



Standard Specification for Refined Benzene-545¹

This standard is issued under the fixed designation D 4734; 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 benzene-545.

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 in Practice E 29.

1.3 Consult current OSHA regulations, supplier’s Material Safety Data Sheets, and local regulations for all materials used in this specification.

2. Referenced Documents

2.1 *ASTM Standards:*²

- D 848 Test Method for Acid Wash Color of Industrial Aromatic Hydrocarbons
- D 852 Test Method for Solidification Point of Benzene
- D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)
- D 1492 Test Method for Bromine Index of Aromatic Hydrocarbons by Coulometric Titration
- D 1685 Test Method for Traces of Thiophene in Benzene by Spectrophotometry
- D 3437 Practice for Sampling and Handling Liquid Cyclic Products
- D 4045 Test Method for Sulfur in Petroleum Products by Hydrogenolysis and Rateometric Colorimetry
- D 4492 Test Method for Analysis of Benzene by Gas Chromatography
- D 4629 Test Method for Trace Nitrogen in Liquid Petro-

- leum Hydrocarbons by Syringe/Inlet Oxidative Combustion and Chemiluminescence Detection
- D 4735 Test Method for Determination of Trace Thiophene in Refined Benzene by Gas Chromatography
- D 5386 Test Method for Color of Liquids Using Tristimulus Colorimetry
- D 5776 Test Method for Bromine Index of Aromatic Hydrocarbons by Electrometric Titration
- D 6069 Test Method for Trace Nitrogen in Aromatic Hydrocarbons by Oxidative Combustion and Reduced Pressure Chemiluminescence Detection
- D 6212 Test Method for Total Sulfur in Aromatic Compounds by Hydrogenolysis and Rateometric Colorimetry
- D 6304 Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration
- D 6313 Test Method for Total Sulfur in Aromatic Compounds by Hydrogenolysis and Sulfur Specific Difference Photometry
- D 6366 Test Method for Total Trace Nitrogen and Its Derivatives in Liquid Aromatic Hydrocarbons by Oxidative Combustion and Electrochemical Detection
- D 6428 Test Method for Total Sulfur in Liquid Hydrocarbons and Their Derivatives by Oxidative Combustion and Electrochemical Detection
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E 1064 Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration

2.2 *Other Document:*

OSHA Regulations, 29 CFR, paragraphs 1910.1000 and 1910.1200³

3. Properties

3.1 Benzene-545 shall conform to the following requirements:

¹ This specification is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons 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 Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

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

Property	Specification	ASTM Test Method ^A	Appearance	^B	...
			Color, max, Pt–Co scale	20	D 1209 or D 5386
Benzene, min, weight %	99.90	D 4492	Solidification point, anhydrous basis, min, °C	5.45	D 852
Sulfur, max, mg/kg	1	D 4045 or D 6212 or D 6313 or D 6428			
Thiophene, max, mg/kg	0.6	D 1685 or D 4735	^A Where multiple analytical techniques are allowed the referee method will be mutually agreed by the parties involved.		
Toluene, max, weight%	0.05	D 4492	^B Clear liquid at 18.3 to 25.6°C.		
Nonaromatic hydrocarbons, max, weight %	0.10	D 4492			
Nitrogen	(if needed)	D 4629 or D 6069 or D 6366	4. Sampling		
1,4 Dioxane	(if needed)	D 4492	4.1 The material shall be sampled in accordance with Practice D 3437.		
Acid wash color, max	pass with 1	D 848	5. Keywords		
Bromine index, max	20	D 1492 or D 5776	5.1 benzene; benzene-545; purity		
Water	(if needed)	D 6304 or E 1064			

SUMMARY OF CHANGES

Committee D16 has identified the location of selected changes to this standard since the last issue (D 4734 – 98) that may impact the use of this standard.

- (1) 2.1 – Added references for Test Methods D 6069, D 6212, D 6304, D 6313, D 6366, D 6428, and E 1064. Removed reference for Test Method D 4017.
- (2) 3.1 – Removed Test Method D 4017 and replaced it with

Test Methods D 6304 and E 1064.

- (3) 3.1 – Added additional methods for sulfur and nitrogen that should be acceptable for this product.

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