



Standard Specification for Cumene (Isopropylbenzene) Manufactured Via a Zeolite Process¹

This standard is issued under the fixed designation D7125; 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 cumene (isopropylbenzene) manufactured using a zeolite catalyst process.

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 standard. No other units of measurement are included in this standard.

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

2. Referenced Documents

2.1 ASTM Standards:²

- D1492 Test Method for Bromine Index of Aromatic Hydrocarbons by Coulometric Titration
- D2710 Test Method for Bromine Index of Petroleum Hydrocarbons by Electrometric Titration
- D3160 Test Method for Phenol Content of Cumene (Isopropylbenzene) or AMS (α -Methylstyrene)
- D3437 Practice for Sampling and Handling Liquid Cyclic Products
- D3760 Test Method for Analysis of Isopropylbenzene (Cumene) by Gas Chromatography
- D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

¹ This specification is under the jurisdiction of Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Sub committee D16.07 on Styrene, Ethylbenzene and C9 and C10 Aromatic Hydrocarbons.

Current edition approved June 1, 2016. Published August 2016. Originally approved in 2007. Last previous edition approved in 2011 as D7125 – 11. DOI: 10.1520/D7125-16.

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.

- D7057 Test Method for Analysis of Isopropylbenzene (Cumene) by Gas Chromatography (External Standard)
 - D7183 Test Method for Determination of Total Sulfur in Aromatic Hydrocarbons and Related Chemicals by Ultra-violet Fluorescence
 - 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)
 - 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
 - E298 Test Methods for Assay of Organic Peroxides
 - E299 Test Method for Trace Amounts of Peroxides In Organic Solvents
- 2.2 Other Documents:
- OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200³

3. Properties

3.1 Cumene (isopropylbenzene) manufactured via a catalytic zeolite process shall conform to the following requirements:

Property	Specifications	ASTM Test Method ⁴
Purity, weight %, min	99.93	D3760 or D7057
Alpha-Methylstyrene, mg/kg, max	50	D3760 or D7057
Benzene, mg/kg, max	10	D3760 or D7057
Cumene hydroperoxide, at loading, mg/kg, max	100	E298 or E299
Diisopropylbenzenes, Individual Isomer, mg/kg, max	5	D3760 or D7057
Diisopropylbenzenes, Total, mg/kg, max	10	D3760 or D7057
Ethylbenzene, mg/kg, max	50	D3760 or D7057
<i>i</i> -Butylbenzene, mg/kg, max	10	D3760 or D7057
<i>n</i> -Butylbenzene, mg/kg, max	10	D3760 or D7057
<i>s</i> -Butylbenzene, mg/kg, max	20	D3760 or D7057
<i>t</i> -Butylbenzene, mg/kg, max	25	D3760 or D7057

³ 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

Phenols, mg/kg, max	5	D3160, D3760 or D7057
<i>n</i> -Propylbenzene, mg/kg, max	300	D3760 or D7057
Sulfur, mg/kg, max	0.1	D7183 or D7359
Toluene, mg/kg, max	10	D3760 or D7057
Total Butylbenzenes, mg/kg, max	65	D3760 or D7057
Total Cymenes, mg/kg, max	50	D3760 or D7057
Total Non-Aromatics, mg/kg, max	150 ^B	D3760 or D7057
Total GC Unknowns, mg/kg, max	50 ^C	D3760 or D7057
Bromine index, max	25	D1492 or D2710
Appearance	^D	visual
Color, Pt/Co, max	10	D5386 or D8005

4. Sampling

4.1 Sampling the material in accordance with Practice D3437.

4.2 If cumene has been exposed to air, cumene hydroperoxide may be in the sample. Suitable precautions should be exercised for handling cumene that may contain cumene hydroperoxide.

5. Keywords

5.1 cumene; isopropylbenzene; 2-phenylpropane

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

^B All components eluting between toluene and cumene in a non-polar (HP-1 or equivalent) GC analysis (See Test Method D3760 or D7057) excluding Ethylbenzene. May include Xylenes.

^C Excluding CHP, Acetophenone, and 2-Phenyl-2-Propanol (Dimethylbenzylalcohol or Dimethylphenylcarbinol).

^D Clear liquid, free of sediment and haze when observed at 18.3 to 25.6°C.

SUMMARY OF CHANGES

Committee D16 has identified the location of selected changes to this standard since the last issue (D7125–11) that may impact the use of this standard. (Approved June 1, 2016.)

(1) Section 1—minor editorial changes.
 (2) 2.1—D1209 deleted and D8005 added.

(3) 3.1—as above, also fixed error with inclusion of D3160 for *n*-propylbenzene determination. Removed non-SI units.

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/