



Designation: D 4077 – 00

## Standard Specification for Cumene (Isopropylbenzene)<sup>1</sup>

This standard is issued under the fixed designation D 4077; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This specification covers cumene (isopropylbenzene).

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

1.3 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 E 29.

### 2. Referenced Documents

2.1 *ASTM Standards*:

D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)<sup>2</sup>

D 1492 Test Method for Bromine Index of Aromatic Hydrocarbons by Coulometric Titration<sup>2</sup>

D 2710 Test Method for Bromine Index Petroleum Hydrocarbons by Electrometric Titration<sup>3</sup>

D 3160 Test Method for Phenol Content of Isopropylbenzene (Cumene)<sup>2</sup>

D 3437 Practice for Sampling and Handling Liquid Cyclic Products<sup>2</sup>

D 3760 Test Method for Analysis of Isopropylbenzene (Cumene) by Gas Chromatography<sup>2</sup>

D 3961 Test Method for Trace Quantities of Sulfur in Liquid Aromatic Hydrocarbons by Oxidative Microcoulometry<sup>2</sup>

D 4045 Test Method for Sulfur in Petroleum Products by Hydrogenolysis and Rateometric Colorimetry<sup>3</sup>

E 29 Practice for Using Significant Digits in Test Data to

Determine Conformance with Specifications<sup>4</sup>

E 298 Test Methods for Assay of Organic Peroxides<sup>5</sup>

E 299 Test Method for Trace Amounts of Peroxides in Organic Solvents<sup>4</sup>

2.2 *Other Document*:

*OSHA Regulations*, 29 CFR, paragraphs 1910.1000 and 1910.1200<sup>6</sup>

### 3. Sampling

3.1 Sampling the material in accordance with Practice D 3437.

3.2 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.

### 4. Properties

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

| Property                                     | Specifications | ASTM Test Method |
|--|----------------|------------------|
| Purity, weight %, min                        | 99.92          | D 3760           |
| Alpha-Methylstyrene, weight %, max           | 0.01           | D 3760           |
| Benzene, weight %, max                       | 0.001          | D 3760           |
| Butylbenzenes, weight %, max                 | 0.02           | D 3760           |
| Diisopropylbenzenes, weight %, max           | 0.002          | D 3760           |
| Ethylbenzene, weight %, max                  | 0.01           | D 3760           |
| <i>n</i> -Propylbenzene, weight %, max       | 0.03           | D 3760           |
| Appearance                                   | <sup>A</sup>   | visual           |
| Bromine index, max                           | 100            | D 1492 or D 2710 |
| Color, Pt/Co, max                            | 15             | D 1209           |
| Cumene hydroperoxide, at loading, mg/kg, max | 100            | E 298 or E 299   |
| Phenols, mg/kg, max                          | 5              | D 3160           |
| Sulfur, mg/kg, max                           | 1              | D 3961 or D 4045 |

<sup>A</sup> Clear liquid, free of sediment and haze from 18.3 to 25.6°C (65 to 78°F).

### 5. Keywords

5.1 cumene (isopropylbenzene)

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.07 on Styrene, Ethylbenzene, and C<sub>9</sub> and C<sub>10</sub> Aromatic Hydrocarbons.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 06.04.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 05.02.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 14.02.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 15.05.

<sup>6</sup> Available from Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.