

ICS 67.050
CCS X 04



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

GB/T 20188-2026

Replacing GB/T 20188-2006

**Inspection of grain and oils - Determination of bromate in wheat
flour and its products - Ion chromatography**

粮油检验 小麦粉及其制品中溴酸盐的测定 离子色谱法

Issued on: February 27, 2026

Implemented on: September 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 20188-2006 "Determination of Bromate in Wheat Flour by Ion Chromatography" and is consistent with GB/T 20188-2006. Compared to previous versions, aside from structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope has been changed (see Chapter 1, Chapter 1 of the.2006 edition);
- b) The principle has been changed (see Chapter 4, Chapter 2 of the.2006 edition);
- c) Reagents and materials have been changed (see Chapter 5, Chapter 3 of the.2006 edition);
- d) The instruments and equipment were changed (see Chapter 6, Chapter 4 of the.2006 edition);
- e) The preparation of flour products has been added (see 7.1);
- f) The purification process for the test solution has been modified (see 7.3, 5.2 in the.2006 edition);
- g) The chromatographic reference conditions have been changed (see 8.1, Chapter 6 of the.2006 edition);
- h) Added the ability to plot standard curves (see 8.2);
- i) The detection limit has been changed (see Chapter 11, Chapter 1 of the.2006 edition);
- j) A limit of quantitation has been added (see Chapter 11). 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: Hubei Provincial Grain and Oil Food Quality Supervision and Inspection Center, Three Gorges University, Anhui Wanyi Technology Co., Ltd., and Huazhong University of Science and Technology. University of Science and Technology of China, Wuhan University of Light Industry, National Academy of Food and Strategic Reserves Administration, Hubei Provincial Institute of Food Quality and Safety Supervision and Inspection Wuhan Municipal Grain Reserve Security Center, Anhui Provincial Grain and Oil Product Quality Supervision and Inspection Station, Wuhan Customs Technology Center, Hunan Provincial Grain and Oil Product Quality Supervision and Inspection Center Testing Center, Hefei Municipal Food and Drug Safety Inspection and Testing Center, and Xianning Municipal Public Inspection and Testing Center. The main drafters of this document are: Liu Jian, Guo Jian, Sun Tinglin, Liu Yong, Liu Yang, Li Yin, Zhu Xiaoling, Chen Yuan, Liu Li, Zhang Sihong, Gao Qian, and Liu Bo. Ling Yuetao, Ni Xiaoying, Qin Shicong, Wang Haixuan, Wang Xiaopeng, Zhou Ying, Mei Hua, Mao Hongxia, Yang Heng, Xu Shiyao. The release history of this document and the document it replaces is as follows:

---First published in 2006 as GB/T 20188-2006;

1 Scope

GB/T 20188-2026 is the Chinese national standard covering bromate in flour and bread - potassium bromate was the flour improver of the twentieth century and is now banned in China as a carcinogen, which makes this a control method rather than a quality one. It replaces GB/T 20188-2006. It was issued on 27 February 2026 and has been in force since 1 September 2026, replacing GB/T 20188-2006. 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 a test method for determining bromate in wheat flour and its products using ion chromatography. This document applies to the determination of bromate in wheat flour and steamed buns.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 6682 Specifications and test methods for water used in analytical laboratories

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4.Principles After extraction by shaking and centrifugation, the sample was eluent with potassium hydroxide or sodium hydroxide solution. Bromate in the sample was then analyzed by ion chromatography. After column separation, the bromate ion was derivatized with hydroiodic acid. The bromate ion reacted with hydroiodic acid to generate triiodide ions, which were then analyzed by their ultraviolet absorption characteristics at 352 nm. The external standard method was used to quantitatively analyze bromate.

5.Reagents and Materials Unless otherwise specified, use only analytical grade reagents.

5.1 Water, GB/T 6682, Grade 1.

5.2 Potassium bromate standard (KBrO_3). Primary standard reagent, relative molecular mass 167.00, purity $\geq 99.9\%$ or a certified standard sample. Standard/Standard Substances.

5.3 Sodium hydroxide (NaOH).

5.4 Potassium hydroxide (KOH).

5.5 Petroleum ether. boiling range $30^\circ\text{C}\sim 60^\circ\text{C}$.

5.6 Bromate Derivatizing Reagents. The preparation of bromate derivatizing reagents is given in Appendix A.

5.7 Eluent Stock Solution (100 mmol/L). Weigh

4.00 g sodium hydroxide (5.3) or

5.61 g potassium hydroxide (5.4), and dilute with water to a final volume. Mix 1000mL well and set aside.

5.8 Bromate Standard Stock Solution [$\rho(\text{BrO}_3^-) = 1000 \mu\text{g/mL}$]. Accurately weigh 0.1310 g of potassium bromate standard (5.2), dissolve in water Make up to 100 mL and store at $2^\circ\text{C}\sim 8^\circ\text{C}$. Shelf life is 6 months.

5.9 Bromate Standard Intermediate Solution [$\rho(\text{BrO}_3^-) = 10 \mu\text{g/mL}$]. Pipette 1 mL of bromate standard stock solution (5.8) into a 100 mL volumetric precipitate.