Designation: D7124 – 16

Standard Specification for Benzene for Use with Zeolite Based Catalysts[1]

This standard is issued under the fixed designation D7124; 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 for use with zeolite based catalysts.

1.2 The following applies to all specified limits in this specification: for purposes of determining conformance with this specification, 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 the standard. The values given in parentheses are for information only.

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

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D848 Test Method for Acid Wash Color of Industrial Aromatic Hydrocarbons

D1492 Test Method for Bromine Index of Aromatic Hydrocarbons by Coulometric Titration

D1685 Test Method for Traces of Thiophene in Benzene by Spectrophotometry (Withdrawn 2009)[3]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

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

D5776 Test Method for Bromine Index of Aromatic Hydrocarbons by Electrometric Titration

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

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

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

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

D8005 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

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

[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.

Current edition approved June 1, 2016. Published July 2016. Originally approved in 2005. Last previous edition approved in 2012 as D7124 – 12. DOI: 10.1520/D7124-16.

[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.

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

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States

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

3. Properties

3.1 Benzene for use with zeolite based catalysts shall conform to the following requirements:

Property	Specification	ASTM Test Method[A]
Benzene, min, weight %	99.8	D4492 or D7360 or D7504
Sulfur, max, mg/kg	1.0	D7183
Thiophene, max, mg/kg	0.6	D1685 or D4735 or D7011
Toluene, max, weight %	0.05	D4492 or D7360 or D7504
Nonaromatic hydrocarbons, max, weight %	0.15	D4492 or D7360 or D7504
Nitrogen, max, mg/kg	0.5	D7184
Chlorides, max, mg/kg	1	D7359 or D7457 or D7536
Appearance	[B]	...
Color, max, Pt–Co scale	15	D5386 or D8005

[A] If more than one method is listed for a property the producer and user should agree on the referee method.
[B] Clear liquid free of sediment and haze at 18.3 to 25.6°C (65 to 78°F).

3.2 See Section 5.1 for non-mandatory supplementary requirements.

[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.

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]
1,4 Dioxane	D4492 or D7360 or D7504
Acid wash color, max	D848
Bromine index, max	D1492 or D5776
Water	D6304 or E1064 or D7375

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

6. Keywords

6.1 benzene; purity; zeolite

SUMMARY OF CHANGES

Committee D16 has identified the location of selected changes to this standard since the last issue (D7124–12) that may impact the use of this standard. (Approved June 1, 2016.)

(1) Removed D1209 and added D8005 in Section 2.
(2) Modified table in 3.1 to replace D1209 with D8005.
(3) Removed D6069 from Section 2.
(4) Modified table in 3.1 to remove D6069.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; http://www.copyright.com/