



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 45235-2025

**Determination of bisphenol A in electrical and electronic
products - High performance liquid chromatography**

电子电气产品中双酚A的测定 高效液相色谱法

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1 Scope

GB/T 45235-2025 gives the high performance liquid chromatographic determination of bisphenol A in electrical and electronic products. BPA is the monomer of polycarbonate and of epoxy resins, so it is present in housings, connectors, laminates and coatings throughout electronics, and unreacted monomer migrates out; it is an endocrine disruptor, restricted in the EU and increasingly declared through supply chain compliance systems, which is why Chinese manufacturers need a reference method rather than a supplier's word. The standard describes the principle, the reagents and materials, the instrumentation, the preparation of the sample, the test procedure, the calculation of results, the limit of quantification and the precision, and the test report, with an informative annex giving the chromatogram of the standard working solution. It takes effect on 1 August 2025.

This Document describes the principle, reagents and materials, instrumentation, preparation of sample, test procedures, calculation of results, Limit of quantification and precision, and test report for the determination of bisphenol A content in electronic and electrical products by high performance liquid chromatography. This Document is applicable to the determination of bisphenol A content in polymer materials of electronic and electrical

products.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 39560.1 Determination of certain substances in electrical and electronic products - Part

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB/T 39560.1 and the following apply.

3.1 Bisphenol A; BPA

5.9 Centrifuge tube. 10 mL, with cap.

5.10 Glass vial. 50 mL, with sealing cap.

5.11 Syringe. 2 mL.

5.12 Liquid chromatography sample bottle. About

1.5 mL, with cap.

5.13 Sealing film.

6 Instrumentation

6.1 High performance liquid chromatograph. Equipped with fluorescence detector.

6.2 Electronic balance. With sensitivity of

0.1 mg.

6.3 Grinder. With 1 mm pore size filter screen.

6.4 Water bath ultrasonic generator, power per unit area $\geq$

0.3 W/cm².

6.5 Pipettor or pipette tube. 10 mL, 30 mL.

6.6 Rotary oscillator.

6.7 Centrifuge. Speed $\geq 5,000$ r/min.

7 Preparation of Sample

Sampling is conducted according to GB/T 39560.2. Cut the sample into particles no less than 5 mm with scissors and crush it into small particles less than 1 mm with a grinder (6.3) as the specimen to be tested. Liquid nitrogen shall be used to cool the specimen fully before grinding. The cooling time should be no less than 15 min.

8.1 Ultrasonic extraction Weigh 1 g (accurate to

0.1 mg) of the crushed specimen in Clause 7 and carefully put it into the bottom of the glass vial (5.10). Use a pipettor or pipette tube (6.5) to accurately transfer 10 mL of tetrahydrofuran (5.2) and slowly add it along the inner wall of the glass vial containing the specimen. Cover the bottle cap tightly and seal it with a sealing film (5.13). Place it in a water bath ultrasonic generator (6.4) for ultrasonic oscillation for 60 min. After the ultrasonic oscillation is completed, place it at room temperature to cool to room temperature.

8.2 Dilution Open the cap of the glass vial in 8.1; use a pipettor or pipette tube (6.5) to accurately transfer 30 mL of methanol-water mixture (5.4); slowly titrate it into the opened glass vial; close the cap. Place the glass vial in a rotary oscillator (6.6) and shake for about 0.5 min to fully mix the extract in the glass vial.

8.3 Centrifugal separation Open the cap of the glass vial in 8.2; use a pipettor or pipette tube (6.5) to transfer about 10 mL of extract into a centrifuge tube (5.9); cover the cap and place it in a centrifuge (6.7); centrifuge at 5,000 r/min for 5 min. Use a syringe (5.11) to take out about 2 mL of the supernatant in the centrifuge tube; filter it through a membrane filter (5.8); and inject it into a liquid chromatography sample bottle (5.12) for testing.

8.4 High-performance liquid chromatography determination

8.4.1 Instrument conditions The test results depend on the used instrument, and it is impossible to give general parameters for high-performance liquid chromatography (with fluorescence detector). The following parameters have been proven to be feasible.

a) Liquid chromatography column. C18, 250 mmx

4.6 mm (i.d.), particle size 5 μ m, or equivalent performance.

b) Column temperature. 30 °C.

c) Mobile phase. methanol-water (70+30, volume ratio).

d) Flow rate. 1 mL/min.

- e) Injection volume. 10.0 μL .
- f) Detector wavelength. Excitation wavelength, 275 nm; emission wavelength, 313 nm.
- g) Run time. 15 min.

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