



Designation: D 4493 – 03

Standard Test Method for Solidification Point of Bisphenol A (4,4'-Isopropylidenediphenol)¹

This standard is issued under the fixed designation D 4493; 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 test method describes the procedure for determination of the solidification point of 4,4'-isopropylidene diphenol, commercially known as bisphenol A, between 150 and 157°C.

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 E 29.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this test method.* For specific hazard statements, see Section 9.

2. Referenced Documents

2.1 ASTM Standards:

D 1493 Test Method for Solidification Point of Industrial Organic Chemicals²

D 4297 Practice for Sampling and Handling Bisphenol A (4,4'-Isopropylidenediphenol)²

E 1 Specification for ASTM Thermometers³

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁴

E 77 Test Method for Inspection and Verification of Thermometers³

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁴

2.2 Other Document:

OSHA Regulations, 29 CFR, paragraphs 1910.1000 and 1910.1200⁵

¹ This test method is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.02 on Oxygenated Aromatics.

Current edition approved Jan. 10, 2003. Published March 2003. Originally approved in 1985. Last previous edition approved in 1994 as D 4493 – 94.

² Annual Book of ASTM Standards, Vol 06.04.

³ Annual Book of ASTM Standards, Vol 14.03.

⁴ Annual Book of ASTM Standards, Vol 14.02.

⁵ Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

3. Terminology

3.1 Definitions:

3.1.1 *solidification point*—the temperature at which the liquid phase of a substance is in approximate equilibrium with a relatively small amount of the same substance in its solid phase.

4. Summary of Test Method

4.1 Bisphenol A is melted, and then cooled slowly with constant agitation. When crystallization begins, and supercooling occurs, the temperature falls to a minimum, rises to a maximum, and then falls again. The maximum temperature attained after crystallization begins is the solidification point of bisphenol A.

5. Significance and Use

5.1 The solidification point of bisphenol A is a direct indication of its purity, although it gives no information as to the nature of any impurities present.

5.2 High purity bisphenol A has a solidification point of approximately 157°C.

5.3 This test method can be used for internal quality control or for setting specifications.

6. Interference

6.1 Bisphenol A that is not stored or packaged properly may adsorb moisture. Adsorbed moisture will lower the solidification point.

7. Apparatus

7.1 *Nessler Tubes*, borosilicate, 100 mL, short form, 32-mm diameter.

7.2 *Electric Heat Block*, thermostatically controlled, capable of reaching 170°C; having flat-bottom holes 34 mm in diameter by 172 mm deep.

NOTE 1—A suitable size block is 100 by 110 by 175 mm high, and made of aluminum.

NOTE 2—A thermostatically controlled hot oil bath may be used.

7.3 *Erlenmeyer Flask*, 500-mL.

NOTE 3—The melted sample may be cooled in an air jacket-cooling bath, as specified in Test Method D 1493.