

ICS 67.050
CCS X 04



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

GB/T 18415-2026

Replacing GB/T 18415-2001

**Determination of benzoyl peroxide in wheat flour and its
products**

小麦粉及其制品中过氧化苯甲酰的测定

Issued on: March 31, 2026

Implemented on: October 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document supersedes GB/T 18415-2001 "Determination of Benzoyl Peroxide in Wheat Flour" and GB/T 22325-2008 "Wheat Flour "Determination of Benzoyl Peroxide in Medium by High Performance Liquid Chromatography". This document is based on GB/T 18415-2001 and integrates GB/T 22325- Compared with GB/T 18415-2001, the main technical changes in.2008, apart from structural adjustments and editorial modifications, are as follows:

---The scope of application has been changed to include wheat flour products (see Chapter 1, Chapter 1 of the.2001 edition);

---High performance liquid chromatography (HPLC) has been added (see Chapter 5), and the second method of gas chromatography (Part 2 of the.2001 edition) has been deleted;

---The principles have been changed (see 4.1, 5.1, Chapter 3 of the.2001 edition);

---The reagents have been changed; sodium thiosulfate is used instead of reduced iron powder in gas chromatography (see 4.2.7,

4.4 in the.2001 edition);

---Sample preparation has been added (see 4.4.1, 5.4.1);

---The sample pretreatment has been changed (see 4.4.2, 6.2 in the.2001 edition);

---The creation of the standard working curve has been modified (see 4.4.3, 5.4.3, and 6.3 in the.2001 version);

---The instrument reference conditions have been changed (see 4.4.5, 5.4.5, and 6.4 in the.2001 edition). Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the National Food and Strategic Reserves Administration. This document is under the jurisdiction of the National Technical Committee on Standardization of Grain and Oil (SAC/TC270). This document was drafted by: Henan Provincial Institute of Food and Salt Industry Inspection and Technology (Henan Provincial Grain, Oil and Feed Product Quality Supervision and Inspection Center). The National Food and Strategic Reserves Administration Research Institute, the Grain and Oil Center Laboratory of the Tibet Autonomous Region Grain Bureau, and Shanghai Kemao Grain and Oil Food Quality Testing Co., Ltd. Limited Company, Shandong Provincial Grain and Oil Testing Center, Henan University of Technology, Guangdong Provincial Grain Science Research Institute Co., Ltd., Zhengzhou Municipal Product Quality Inspection and Testing Center Testing center. The main drafters of this document are. Sun Zhiyuan, Wang Jiaya, Jiang Pengli, Lu Huili, Gao Haijun, Xie Gang, Peng Xingxing, Yin Chenghua, and Wang Yanan. Zhang Fuyao, Li Min, Ren Lingyun, Liu Xiaobin, Zhu Xueqing, He Yongyi. The release history of this document and the document it replaces is as follows:

1 Scope

GB/T 18415-2026 is the Chinese national standard covering benzoyl peroxide in flour - once permitted as a bleaching agent in China and banned since 2011, which turns this from a quality control method into an enforcement one. It replaces GB/T 18415-2001 and has been in force since 1 October 2026. It was issued on 31 March 2026 and takes effect on 1 October 2026, replacing GB/T 18415-2001. The document is under the responsibility of the National Food and Strategic Reserves Administration. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes gas chromatography and high performance liquid chromatography methods for the determination of benzoyl peroxide in wheat flour and its products. This document applies to the determination of benzoyl peroxide in wheat flour, steamed buns, and fresh and wet noodle products. This document does not apply to the

determination of benzoyl peroxide in wheat flour products containing fillings.

4 Gas chromatography

4.1 Principle Benzoyl peroxide in the sample was reduced to benzoic acid by sodium thiosulfate, followed by extraction with alkaline aqueous solution, acidification with hydrochloric acid, and extraction with organic solvent. The purified extract was then analyzed by gas chromatography to determine the benzoic acid content. The external standard method was used for quantification, and the result was converted to the benzoyl peroxide content.

4.2 Reagents and Materials Unless otherwise specified, all reagents are of analytical grade, and the water used in the experiment shall meet the requirements for Grade III water in GB/T 6682.

4.2.1 Sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3$).

4.2.2 Sodium bicarbonate (NaHCO_3).

4.2.3 Hydrochloric acid (HCl).

4.2.4 Petroleum ether (C_5H_{12}). Boiling range is $60^\circ\text{C}\sim 90^\circ\text{C}$.

4.2.5 Diethyl ether ($\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$).

4.2.6 Sodium chloride (NaCl).

4.2.7 Sodium thiosulfate solution (5%). Weigh 50g of sodium thiosulfate (4.2.1) and dissolve it in 1000mL of boiled and cooled water.

4.2.8 Sodium bicarbonate solution (1%). Weigh 10g of sodium bicarbonate (4.2.2) and dissolve it in 1000mL of water.

4.2.9 Hydrochloric acid solution (1:1, V/V). Measure 10 mL of hydrochloric acid (4.2.3) and add it to 10 mL of water and mix well.

4.2.10 Petroleum ether-diethyl ether mixed solution (3:1, V/V). Measure 150 mL of petroleum ether (4.2.4) and 50 mL of diethyl ether (4.2.5) and mix. Mix evenly.

4.2.11 Benzoic acid ($\text{C}_6\text{H}_5\text{COOH}$, CAS No.. 65-85-0). Purity $\geq 99.0\%$, or a standard sample certified by the state and granted a certificate. Standard/Standard Substances.

4.2.12 Benzoic acid standard stock solution (1 mg/mL). Accurately weigh 100 mg of benzoic acid (4.2.11) (accurate to 0.0001 g), and dissolve it in carbonic acid. Dissolve the sodium hydroxide solution (4.2.8) and transfer it to a 100 mL volumetric flask. Dilute to the mark and mix well. Transfer the solution to a brown reagent bottle, seal, and refrigerate. Store in a refrigerator at $2^\circ\text{C}\sim 8^\circ\text{C}$. Shelf life is 6 months.

4.2.13 Benzoic acid standard working solution (100 µg/mL). Accurately pipette

10.00 mL of benzoic acid standard stock solution (4.2.12) into... Store in a refrigerator at 2°C~8°C. Shelf life is 3 months.

4.2.14 Capped centrifuge tubes. 50 mL.

4.2.15 Glass beads. 5mm~6mm in diameter.

4.3 Instruments and Equipment

4.3.1 Gas chromatograph. equipped with a flame ionization detector.

4.3.2 Analytical balance. sensitivity of 0.01g and 0.0001g.

4.3.3 Crusher. capable of crushing dry samples to the point that all of them can pass through a sieve with a mesh size of 2 mm.

4.3.4 Tissue homogenizer. capable of pulverizing wet samples to the point that all of them pass through a sieve with a sieve aperture of 2 mm.

4.3.5 Oscillator. reciprocating type, oscillation frequency.200 times/min.

4.3.6 High-speed centrifuge. speed ≥ 10000 r/min.

4.3.7 Vortex mixer.

4.4 Analysis Steps

4.4.1 Sample Preparation Take at least.200g of representative sample from all samples. Place the wheat flour sample directly into a clean container, seal it, and store it for later use. After being cut or chopped, the wheat flour products are ground in a grinder (4.3.3) or a tissue homogenizer (4.3.4) until all of them pass through a 2mm aperture. Sift, mix well, and store in a clean, sealed container for later use.

4.4.2 Sample Pretreatment Weigh 5g (accurate to 0.01g) of the sample into a 50mL capped centrifuge tube (4.2.14) pre-filled with 5 to 6 glass beads (4.2.15). Add 20 mL of sodium thiosulfate solution (4.2.7) to the centrifuge tube (4.2.14) and mix well. Place the capped centrifuge tube horizontally on a shaker (4.3.5) and centrifuge. Shake at a frequency of.200 times/min for 30 minutes, add 10 mL of sodium bicarbonate solution (4.2.8), repeat shaking for 5 minutes, and then place in a high-speed centrifuge. (4.3.6) Centrifuge at 10000 r/min for 5 min, take 15 mL of the supernatant aqueous solution and place it in another container with 5 g to 6 g of sodium chloride placed in it beforehand. (4.2.6) In a 50 mL capped centrifuge tube (4.2.14), shake thoroughly to dissolve sodium chloride until saturated, then add

0.5 mL of hydrochloric acid solution. (4.2.9) First, gently shake to release the gas, then shake thoroughly to release the gas. Next, add 5 mL of petroleum ether-diethyl ether