



GB 31604.54-2023

National Food Safety Standard

Food Contact Materials and Products Determination of Migration of Bisphenol F and Bisphenol S

食品安全国家标准 食品接触材料及制品 双酚F和双酚S迁移量的测定

National Health Commission of the People's
Republic of China
State Administration for Market Regulation

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ChemLinked Team, REACH24H Consulting Group | <http://food.chemlinked.com>

14F, #3 Bldg., Haichuang Technology Center, No. 1288 Wenyi West Road, Hangzhou, China. PC: 311121

Tel: +86 571 8710 3822 | Fax: +86 571 8700 7566 | Email: food@chemlinked.com

National Food Safety Standard

Food Contact Materials and Products

Determination of Migration of Bisphenol F and Bisphenol S

1 Scope

This standard specifies the liquid chromatography and liquid chromatography-tandem mass spectrometry methods for the determination of the migration of bisphenol F and bisphenol S in food contact materials and products.

The first method, liquid chromatography, is applicable to the determination of the migration amount of bisphenol F and bisphenol S in food contact plastic materials and products, food contact paints and coatings, and food contact paper and paperboard materials and products.

The second method, liquid chromatography-tandem mass spectrometry, is suitable for the determination of the migration amount of bisphenol F and bisphenol S in food contact materials and products.

Method 1 Liquid Chromatography

2 Principle

After the migration test of food contact materials and products is carried out according to GB31604.1 and GB5009.156, liquid chromatography is used for detection. Aqueous, acidic and alcoholic food simulants are filtered and directly injected; 95% (volume fraction) ethanol is blown dry with nitrogen, fixed to volume with ethanol-water, filtered and injected; oily food simulants are extracted with a methanol-water mixture, filtered and injected; isooctane chemical replacement solvent is blown dry with nitrogen, fixed to volume with methanol-water, filtered and injected. The quantitative analysis is performed by the external standard method.

3 Reagents and materials

Unless otherwise specified, all reagents used in this method are chromatographically pure and the water is Grade-1 water as specified in GB/T6682.

3.1 Reagents

3.1.1 Aqueous, acidic, alcoholic, oily food simulants and chemical alternative solvents:
The reagents used shall comply with the provisions of GB5009.156.

3.1.2 n-Hexane (C_6H_{14}).

3.1.3 Methanol (CH_3OH).

3.1.4 Acetonitrile (C_2H_3N).

3.1.5 Isooctane (C_8H_{18}).

3.1.6 Acetone (C_3H_6O).

3.1.7 Ethanol (C_2H_6O).

3.1.8 Corn oil: chemically pure, in accordance with the requirements of GB5009.156.

3.2 Reagent preparation

3.2.1 Water-based, acidic, alcoholic, corn oil food simulants and chemical alternative solvents: operate in accordance with GB5009.156.

3.2.2 Methanol-water mixture (1+1): Measure 100 mL of methanol and 100 mL of water and mix well.

3.2.3 Ethanol-water mixture (1+1): Measure 100 mL of ethanol and 100 mL of water and mix well.

3.3 Standards

3.3.1 Bisphenol F ($C_{13}H_{12}O_2$, CAS: 620-92-8): purity $\geq 99\%$, or a standard product certified by the state and awarded a standard substance certificate.

3.3.2 Bisphenol S ($C_{12}H_{10}O_4$, CAS: 80-09-1): purity $\geq 99\%$, or standard product certified by the state and awarded with standard material certificate.

3.4 Preparation of standard solution

3.4.1 Standard stock solution

3.4.1.1 Bisphenol F (Bisphenol S) Standard Stock Solution A (100 mg/L, methanol)

CheMLinked Team, REACH24H Consulting Group | <http://food.chemlinked.com>

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Tel: +86 571 8710 3822 | Fax: +86 571 8700 7566 | Email: food@chemlinked.com



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