec-press.com.

[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.

[4] Available from Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

[5] 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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