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

GB/T 20618-2026

Replacing GB/T 20618-2006

**Fireworks - Determination of nitrate content in pyrotechnic
composition**

烟花爆竹 烟火药中硝酸盐含量的测定

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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 replaces GB/T 20618-2006 "Determination of Nitrate Content in Fireworks and Firecrackers Pyrotechnics", and is consistent with GB/T 20618- Compared to.2006, aside from structural adjustments and editorial changes, the main technical changes are as follows:

---The safety notice has been revised (see 8.1);

---The term "instruments" has been changed to "equipment and tools" (see Chapter 7, Chapter 6 of the.2006 edition);

---The precision of the analytical balance has been changed to

0.1 mg (see 7.3,

6.3 in the.2006 edition);

---Added content on copper test sieves (see 7.6);

---The method for preparing pyrotechnic sample has been changed (see 8.2,

7.1 of the.2006 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 China National Light Industry Council. This

document is under the jurisdiction of the National Technical Committee on Standardization of Fireworks and Firecrackers (SAC/TC149). This document was drafted by: Nanning Customs Technology Center and Hunan Fireworks and Firecrackers Product Safety and Quality Inspection Center. The main drafters of this document are. Shang Jie, Wu Junyi, Huang Chaxiang, Yan Chun, and Deng Hongwen. The release history of this document and the document it replaces is as follows:

---First published in.2006 as GB/T 20618-2006;

---This is the first revision. Determination of nitrate content in fireworks and firecracker gunpowder Warning. This document should be used by personnel with practical experience in formal laboratory work. This document does not address all potential safety issues. Users are responsible for taking appropriate safety and health measures and ensuring compliance with relevant national laws and regulations.

1 Scope

GB/T 20618-2026 is the Chinese national standard covering nitrates in a pyrotechnic mixture. Nitrates are the oxidiser of most fireworks composition, so the assay decides both the performance and the hazard classification of the mixture. It fixes the reagents, the sample preparation, the procedure and the calculation. It replaces GB/T 20618-2006 and takes effect on 1 June 2026, one of the pyrotechnic analysis methods revised together. It was issued on 27 February 2026 and has been in force since 1 June 2026, replacing GB/T 20618-2006. The document is under the responsibility of the China National Light Industry Council. 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 method for determining the nitrate content in fireworks and firecracker gunpowder. This document applies to the determination of nitrate content in fireworks and firecracker gunpowder.

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 601 Preparation of Standard Titration Solutions for Chemical Reagents

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

GB/T 8170 Rules for rounding off numerical values and the representation and

determination of limiting values AQ4115 General Guidelines for Preventing Static Electricity in Fireworks and Firecrackers SN/T 0306.4-2024 Inspection Procedures for Exported Fireworks and Firecrackers Part

3 Terms and Definitions

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

4.Principles After appropriate pretreatment, the sample was dissolved in hot water and filtered. The filtrate was reduced with ferrous salt under the catalysis of molybdenum salt, and then titrated with potassium permanganate standard. Titrate excess ferrous salt with a constant solution until the solution changes from colorless to pink, maintain this color for 30 seconds, and simultaneously perform a blank test. Based on the two titrations... The nitrate content in the sample is calculated from the difference in the volume of potassium permanganate standard titration solution consumed.

5 Reaction Formula $\text{NO}_3^- + 3\text{Fe}^{2+} + 4\text{H}^+ \rightarrow 3\text{Fe}^{3+} + \text{NO} + 2\text{H}_2\text{O}$ $\text{MnO}_4^- + 5\text{Fe}^{2+} + 8\text{H}^+ \rightarrow \text{Mn}^{2+} + 5\text{Fe}^{3+} + 4\text{H}_2\text{O}$

6.Reagents Unless otherwise specified, only reagents confirmed to be of analytical grade and water of at least grade 3 as specified in GB/T 6682 shall be used in the analysis.

6.1 Anhydrous ethanol.