



Designation: D4077 – 23

Standard Specification for Cumene (Isopropylbenzene)¹

This standard is issued under the fixed designation D4077; 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).

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 *Units*—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.

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

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

D3160 Test Method for Phenol Content of Cumene (Isopropylbenzene) or AMS (α -Methylstyrene)

D3437 Practice for Sampling and Handling Liquid Cyclic Products

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

D5776 Test Method for Bromine Index of Aromatic Hydro-

carbons by Electrometric Titration

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 Ultraviolet 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

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

2.2 *Other Documents:*

OSHA Regulations, 29 CFR 1910.1000 and 1910.1200 Toxic and Hazardous Substances – Air contaminants; Hazard Communication³

3. Properties

3.1 Cumene (isopropylbenzene) shall conform to the following requirements:

Property	Specifications	ASTM Test Method ^A
Purity, mass %, min	99.92	D7057
Alpha-Methylstyrene, mass %, max	0.01	D7057
Benzene, mass %, max	0.001	D7057
Butylbenzenes, mass %, max	0.02	D7057
Diisopropylbenzenes, mass %, max	0.002	D7057
Ethylbenzene, mass %, max	0.01	D7057
Phenols, mg/kg, max	5	D3160 or D7057
n-Propylbenzene, mass %, max	0.03	D7057
Sulfur, mg/kg, max	1	D7183 or D7359
Bromine index, max	100	D1492 or D5776
Appearance, free of haze, particulates or suspended matter particles	pass	E2680

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 D16.07 on Styrene, Ethylbenzene and C9 and C10 Aromatic Hydrocarbons.

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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 Superintendent of Documents, U.S. Government Printing Office, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

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

Color, Pt/Co, max	15	D5386 or D8005
Cumene hydroperoxide, at loading, mg/kg, max	100	E298 or E299

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

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

4. Sampling

4.1 Sample the material in accordance with Practice D3437.

5. Keywords

5.1 cumene; isopropylbenzene; 2-phenylpropane

SUMMARY OF CHANGES

Committee D16 has identified the location of selected changes to this standard since the last issue (D4077 – 22) that may impact the use of this standard. (Approved April 1, 2023.)

(1) Test Method D3760 removed from Sections 2 and 3.

Committee D16 has identified the location of selected changes to this standard since the last issue (D4077 – 17) that may impact the use of this standard. (Approved September 1, 2022.)

(1) Changed ‘weight’ to ‘mass’ to be consistent with SI units.
 (2) Added the Committee D16 Test Method for BI: D5776 and removed the Committee D02 Test Method D2710.

(3) Corrected spelling mistakes.
 (4) Corrected footnote 3 to be consistent with editorial standards.

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