Translated English of Chinese Standard: GB5009.301-2025

www.ChineseStandard.net → Buy True-PDF → Auto-delivery.

Sales@ChineseStandard.net

GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB 5009.301-2025

National food safety standard - Determination of osmotic pressure in food

食品安全国家标准 食品中渗透压的测定

Issued on: March 16, 2025 **Implemented on: March 16, 2026**

**Issued by: National Health Commission of the People's Republic of China;
State Administration for Market Regulation.**

Table of Contents

National food safety standard - Determination of osmotic pressure in food

1 Scope

This Standard specifies the methods for the determination of osmotic pressure in food.

This Standard apples to the determination of osmotic pressure of special dietary foods and special purpose beverages.

Method I -- Freezing point method

2 Principle

The osmotic pressure molar concentration is indirectly determined by measuring the freezing point depression of the solution. In an ideal dilute solution, the freezing point depression conforms to the relationship of $\Delta T_f = K_f \cdot m$, while the osmotic pressure conforms to the relationship of $P_0 = K_0 \cdot m$ [ΔT_f is the freezing point depression; K_f is the freezing point depression constant (1.86 when water is the solvent); m is the mass molar concentration of the solution; K_0 is the osmotic pressure constant]. The concentrations in the two formulas are equal, so the freezing point depression method can be used to determine the osmotic pressure molar concentration of the solution.

3 Reagents and materials

The water is grade 3 water specified in GB/T 6682.

3.1 Reagents

Sodium chloride (NaCl): working reference reagent.

3.2 Preparation of reference reagent standard solution

The preparation of sodium chloride reference reagent standard solution is shown in Annex A. Or use a nationally certified osmotic pressure molar concentration standard solution.

4 Instruments and equipment

4.1 Freezing point osmotic pressure instrument.

4.2 Analytical balance: the sensitivity is 0.1 mg and 0.001 g respectively.

4.3 Muffle furnace.

4.4 Dryer (with desiccant).

4.5 Ultrasonic cleaner.

4.6 Homogenizing beating machine.

4.7 Pipette.

5 Analysis steps

5.1 Sample pretreatment

5.1.1 Liquid sample

Take no less than 100 mL of liquid sample, mix thoroughly to prepare a specimen. Try to avoid bubbles during the mixing process, perform ultrasonic treatment if necessary.

5.1.2 Solid sample

Take no less than 200 g of sample, mix thoroughly, and prepare a specimen according to the mixing ratio or preparation method indicated on the label or instruction manual. Try to avoid bubbles during the preparation process, perform ultrasonic treatment if necessary.

5.1.3 Semi-solid sample

Take no less than 200 g of sample, pour the product into a homogenizing beating bag, beat it with a homogenizing beating machine at a speed of 8 times per second for 5 min, pour it into a beaker, and let it stand for 15 min to defoam.

5.2 Analysis steps

5.2.1 Instrument calibration

According to the instrument calibration procedure, use the sodium chloride reference reagent standard solution to calibrate the freezing point osmotic pressure instrument. The osmotic pressure value of the specimen shall be within the range of the calibration solution.

5.2.2 Specimen determination

According to the instrument operating procedure, accurately absorb a certain amount of specimen and add it to the sample tube (avoid bubbles during the absorption process),

The preparation of sodium chloride reference reagent standard solution is shown in Annex B. Or use a nationally certified osmotic pressure molar concentration standard solution.

10 Instruments and equipment

10.1 Dew point osmotic pressure instrument.

10.2 Same as 4.2.

10.3 Same as 4.3.

10.4 Same as 4.4.

10.5 Micropipette: 2 μL ~ 20 μL.

10.6 Slide paper: compatible with the instrument model.

11 Analysis steps

11.1 Sample pretreatment

Same as 5.1.

11.2 Analysis steps

11.2.1 Instrument calibration

According to the instrument calibration procedure, use the sodium chloride reference reagent standard solution to calibrate the dew point osmotic pressure instrument. The tested sample shall be within the range of the calibration solution.

11.2.2 Specimen determination

According to the instrument operating procedure, accurately pipette a certain amount of specimen and drop it into the slide paper; after the test sample is evenly absorbed, perform the test operation and measure the data according to the instrument operating procedure, and record the data after the determination is completed.

After the determination is completed, wipe the sample pool clean, and wait for the instrument to stabilize before testing the next sample.

NOTE: It is not applicable to foods that are easily decomposed by heat and contain volatile solutions such as ethanol.

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. https://www.ChineseStandard.us

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. https://www.ChineseStandard.net

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - https://www.ChineseStandard.us).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading…): https://www.chinesestandard.net/AboutUs.aspx

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: https://www.linkedin.com/in/waynezhengwenrui/

------ The End ------