Designation: D4297 – 15

Standard Practice for Sampling and Handling Bisphenol A (4,4′-Isopropylidinediphenol)[1]

This standard is issued under the fixed designation D4297; 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 practice covers procedures for safely sampling and handling 4,4′-isopropylidinediphenol, commercially known as bisphenol A (BPA), in various solid forms, and as a liquid at elevated temperatures in a manner which represents and preserves product quality.

1.2 Any person sampling or handling this product should have consulted a safety Data Sheet (SDS) for specific first aid instructions and information on the proper equipment to have available for use in the event of personal contact or exposure.

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 *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 standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. For specific hazard statements, see Sections 3, 4, 5, 6, 7 and 8 and an appropriate SDS.*

2. Referenced Documents

2.1 *OSHA Regulations:*

29 CFR Labor, paragraphs 1910.1000 and 1910.1200[2]

2.2 *U.S. DOT Regulations:*

49 CFR Transportation, Subchapter C, Parts 171-180[2]

3. Significance and Use

3.1 This practice is issued to provide information useful in establishing sampling and handling procedures. It is expected that this information will only be utilized in conjunction with an existing health and safety program and consultation with an appropriate SDS. The information provided herein cannot be used as a substitute for expert safety and medical advice as provided in an appropriate SDS, but rather as a supplement to such advice.

4. Description of Product (See Table 1)

4.1 Bisphenol A (BPA) is not classified as a hazardous chemical by the Department of Transportation, and is, therefore, not subject to DOT regulations governing the transportation of hazardous articles. Bisphenol A is normally transported in several types of containers including cloth and paper bags, bulk trucks, and covered hopper cars. (See Table 1.)

4.2 While bisphenol A (BPA) is dangerous when handled improperly, particularly at elevated temperatures, its unloading need not be hazardous provided the hazards are recognized and handling instructions are rigidly observed as detailed here and in an appropriate SDS.

5. Hazards

5.1 *Health*—Consult current OSHA regulations and supplier's Safety Data Sheet for all materials used in this practice.

5.1.1 Aside from the risk of thermal burns in handling BPA when molten, and a possibility of dermatitis from impurities, particularly in crude grades, industrial use does not present a significant health hazard. However, ordinary precautions must be observed to protect personnel from contact with molten BPA or excessive exposure to dusts or high concentrations of vapor.

5.1.2 Precautions must be observed to protect personnel from excessive inhalation of vapors and dust.

5.2 *Fire:*

5.2.1 BPA in both the solid and liquid form is combustible and introduces a potential fire hazard when it is stored, handled, or used.

5.2.2 BPA vapors or dust can form explosive mixtures with air.

5.2.3 Dry chemicals, carbon dioxide, foam, and water can all be used in fighting fires involving BPA.

[1] This practice is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.08 on Handling and Sampling Aromatic and Cyclic Hydrocarbons.

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[2] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.ecfr.gov.

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

TABLE 1 Typical Physical Properties Product Bisphenol A

Melting Point, °C	Boiling Point, °C (10.5 mm Hg)	Solid Forms	Flash Point, °C	Specific Gravity, 25°C
154–157	240	prills, flakes, crystals, powder	207.2	1.20 (solid)

6. Protective Equipment

6.1 Employees who work with BPA should be well trained and should maintain safe working conditions. They should be required to read an appropriate SDS for BPA in its entirety and consult appropriate, local, safety personnel if they have any questions or concerns. Persons handling molten bisphenol-A need to exercise particular care.

7. First Aid

7.1 Consult an appropriate SDS for BPA with regards to first aid measures that should be taken. In particular, extreme care must be observed handling molten BPA as it can cause severe thermal burns.

8. Safety Precautions

8.1 Exercise care to prevent spills and leaks. If they do occur, only properly protected personnel should remain in the contaminated area in accordance with the instructions in an appropriate SDS. All spill-related activities should comply with applicable EPA, OSHA, and local regulations and laws.

8.2 Because of fire and dust explosion hazards, do not permit open flames in the vicinity of tank carriers, other shipping containers, or storage tanks. Provide all electrical fixtures with vapor-proof globes and explosion-proof safety devices. Ground tank carriers by an approved method. Prohibit smoking. All pneumatic conveying should be done with nitrogen or other inert gas.

8.3 Any person sampling or handling these products should have consulted an appropriate SDS for specific first aid instructions and equipment to have available for use in the event of personal contact or exposure.

8.4 Conduct sampling and handling operations in accordance with the instructions in an appropriate SDS.

9. Unloading Hopper Cars or Hopper Trucks

9.1 Observe all safety precautions as outlined in Section 8 and in an appropriate SDS. Always follow shipper's instructions for unloading, and read and observe all caution markings on both sides of the hopper or dome.

9.2 Opening of the hopper car dome cover and attachment of delivery lines should all be done by accepted safety procedures.

10. Sampling Solid Bisphenol A

10.1 *Bulk Quantities*—Take a representative sample, preferably from a falling BPA stream, using a straight-path sampler. Adjust sampler feed rate, slot width, cutter speed, and frequency to collect 227-g of sample per 4540 kg of BPA.

10.2 *Bags (22.7 kg):*

10.2.1 Using a small thief, 203 to 305 mm, remove about 113 g of sample from 1 bag out of every 40 bags (approximately 907 kg) of BPA. Take the sample from the filling ear or, if necessary, by opening one corner of the bag. Place each sample in a plastic bag. Tightly secure the sample bag to minimize absorption of moisture. Label with proper identification and in accordance with OSHA Regulations, or other appropriate local regulations, or both.

10.2.2 Make a composite blend from the individual samples and mix thoroughly before analyzing.

10.2.3 Aluminum, polyethylene, polypropylene, or stainless steel-type scoops are recommended for taking samples of product from the bags selected for sampling. Avoid contaminating the sample with iron or rust.

10.3 Extreme care and good judgment are necessary to ensure that the samples truly represent the product.

10.4 Remove approximately 75 g portions from each of the bags selected from a sample unit and place in a plastic bag. Seal the opened bags with suitable tape.

10.5 Label the sample container in accordance with OSHA or other appropriate local regulations, or both, to indicate, as a minimum, the date and time, source of the sample, type of material, purpose of the sample, and the name of the sample.

10.6 *Large Bulk Sacks (500 to 1000 kg):*

10.6.1 Use a sample thief to collect 227-g samples for each 1814 to 2268 kg of material.

10.6.2 Place samples in plastic bags. Tightly secure the sample bags to minimize absorption of moisture. Label samples in accordance with 10.5.

11. Keywords

11.1 bisphenol A; BPA; handling; sampling

SUMMARY OF CHANGES

Committee D16 has identified the location of selected changes to this standard since the last issue (D4297 – 10) that may impact the use of this standard. (Approved June 1, 2015.)

(1) Editorial changes made to Sections 1, 3, 4, 5, 6, 7, 8, 9, 10, and Footnote 2.