Designation: D2359 – 17

Standard Specification for Refined Benzene-535[1]

This standard is issued under the fixed designation D2359; 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 specification covers a grade of benzene known as refined benzene-535.

1.2 The following applies to all specified limits in this standard: for purposes of determining conformance with this standard, an observed value or a calculated value shall be rounded off "to the nearest unit" in the last right-hand digit used in expressing the specification limit, 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 Consult current OSHA regulations, supplier's Safety Data Sheets, and local regulations for all materials used in this specification.

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:*[2]

D848 Test Method for Acid Wash Color of Industrial Aromatic Hydrocarbons

D852 Test Method for Solidification Point of Benzene

D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

D1685 Test Method for Traces of Thiophene in Benzene by Spectrophotometry (Withdrawn 2009)[3]

D3437 Practice for Sampling and Handling Liquid Cyclic Products

D4492 Test Method for Analysis of Benzene by Gas Chromatography

D4735 Test Method for Determination of Trace Thiophene in Refined Benzene by Gas Chromatography

D5194 Test Method for Trace Chloride in Liquid Aromatic Hydrocarbons

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

D5808 Test Method for Determining Chloride in Aromatic Hydrocarbons and Related Chemicals by Microcoulometry

D6304 Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration

D6875 Test Method for Solidification Point of Industrial Organic Chemicals by Thermistor

D7011 Test Method for Determination of Trace Thiophene in Refined Benzene by Gas Chromatography and Sulfur Selective Detection

D7183 Test Method for Determination of Total Sulfur in Aromatic Hydrocarbons and Related Chemicals by Ultraviolet Fluorescence

D7184 Test Method for Ultra Low Nitrogen in Aromatic Hydrocarbons by Oxidative Combustion and Reduced Pressure Chemiluminescence Detection

D7359 Test Method for Total Fluorine, Chlorine and Sulfur in Aromatic Hydrocarbons and Their Mixtures by Oxidative Pyrohydrolytic Combustion followed by Ion Chromatography Detection (Combustion Ion Chromatography-CIC)

D7360 Test Method for Analysis of Benzene by Gas Chromatography with External Calibration

D7375 Test Method for Trace Quantities of Water in Aromatic Hydrocarbons and Their Mixtures by Coulometric Karl Fischer Titration (Withdrawn 2017)[3]

D7457 Test Method for Determining Chloride in Aromatic Hydrocarbons and Related Chemicals by Microcoulometry

[1] This specification is under the jurisdiction of ASTM Committee D16 on Aromatic, Industrial, Specialty and Related Chemicals and is the direct responsibility of Subcommittee D16.01 on Benzene, Toluene, Xylenes, Cyclohexane and Their Derivatives.

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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] The last approved version of this historical standard is referenced on www.astm.org.

D7504 Test Method for Trace Impurities in Monocyclic Aromatic Hydrocarbons by Gas Chromatography and Effective Carbon Number
D7536 Test Method for Chlorine in Aromatics by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry
E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
E1064 Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration
E2680 Test Method for Appearance of Clear, Transparent Liquids (Visual Inspection Procedure)

2.2 *Other Document:*
OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200 [4]

3. Properties

3.1 Refined benzene-535 shall conform to the following requirements:

Property	Specification	ASTM Test Method[A]
Purity, min, weight %	99.80	D4492 or D7360
Toluene, max, weight %	0.10	D4492 or D7360
Thiophene, max, mg/kg	1	D1685 or D4735 or D7011
Nonaromatic hydrocarbons, max, weight %	0.15	D4492 or D7360
Acid wash color, max	pass with 1	D848
Appearance, free of haze, particulates or suspended matter particles	pass	E2680
Color, max, Pt–Co scale	20	D1209 or D5386
Solidification point, anhydrous basis, min, °C	5.35	D852 or D6875

[A] If more than one method is listed, the producer and user should agree on the referee method.

3.2 See Section 5 for non-mandatory supplementary requirements.

4. Sampling

4.1 The material shall be sampled in accordance with Practice D3437.

5. Supplementary Requirements (Non-mandatory)

5.1 The following supplementary requirements shall apply when agreed upon by the supplier and purchaser:

Property	ASTM Test Method[A]
Sulfur, max, mg/kg	D7183
Nitrogen, max, mg/kg	D7184
Water	D6304 or E1064 or D7375
1,4 Dioxane	D4492 or D7360 or D7504
Chloride, max, mg/kg	D5194 or D5808 or D7359 or D7536

[A] If more than one method is listed, the producer and user should agree on the referee method.

6. Keywords

6.1 benzene; benzene–535

[4] 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.