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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

GB 31604.18-2016

**National food safety standard - Food contact materials
and articles - Determination of migration of acrylamide**

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Foreword

This standard replaces GB/T 23296.9-2009 “Food contact materials - Polymer - Determination of acrylamide in food simulants - High performance liquid chromatography”.

As compared with GB/T 23296.9-2009, the main changes of this standard are as follows:

- CHANGE the standard name into “National food safety standard - Food contact materials and articles - Determination of migration of acrylamide”;
- ADD the scope of application;
- MODIFY the food simulant preparation;
- MODIFY the processing of oil-based food simulant test solutions.

National food safety standard - Food contact materials and articles - Determination of migration of acrylamide

1 Scope

This standard specifies the determination of the migration of acrylamide in food contact materials and articles.

This standard applies to the use of liquid chromatography for the detection of acrylamide migration in food contact materials and articles.

2 Principle

The food simulants of food contact materials and articles are tested by liquid chromatography, wherein the water-based, acidic, and alcoholic food simulants are directly injected, the oil-based food simulants are injected after water extraction and separated through high-performance liquid chromatography. (The column is an ion exclusion column), detected by a UV detector, and it is quantified using the external standard peak area method.

3 Reagents and materials

Unless otherwise stated, the reagents used in this method are of analytical grade, and the water is grade I water as specified in GB/T 6682. Containers and transfer apparatus used in the test shall avoid the use of plastic materials.

3.1 Reagents

3.1.1 Water-based, acidic, alcoholic, oil-based food simulants: The reagents used shall be in accordance with the provisions of GB 31604.1.

3.1.2 Acetonitrile (C_2H_3N): Chromatographically pure.

3.1.3 Methanol (CH_3OH): Chromatographically pure.

3.1.4 Sulfuric acid (H_2SO_4): Excellent grade.

3.2 Reagent preparation

3.2.1 Water-based, acidic, alcohol-based, oil-based food simulants: In accordance with the expected use of the sample to be tested and the conditions

5.1.3 Preparation of oil-based food simulant test solution

WEIGH 10 g (accurate to 0.01 g) of oil-based food simulant test solution to the colorimetric tube, ADD 10.0 mL of water, SHAKE it vigorously for 1 min, LET it be standing for stratification. TAKE the lower layer aqueous solution, MAKE it pass through a 0.2 μ m filter membrane for measurement.

5.1.4 Preparation of blank solutions

5.1.4.1 Water-based, acidic, alcoholic food simulant blank solution

PIPETTE food simulant that had not been contacted with the sample, FILTER it through a 0.2 μ m microporous membrane for measurement.

5.1.4.2 Oil-based food simulant blank solution

PIPETTE 10 g (accurate to 0.01 g) of the food simulant that has not been contacted with the sample, OPERATE in accordance with 5.1.3.

5.1.5 Water-based, acidic, alcoholic food simulant standard working solution

Accurately PIPETTE 0.00 mL, 0.03 mL, 0.05 mL, 0.08 mL, 0.1 mL, 0.5 mL of acrylamide standard intermediate solution in a 10 mL volumetric flask, USE the food simulant that has not been in contact with the sample to make its volume reach to the mark, to obtain the standard working solution which has a concentration of acrylamide of 0.00 mg/L, 0.03 mg/L, 0.05 mg/L, 0.08 mg/L, 0.10 mg/L, 0.50 mg/L. In the same manner, respectively USE the corresponding water-based, acidic, and alcoholic food simulants to prepare the same concentration series of acrylamide standard working solutions.

5.1.6 Oil-based food simulant standard working solution

Respectively WEIGH 10 g (accurate to 0.01 g) of oil-based food simulants into 5 colorimetric tubes, respectively PIPETTE 0.00 mL, 0.03 mL, 0.05 mL, 0.08 mL, 0.1 mL and 0.5 mL of acrylamide standard intermediate solution (10 mg/L) in the colorimetric tube, MIX it uniformly, ADD 10.0 mL of water, SHAKE it vigorously for 1 min, LET it be standing for stratification. The acrylamide concentration of the obtained standard working solution is respectively 0.00 mg/kg, 0.03 mg/kg, 0.05 mg/kg, 0.08 mg/kg, 0.10 mg/kg, and 0.50 mg/kg. TAKE the lower layer aqueous solution, MAKE it pass through a 0.2 μ m filter membrane for measurement.

5.2 Determination

5.2.1 Liquid chromatography conditions

- a) Column: Venusil CIS, ion exclusion column, column length 250 mm, inner

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