



# Standard Specification for Styrene Monomer<sup>1</sup>

This standard is issued under the fixed designation D2827; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 This specification covers styrene monomer.

1.2 The following applies to all specified limits in this standard: for purposes of determining conformance with this standard, 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.

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

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

D1016 Test Method for Purity of Hydrocarbons from Freezing Points

D2119 Test Method for Aldehydes in Styrene Monomer

D2121 Test Methods for Polymer Content of Styrene Monomer and AMS ( $\alpha$ -Methylstyrene)

D2340 Test Method for Peroxides in Styrene Monomer

D3437 Practice for Sampling and Handling Liquid Cyclic Products

D4017 Test Method for Water in Paints and Paint Materials by Karl Fischer Method

D4590 Test Method for Colorimetric Determination of *p*-*tert*-Butylcatechol In Styrene Monomer or AMS ( $\alpha$ -Methylstyrene) by Spectrophotometry

D5135 Test Method for Analysis of Styrene by Capillary Gas Chromatography

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

D6229 Test Method for Trace Benzene in Hydrocarbon Solvents by Capillary Gas Chromatography

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

D7375 Test Method for Trace Quantities of Water in Aromatic Hydrocarbons and Their Mixtures by Coulometric Karl Fischer Titration

D7504 Test Method for Trace Impurities in Monocyclic Aromatic Hydrocarbons by Gas Chromatography and Effective Carbon Number

D7704 Test Method for Total Aldehydes in Styrene Monomer by Potentiometric Titration

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

### 2.2 Other Document:

OSHA Regulations, 29CFR paragraphs 1910.1000 and 1910.1200<sup>3</sup>

## 3. Properties

3.1 Styrene monomer shall conform to the following requirements:

<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 C9 and C10 Aromatic Hydrocarbons.

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<sup>2</sup> 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.

<sup>3</sup> 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

Property	Specification	ASTM Test Method <sup>A</sup>
Purity, min, weight %	99.8 <sup>B</sup>	D5135 or D7504
Aldehydes, max, weight % as benzaldehyde	0.0100	D2119 or D7704
Peroxides, max, mg/kg as H <sub>2</sub> O <sub>2</sub>	50	D2340
Polymer, max, mg/kg	10	D2121, Test Method A
Inhibitor, mg/kg	10 to 15 (or as required)	D4590
Ethylbenzene, max, mg/kg	500	D5135 or D7504
Benzene, max, mg/kg	1	D6229
Appearance	c	...
Color, max, Pt/Co scale	15	D5386

<sup>A</sup> If more than one method is listed, the producer and user should agree on the referee method.

<sup>B</sup> The most common impurities can be determined by Test Method D5135 or D7504.

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

NOTE 1—Note that weight percent purity of this specification is equivalent to mole percent purity as determined by Test Method D1016.

3.2 See Section 5 for nonmandatory requirements.

#### 4. Sampling

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

#### 5. Supplementary Requirements

5.1 The following supplementary requirements shall apply only when specified by the purchaser in the purchase order or contact.

Property	ASTM Test Method <sup>A</sup>
Water	D4017, D6304, D7375 or E1064

<sup>A</sup> If more than one method is listed, the producer and user should agree on the referee method.

#### 6. Keywords

6.1 specification; styrene; styrene monomer

### SUMMARY OF CHANGES

Committee D16 has identified the location of selected changes to this standard since the last issue (D2827 – 12a) that may impact the use of this standard. (Approved February 1, 2013.)

(1) Removed references to Test Method D1209 for color determination.

Committee D16 has identified the location of selected changes to this standard since the last issue (D2827 – 12) that may impact the use of this standard. (Approved November 1, 2012.)

(1) Changed the specification range for Color to 15 max, Pt/Co units when measured by Test Method D1209 or D5386 in the table in 3.1.

Committee D16 has identified the location of selected changes to this standard since the last issue (D2827 – 11) that may impact the use of this standard. (Approved July 1, 2012.)

(1) Added D7704, Test Method for Total Aldehydes in Styrene Monomer by Potentiometric Titration as a test method for aldehydes to the properties table in Section 3 and to Section 2 Referenced Documents.

(2) Added D7504, Test Method for Trace Impurities in Monocyclic Aromatic Hydrocarbons by Gas Chromatography and

Effective Carbon Number to the Properties Section 3 and Section 2 Referenced Documents to allow this test method for determining the purity of styrene monomer.

(3) Moved the water specification “as needed” to a new Section 5 from Section 3, Properties.

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