



GB 5009.16-2023

National Food Safety Standard

Determination of Tin in Food

食品安全国家标准 食品中锡的测定

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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National Standard of the People's Republic of China

GB 5009.15-2023

In Replacement of GB 5009.15-2014

National Food Safety Standard

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食品安全国家标准

食品中锡的测定

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Foreword

This standard replaces GB 5009.16-2014 “National Food Safety Standard Determination of Tin in Food”.

Compared with GB 5009.16-2014, the main changes of this standard are as follows:

- the inductively coupled plasma mass spectrometry has been added as the method II;
- the inductively coupled plasma optical emission spectrometry has been added as the method III;
- the Phenylfluorone colorimetry method has been deleted;
- the scope of application of the “Method I Hydride Atomic Fluorescence Spectrometry” has been modified and the limit of detection has been increased.

National Food Safety Standard

Determination of Tin in Food

1. Scope

This standard specifies the determination method of tin in food by hydride atomic fluorescence spectrometry, inductively coupled plasma mass spectrometry and inductively coupled plasma optical emission spectrometry.

This standard applies to the determination of tin in foods.

Method 1 Hydride atomic fluorescence spectrometry

2. Principle

After being digested, the test sample reacts with sodium borohydride (or potassium borohydride) generates tin hydride(SnH_4), and then it is carried into the atomizer by carrier gas for atomization; under irradiation of tin hollow cathode lamp, the ground state tin atoms are stimulated to a high energy state, and further deactivated back to ground state, emitting fluorescence of characteristic wavelength; the fluorescence intensity is in direct proportion to the tin content and then quantitative analysis is carried out compared with standard series solution.

3. Reagents and Materials

Unless otherwise specified, the reagents used in this method are analytically pure and water is Grade 2 water specified in GB/T 6682.

3.1 Reagents

3.1.1 Sulfuric acid (H_2SO_4): guarantee reagent.

3.1.2 Nitric acid (HNO_3): guarantee reagent.

3.1.3 Perchloric acid (HClO_4): guarantee reagent.

3.1.4 Thiourea ($\text{CH}_4\text{N}_2\text{S}$).

3.1.5 Ascorbic acid ($\text{C}_6\text{H}_8\text{O}_6$).



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