

ICS 29.220.99

CCS K 82



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

GB/T 28164.2-2025

Replacing GB/T 28164-2011

**Secondary cells and batteries containing alkaline or other non-acid electrolytes -
Safety requirements for portable sealed secondary cells, and for batteries made
from them, for use in portable applications - Part 2: Lithium systems**

含碱性或其他非酸性电解质的蓄电池和蓄电池组 便携式密封蓄电池和蓄电池组的
安全要求 第2部分：锂系

(English Translation)

Issued on: October 31, 2025

Implemented on: May 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative References	
3 Terms and Definitions	
4 Parameter Measurement Tolerances	
5 General safety considerations	
5.1 General Requirements	
5.2 Insulation and Wiring	
5.3 Deflating	
5.4 Temperature/Voltage/Current Management	
5.5 Terminal Contacts	
5.6 Battery Pack Assembly	
5.7 Quality Plan	
5.8 Battery Pack Safety Components	
6 Type testing and sample quantity	
7 Specific Requirements and Tests	
7.1 Test charging procedure	
7.2 Expected Use	
7.3 Reasonably foreseeable misuse	
8 Security Information	
8.1 General Requirements	
8.2 Safety Information for Small Batteries and Small Battery Packs	
9 Mark	
9.1 Battery Label	
9.2 Battery Pack Identification	
9.3 Small batteries and small battery packs - anti-swallowing warning	
9.4 Other Information	
10 Packaging and Shipping	
Appendix A (Normative) Charge and Discharge Range for Safe Use of Lithium-ion Batteries	
Appendix B (Informative) Recommendations for Equipment Manufacturers and Battery Pack Manufacturers	

Appendix C (Informative) Recommendations for End Users
Appendix D (Normative) Measurement of AC Internal Resistance of Button Cells
Appendix E (Informative) Packaging and Shipping
Appendix F (Informative) Component Reference Standard
References

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 is based on GB/T 28164, "Storage Batteries and Battery Packs Containing Alkaline or Other Non-Acidic Electrolytes, Portable Sealed Storage Batteries and..." Part 2 of GB/T 28164, "Safety Requirements for Storage Battery Packs," has been published, including the following sections.

---Part 2: Lithium-based systems.

This document replaces GB/T 28164-2011 "Storage Batteries and Battery Packs Containing Alkaline or Other Non-Acidic Electrolytes - Portable Sealed Batteries".

The section on lithium batteries in "Safety Requirements for Storage Batteries and Battery Packs" differs from GB/T 28164-2011 except for structural adjustments and editing.

Aside from the gender changes, the main technical changes are as follows.

a) Changes were made to damage (see 3.3, 1.3.3 in the 2011 version), intended use (see 3.5, 1.3.5 in the 2011 version), and battery pack (see...).

3.8 (1.3.8 in the 2011 edition), leakage (see 3.9 (1.3.9 in the 2011 edition), rupture (see 3.11 (1.3.11 in the 2011 edition) and Definition of rated capacity (see 3.17, 1.3.16 of the 2011 edition);

b) Added lithium-ion polymer battery (see 3.16), reference test current (see 3.18), upper charging voltage limit (see 3.19), and maximum charging current.

Current (see 3.20), coin cell/button cell/coin cell pack (see 3.21), cylindrical cell (see 3.22), prismatic cell Batteries (see 3.23), battery packs/parallel connection (see 3.24), functional safety (see 3.25), and discharge termination voltage/final voltage (see 3.26).

Terms and definitions;

c) The parametric measurement tolerances were changed (see Chapter 4, 2011 edition, 1.4);

d) Changes were made to the general requirements (see 5.1, Chapter 2 of the 2011 edition), insulation and wiring (see 5.2, 2.1 of the 2011 edition), and venting (see 5.3 (2.2 in the 2011 edition), temperature/voltage/current management (see 5.4 (2.3 in the 2011 edition), terminal contacts (see 5.5 in the 2011 edition) the following sections were added. 2.4 of the 2011 edition, battery pack assembly (see 5.6, 2.5 of the 2011 edition), and quality planning (see 5.7, 2.6 of the 2011 edition).

Battery pack safety components (see 5.8);

e) Changes were made to the type testing and sample quantity (see Chapter 6, Chapter 3 of the 2011 edition);

f) Modifications were made to the test charging procedure (see 7.1, 4.1 of the 2011 version), the intended use (see 7.2, 4.2 of the 2011 version), and reasonable modifications.

Anticipated misuse (see 7.3, 4.3 in the 2011 edition), vibration adjustment (see 7.3.8.1, 4.2.2 in the 2011 edition), and mechanical shock.

(See 7.3.8.2, 4.3.4 of the 2011 edition) to mechanical testing (battery pack) (see 7.3.8);

g) Added design evaluation---forced internal short circuit (battery) (see 7.3.9);

h) Temperature cycling (see 4.2.4 in the 2011 edition) and low pressure (see 4.3.7 in the 2011 edition) have been removed;

i) Changes were made to the safety information (see Chapter 8, Chapter 5 of the 2011 edition), labeling (see Chapter 9, Chapter 6 of the 2011 edition), and packaging.

Transportation (see Chapter 10, Chapter 7 in the 2011 edition);

j) The safe charge/discharge range for lithium-ion batteries has been expanded (see Appendix A), and AC internal resistance measurement for coin cells has been added (see Appendix D);

k) This document incorporates relevant content from IEC 62133-2:2017/AMD1:2021. The main technical modifications include. 7.1.2 "separately stabilized" the phrase "1h and 4h" was changed to "stable for 1h to 4h", and "at the upper limit charging temperature" was deleted in 7.3.5b). The phrase "charging" was also deleted in 7.3.6a).

"Powered batteries must not cause fire or explosion if used beyond the time specified by the manufacturer." The battery testing ambient temperature in Table 5 has been changed.

This document is equivalent to IEC 62133-2:2017 "Batteries and battery packs containing alkaline or other non-acidic electrolytes - Portable sealed batteries".

Safety requirements for sealed batteries and battery packs - Part 2: Lithium-based.

The following minimal editorial changes have been made to this document.

---Incorporates relevant content from IEC 62133-2:2017/AMD1:2021, with the relevant

clauses indicated by vertical margins.

The double lines (||) are used to indicate this.

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 Ministry of Industry and Information Technology of the People's Republic of China.

This document is under the jurisdiction of the National Alkaline Battery Standardization Technical Committee (SAC/TC77).

Introduction

The 2011 edition of GB/T 28164 is equivalent to IEC 62133:2002. In 2017, IEC divided IEC 62133 into two parts: IEC 62133-1:2017 (Safety requirements for nickel-based batteries) and IEC 62133-2:2017 (Safety requirements for lithium-based batteries). IEC GB/T 28164-2011 has significant technical differences compared to IEC 62133:2002, therefore revision of GB/T 28164-2011 is necessary.

Work. This revision adopts IEC 62133-2:2017 equivalently, partially replacing GB/T 28164-2011.

GB/T 28164 is proposed to consist of two parts.

---Part 1: Nickel-based batteries. This section aims to specify the safety requirements for nickel-based batteries and provide a standard basis for safety assessment of them.

---Part 2: Lithium-based batteries. This section aims to specify the safety requirements for lithium-based batteries and provide a standard basis for safety assessment of them.

Storage batteries containing alkaline or other non-acidic electrolytes and battery packs portable sealed batteries and Safety requirements for battery packs Part 2: Lithium-based

1 Scope

This document specifies the requirements for portable sealed lithium-ion batteries containing non-acidic electrolytes under intended use and reasonably foreseeable misuse conditions.

Requirements and tests for the safe operation of battery packs.

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.