



GB 5009.36-2023

National Food Safety Standard Determination of Cyanide in Food

食品安全国家标准 食品中氰化物的测定

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

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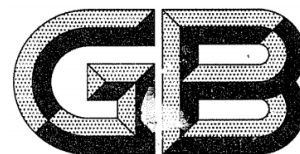
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National Standard of the People's Republic of China

GB 5009.36-2023

In Replacement of GB 5009.36-2016

National Food Safety Standard

Determination of Cyanide in Food

食品安全国家标准

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Foreword

This standard replaces GB 5009.36-2016 “National Food Safety Standard Determination of Cyanide in Food”.

Compared with GB 5009.36-2016, the main changes of this standard are as follows:

——The third method, gas chromatography-mass spectrometry, the fourth method, ion chromatography, and the fifth method, flow injection/continuous flow-spectrophotometry, have been added;

——The third method qualitative method has been deleted;

——The application scope of the standard, reagent preparation and pretreatment procedures for the first method spectrophotometry, and pretreatment procedures for the second method gas chromatography have been modified.

National Food Safety Standard

Determination of Cyanide in Food

1. Scope

This standard specifies the determination method for cyanide in food.

The first method, spectrophotometry, is applicable to the determination of cyanide in distilled spirits and their blends, edible alcohol, tapioca flour, packaged drinking water and mineral water.

The second method, gas chromatography, and the third method, gas chromatography-mass spectrometry, are applicable to the determination of cyanide in liquor, edible alcohol, grain, packaged drinking water, and mineral water.

The fourth method, ion chromatography, is applicable to the determination of cyanide in distilled spirits and their blended spirits, edible alcohol, packaged drinking water, mineral water and beverages (with almonds as raw materials).

The fifth method, flow injection/continuous flow-spectrophotometry, is applicable to the determination of cyanide in distilled spirits and their blends, edible alcohol, packaged drinking water and mineral water.

Method 1 Spectrophotometry

2. Principle

The sample is heated under alkaline conditions to remove high-boiling organic matter or heated under acidic conditions for distillation. After being dissolved or absorbed by sodium hydroxide solution, cyanide is converted into cyanogen chloride with chloramine T at pH = 7.0, and then reacted with isonicotinic acid-pyrazolone to generate a blue dye, which is quantitatively compared with the standard series.

3. Reagents and Materials

Unless otherwise specified, all reagents used in this method are of analytical grade and the water is grade 3 water as specified in GB/T 6682.

3.1 Reagents

3.1.1 Anhydrous ethanol (C_2H_6O).

3.1.2 Zinc acetate ($C_4H_6O_4Zn$).

3.1.3 Tartaric acid ($C_4H_6O_6$).

3.1.4 Sodium hydroxide ($NaOH$).

3.1.5 Potassium dihydrogen phosphate (KH_2PO_4).

3.1.6 Disodium hydrogen phosphate (Na_2HPO_4).

3.1.7 Glacial acetic acid ($C_2H_4O_2$): >99.5%.

3.1.8 Isonicotinic acid ($C_6H_5O_2N$).

3.1.9 Pyrazolone ($C_{10}H_{10}N_2O$).

3.1.10 Chloramine T ($C_7H_7SO_2NCINa \cdot 3H_2O$).

3.1.11 Methyl orange ($C_{14}H_{14}O_3N_3SNa$).

3.1.12 Phenolphthalein ($C_{20}H_{14}O_4$).

3.2 Reagent preparation

3.2.1 Phosphate buffer solution (0.5 mol/L, pH=7.0): weigh 3.40 g of anhydrous potassium dihydrogen phosphate and 3.55 g of anhydrous disodium hydrogen phosphate. Dissolve in water and make up to 100 mL.

3.2.2 Sodium hydroxide solution (20 g/L): Weigh 2 g of sodium hydroxide, dissolve it in water, and make up to 100 mL.

3.2.3 Sodium hydroxide solution (10 g/L): Weigh 1 g of sodium hydroxide, dissolve it in water, and make up to 100 mL.

3.2.4 Zinc acetate solution (100 g/L): Weigh 10 g of zinc acetate, dissolve it in water, and make up to 100 mL.

3.2.5 Sodium hydroxide solution (2 g/L): Measure 10 mL of sodium hydroxide solution (20 g/L) and dilute to 100 mL with water.



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