



GB 31604.55-2023

National Food Safety Standard

Food Contact Materials and Products Determination of Migration Amount of Isothiazolinone Compounds

食品安全国家标准 食品接触材料及制品 异噻唑啉酮类化合物迁移量的测定

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

Release Date: Sept. 6, 2023
Implementation Date: Mar. 6, 2024

Translated by ChemLinked

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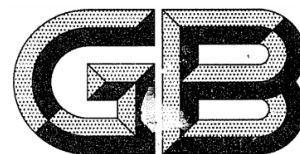
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Date of publication: 2023-09-06

Date of implementation: 2024-03-06

Issued by:

National Health Commission of the People's Republic of China
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National Food Safety Standard

Food Contact Materials and Products

Determination of Migration Amount of Isothiazolinone Compounds

1 Scope

This standard specifies the method for determining the migration of 1,2-benzisothiazolyl-3(2H)-one, 2-methyl-3(2H)-isothiazolinone and 5-chloro-2-methyl-2H-isothiazol-3-one in food contact materials and products.

This standard applies to the determination of the migration amount of 1,2-benzisothiazolyl-3(2H)-one, 2-methyl-3(2H)-isothiazolinone and 5-chloro-2-methyl-2H-isothiazol-3-one in food contact plastics, paints and coatings, rubber, paper and paperboard, as well as food contact materials and products using inks or adhesives.

Method 1 High Performance Liquid Chromatography

2 Principle

Food contact materials and products are tested by high performance liquid chromatography after migration tests are carried out according to GB31604.1 and GB5009.156. Among them, water, 4% (volume fraction) acetic acid, 10% (volume fraction) ethanol, 20% (volume fraction) ethanol, 50% (volume fraction) ethanol food simulants and 95% (volume fraction) ethanol soaking solution of chemical substitution solvent are directly injected after filtration; oil-containing food simulants and chemical substitution solvent isooctane soaking solution are extracted with methanol-water solution and then the lower layer is filtered and injected. The samples were detected by ultraviolet detector or diode array detector and quantified by peak area 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

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3.1.1 Acidic, ethanolic, oily food simulants and chemical alternative solvents: The reagents used must meet the requirements of GB5009.156.

3.1.2 Methanol (CH_4O).

3.1.3 Tetrahydrofuran ($\text{C}_4\text{H}_8\text{O}$).

3.1.4 n-Hexane (C_6H_{14}).

3.2 Reagent preparation

3.2.1 Acidic and ethanol-containing food simulants and chemical alternative solvents: prepared in accordance with the provisions of GB5009.156.

3.2.2 Methanol solution: Take 50 mL of methanol and 50 mL of water respectively and mix well.

3.3 Standards

3.3.11, 2-Benzisothiazolyl-3(2H)-one ($\text{C}_7\text{H}_5\text{NOS}$, CAS No.: 2634-33-5): purity $\geq 95\%$, or standard product certified by the state and awarded with standard substance certificate.

3.3.2 2-Methyl-3(2H)-isothiazolinone ($\text{C}_4\text{H}_5\text{NOS}$, CAS No.: 2682-20-4): purity $\geq 95\%$, or standard product certified by the state and awarded a standard substance certificate.

3.3.3 5-Chloro-2-methyl-2H-isothiazol-3-one ($\text{C}_4\text{H}_4\text{ClNOS}$, CAS No.: 26172-55-4): purity $\geq 95\%$, or standard product certified by the state and awarded a standard material certificate.

3.4 Preparation of standard solution

3.4.1 Isothiazolinone standard stock solution (1000 mg/L, solvent is methanol): Accurately weigh 25 mg (accurate to 0.1 mg) of each of the three isothiazolinone standards, dissolve them in methanol, transfer them to the same 25 mL brown volumetric flask, dilute to the mark with methanol, and shake well. The solution was transferred to a brown glass bottle and stored in a sealed container at 4°C in a dark place. The shelf life is 6 months.



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