



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

GB 5009.156-2016

**National food safety standard - General principle of migration
test pre-treatment method of food contact materials and their
products**

**食品安全国家标准 食品接触材料及制品迁移试验预处理方法通则
(English Translation)**

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1 Scope

1 Scope

This standard specifies the general principles of test, reagents and materials, equipment and instruments, sampling method and sample preparation methods, sample contact area, ratio between sample contact area and food simulant volume, sample cleaning and special treatment, test method, determination requirements of migration quantity, and result presentation requirements of the migration test pre-treatment method of food contact materials and their products.

This standard applies to the migration test pre-treatment method of food contact materials and their products.

2.1 Migration test basin

It refers to the device used to install and fix the sample to be tested, and conduct the migration test pre-treatment after injecting the food simulant.

2.2 Hollow products

It refers to the products for which the depth from the product mouth along the horizontal plane to its internal lowest horizontal plane is more than 25 mm.

2.3 Flat products

It refers to the products for which the depth from the product mouth along the horizontal plane to its internal lowest horizontal plane is less than or equal to 25 mm.

3.1 This standard provides the migration test pre-treatment method of food

contact materials and their products. The soaking solution as obtained through such pre-treatment shall be subjected to the migration quantity determination in accordance with the provisions of the corresponding inspection method standards. When there is special requirement in the corresponding national food safety standards for the migration test pre-treatment, such requirement shall also be satisfied.

3.2 The migration test conditions and the food simulant selection for the food contact materials and products shall follow the provisions of the corresponding standards.

3.3 The determination target of migration test refers to the surface which may be in contact with the food under the reasonably expected conditions of use.

4 Reagents and materials

Unless otherwise stated, the reagents used in this method are of analytical pure AND the water is the level 1 water as specified in GB/T 6682.

4.1 Reagents

4.1.1

Glacial acetic acid (CH₃COOH).

4.1.2

Anhydrous ethanol (C₂H₅OH).

4.1.3

Isooctane (C₈H₁₈).

4.1.4

N-heptane (C₇H₁₆).

4.1.5

N-hexane (C₆H₁₄).

4.1.6 95% ethanol (C₂H₅OH).

4.1.7

Vegetable oil (olive oil, corn oil). SEE Table A.1 in Appendix A.

4.1.8

Sodium hydroxide (NaOH).

4.1.9

Nitric acid (HNO₃), excellent grade pure.

4.1.10

Sodium bicarbonate (NaHCO₃).

4.1.13

Citric acid monohydrate (C₆H₈O₇·2H₂O).

4.1.14

Sodium chloride (NaCl).

4.1.15

Potassium carbonate (K₂CO₃).

4.1.16

Sodium nitrite (NaNO₂).

4.1.17

hydrochloric acid (HCl).

4.2 Reagent preparation

4.2.1 4% acetic acid solution (volume fraction). TAKE 20.0 mL of glacial acetic acid (4.1.1); ADD 480 mL of water; MIX it uniformly.

4.2.2 10% ethanol solution (volume fraction). TAKE 50.0 mL of absolute ethanol (4.1.2); ADD 450 mL of water; MIX it uniformly.

4.2.8 5 g/L citric acid solution. WEIGH 5.47 g of citric acid monohydrate (4.1.13); ADD water to 1000 mL.

4.2.9 1 g/L citric acid solution. WEIGH 1.09 g of citric acid monohydrate (4.1.13); ADD water to 1000 mL.

4.2.12 0.1 mol/L hydrochloric acid solution. TAKE 9 mL of hydrochloric acid (4.1.17); ADD it into water and MAKE its volume reach to 1000 mL.

4.2.13 Artificial saliva. DISSOLVE 4.2 g of sodium bicarbonate (4.1.10), 0.5 g

of sodium chloride (4.1.14), 0.2 g of potassium carbonate (4.1.15) and 30 mg of sodium nitrite (4.1.16) into water; DILUTE it to 900 mL. ADJUST the pH to

9.0 If necessary, ADD 0.1 mol/L hydrochloric acid solution (4.2.12) or 0.1

mol/L sodium hydroxide solution (4.2.7). TRANSFER it to a 1000 mL volumetric flask; ADD water to make the volume reach to the mark.

5 Equipment and instruments

5.1 Balance

The sensitivity is 1 mg.

5.2 Sample holder

The sample holder shall be capable of supporting the sample, maintaining the separation between the samples, and ensuring that the sample is in complete contact with the simulant, AND its material shall be such as not affect the determination results of the migration quantity. As for the holder selection, SEE

Figure B.1 and Figure B.2 in Appendix B; AND it may also use other holders

complying with the requirements.

5.3 Glass rod and glass bead it is used to fine-tune the liquid level of the food simulant so that the surface of the sample is completely immersed in the simulant; AND it may also use other appropriate methods.

5.4 Migration test basin the migration test basin shall be free of leakage AND its material shall not affect the migration test results. The determination of volatile substances shall be carried out using a gas-tight migration test basin and a migration test basin with a smaller reserved space at the top.

5.5 Constant temperature equipment Thermostatic equipment (thermostat, incubator, water bath, refrigerator, etc.) shall ensure that the migration test reaches to the required temperature AND the food simulant temperature can be controlled, with the temperature error complying with the requirements of Table C.1 in Appendix C.

6 Sampling and sample preparation method