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

**GB/T 21789-2025**

Replacing GB/T 21789-2008

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**Determination of flash point - Abel closed-cup method**

闪点的测定 阿贝尔闭口杯法

**(English Translation)**

**Issued on: October 5, 2025**

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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 21789-2008 "Determination of Flash Point of Petroleum Products and Other Liquids - Abel Closed Cup Method", and is consistent with...

Compared with GB/T 21789-2008, apart from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The "principle" has been changed (see Chapter 4, Chapter 4 of the 2008 edition);
- b) The section on "Solvents and Materials" has been amended (see Chapter 5, Chapter 5 of the 2008 edition);
- c) The term "instrumentation" has been changed (see Chapter 6, Chapter 6 of the 2008 edition);
- d) The content of "Instrument Preparation" has been changed (see Chapter 7, Chapter 8 in the 2008 edition);
- e) The content of "Sampling" has been changed (see Chapter 8, Chapter 7 of the 2008 edition);
- f) The "Steps" section has been modified (see Chapter 10, Chapter 10 in the 2008 edition);
- g) The "Precision" value has been changed (see Chapter 13, Chapter 13 in the 2008 edition);
- h) The classification of the "Abel Flashpoint Analyzer" instrument has been changed (see Appendix A, Appendix A of the 2008 edition).

This document is modified to adopt ISO 13736:2021 "Determination of flash point - Abel closed cup method".

This document has undergone the following structural adjustments compared to ISO 13736:2021.

---Chapter 4 has been added;

---Chapter 5, corresponding to Chapter 4 of ISO 13736:2021;

---Chapter 6, corresponding to Chapter 5 of ISO 13736:2021;

---Chapter 7, corresponding to Chapter 6 of ISO 13736:2021;

---Chapter 8, sections 8.4.3 to 8.4.5 correspond to 7.4.3 of ISO 13736:2021, and section 8.5 corresponds to sections 7.5.1 to 7.5.5 of ISO 13736:2021;

---Chapter 10, 10.2 and 10.3 correspond to 9.2.1 and 9.2.2 of ISO 13736:2021 respectively, and 10.4 and 10.5 correspond to...

ISO 13736:2021, sections 9.3 and 9.4;

---Chapter 11, sections 11.3-11.4 correspond to section 10.3 of ISO 13736:2021, and sections 11.5-11.11 correspond to section 10.3 of ISO 13736:2021.

10.4~10.10;

---Chapter 14, 14.1.1~14.1.2 correspond to 13.1 of ISO 13736:2021/Amd.2022.

The technical differences between this document and ISO 13736:2021, and the reasons therefor, are as follows.

---The scope has been changed (see Chapter 1 of ISO 13736:2021) to facilitate the application of this document;

---The definition of "flash point" has been changed (see 3.1, ISO 13736:2021) to align with existing national standards and eliminate ambiguity;

---Abbreviations have been added (see Chapter 4) to facilitate the use of this document;

---The section on "Instrument Placement" (see 8.1, 7.1 of ISO 13736:2021) has been revised to improve operability and facilitate this document.

application;

---The standards for "sampling" have been changed, replacing ISO 15528 with GB/T 3186 and ISO 3170 with GB/T 4756.

GB/T 27867 replaces ISO 3171 and adds a reference to GB/T 6680 (see 9.1, 8.1 of ISO 13736:2021), conforming to...

The actual operational requirements in my country;

---Added the requirement that sample storage should comply with GB 15603 (see 9.3), which aligns with actual operational requirements in my country;

---The standard for sample testing has been changed, replacing ISO 3679 (see 10.4, ISO 13736:2021) with GB/T 5208.

9.3), which conforms to my country's actual operational requirements;

---The standards for precision testing, monitoring, and verification have been changed, replacing ISO 4259 with GB/T 6683.1 and GB/T 6683.3.

(See 14.1.1, 13.1 of ISO 13736:2021), which conforms to the actual operational requirements in my country;

---The standard upon which "glass liquid thermometers" are based has been changed, replacing ASTM E2251 (see Appendix C) with GB/T 514.

C.2.1 (C.2.1 of Annex C of ISO 13736:2021) conforms to the actual operating requirements in my country;

---The content on "Instrument Performance Verification" has been revised (see Annex D, Annex D of ISO 13736:2021) to standardize the operation of flash point instrument verification.

This is done to facilitate the application of this document.

The following editorial changes have been made to this document.

---Incorporated into ISO 13736:2021/Amd1.2022 "Determination of Flash Point - Abel Closed Cup Method - Amendment 1. More Required for the Declaration of Deviation" the content of "New";

---The standard for testing water-based coatings has been changed, replacing ISO 3679 with GB/T 5208 (see note 2 in Chapter 1, ISO 13736.).

(Note 1 in Chapter 1, 2021)

---Added "Gas ignition tests are not subject to this restriction," further clarifying that gas ignition tests are not limited by the gas pressure range (see section 12.2).

Note 1).

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 and is under the jurisdiction of the National Technical Committee on Standardization of Hazardous Chemicals Management (SAC/TC251).

## 1 Scope

This document describes methods for determining the flash point of flammable liquids using both manual and automated closed-cup methods.

This document applies to the determination of flammable liquids with flash points ranging from -30.0°C to 75.0°C.

This document is not applicable to the determination of flash point of water-based coatings.

**Note 1:** The precision given by this method is only applicable to the determination of samples with flash points ranging from -8.5°C to 75.0°C. Detailed precision information can be found in Chapter 14.

**Note 2:** For the determination of water-based coatings, see GB/T 5208.

**Note 3:** The importance of preventing loss of volatile substances for testing is explained in 10.5.

**Note 4:** Liquids containing halides may produce abnormal results.

**Note 5:** The temperature limit for manual instruments is 70°C.

## 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 514 Technical Requirements for Glass Liquid Thermometers for Testing Petroleum Products GB/T 3186 Sampling of raw materials for paints, varnishes and paints and varnishes (GB/T 3186-2006, ISO 15528:2000, IDT) GB/T 4756 Manual Sampling Method for Petroleum Liquids (GB/T 4756-2015, ISO 3170:2004, MOD) GB/T 5208 Determination of flash point - Rapid equilibrium closed cup method (GB/T 5208-2008, ISO 3679:2004, IDT) GB/T 6680-2003 General Rules for Sampling of Liquid Chemical Products GB/T 6683.1 Precision of Measurement Methods and Results for Petroleum and Related Products - Part 1: Determination of Precision Data for Test Methods Standard (GB/T 6683.1-2021, ISO 4259-1:2017, MOD) GB/T 6683.3 Measurement methods and results precision of petroleum and related products - Part 3: Test methods - Precision numbers have been published.

Monitoring and verification of data (GB/T 6683.3-2023, ISO 4259-3:2020, MOD) GB/T 15000.3 Guidelines for the Work of Standard Samples - Part 3: Standard Sample Assignment and Evaluation of Homogeneity and Stability (GB/T 15000.3-2023, ISO Guide 35:2017, IDT) GB/T 15000.7 Guidelines for the Work of Standard Samples Part 7: General Requirements for the Competence of Standard Sample Producers (GB/T 15000.7-2021, ISO 17034:2016, IDT) GB 15603 General Rules for Storage of Hazardous Chemicals GB/T 27867 Automatic Sampling Method for Petroleum Liquids Pipelines (GB/T 27867-2011, ISO 3171, IDT)