



Designation: D5211 – 24

Standard Specification for Xylenes for *p*-Xylene Feedstock¹

This standard is issued under the fixed designation D5211; 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 xylenes for *p*-xylene feedstock. These xylenes typically are extracted from reformat.

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

1.4 Consult current OSHA regulations, suppliers’ Safety Data Sheets (SDS), 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

D850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials

D3437 Practice for Sampling and Handling Liquid Cyclic Products

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

D5917 Test Method for Trace Impurities in Monocyclic Aromatic Hydrocarbons by Gas Chromatography and External Calibration

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)

D7457 Test Method for Determining Chloride in Aromatic Hydrocarbons and Related Chemicals by Microcoulometry (Withdrawn 2019)³

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

E2680 Test Method for Appearance of Clear, Transparent Liquids (Visual Inspection Procedure)

2.2 Other Document:

OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200⁴

3. Properties

3.1 Xylenes for *p*-xylene feedstock shall conform to the following requirements:

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.

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.

Current edition approved Nov. 1, 2024. Published November 2024. Originally approved in 1991. Last previous edition approved in 2019 as D5211 – 19. DOI: 10.1520/D5211-24.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

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

Property	Specification	ASTM Test Method ^A
<i>p</i> -xylene, ^B min, mass %	18	D5917 or D7504
Ethylbenzene, ^B max, mass %	20	D5917 or D7504
Toluene, max, mass %	0.5	D5917 or D7504
C9 and higher boiling aromatic hydrocarbons, max, mass %	1.0	D5917 or D7504
Nonaromatic hydrocarbons, max, mass %	0.3	D5917 or D7504
Sulfur, max, mg/kg	1.0	D7183
Appearance, free of haze, particulates or suspended matter particles ^C	Bright and Clear	E2680
Color, max, Pt/Co scale	20	D5386 or D8005
Distillation range, at 101.3 kPa (760 mm Hg) pressure, max, °C	5	D850
Initial distillation temperature, min, °C	137	...
Dry point, max, °C	143	...

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

^B The *p*-xylene and ethylbenzene specifications represent the weight percentage of these components within the C₈ aromatics and not in the total sample.

^C Record as "Clear" if no particulates are seen at arm's length (generally no referee method, greater than 1 mm in diameter). Otherwise, record description of observed contaminant, whether floating or settling particulates, suspended matter particles, and any free water or free oil droplets or layers. Report the appearance as "Bright" if liquid is transparent with no haze or visible free water (or free oil) in organic (or aqueous) liquids. Otherwise, report the observed condition such as "Hazy".

4. Sampling

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

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), or through the ASTM website (www.astm.org/contact). 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/

5. Calculation

5.1 Calculate the weight percent relative distribution of each C₈ aromatic hydrocarbon in the total C₈ aromatic hydrocarbon fraction as follows:

$$F_i = \frac{W_i}{\sum W_i} \times 100\% \quad (1)$$

where:

F_i = weight fraction of C₈ aromatic component *i* in the total C₈ aromatic hydrocarbon fraction,
 W_i = weight fraction of C₈ aromatic component *i* reported by the method given in Table 3.1, and
i = components: ethylbenzene, *para*-xylene, *meta*-xylene, and *ortho*-xylene.

6. Supplementary Requirements (Non-mandatory)

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

Property	ASTM Test Methods ^A
Nitrogen, max, mg/kg	D7184
Chloride	D5194 or D5808 or D7359 or D7457 or D7536

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

7. Keywords

7.1 feedstock; *p*-xylene; xylenes