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

GB/T 46713.5-2025

**Railway applications - Rolling stock - Batteries for auxiliary
power supply systems - Part 5: Lithium-ion batteries**

轨道交通 机车车辆 辅助供电系统蓄电池 第5部分：锂离子电池

(English Translation)

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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 is Part 5 of GB/T 46713 "Batteries for Auxiliary Power Supply Systems of Rail Transit Locomotives and Rolling Stock". GB/T 46713 has been...

The following sections have been published.

---Part 1: General Requirements;

---Part 2: Nickel-Cadmium Batteries;

---Part 4: Nickel-Metal Hydrate Batteries;

---Part 5: Lithium-ion Batteries.

This document is modified to adopt IEC 62973-5:2023 "Batteries for auxiliary power supply systems of rail transport locomotives and rolling stock - Part 5: Lithium-ion batteries".

Sub-battery.

This document has undergone the following structural adjustments compared to IEC 62973-5:2023.

---Sections 3.1.10 to 3.1.12 have been removed from IEC 62973-5:2023;

---Added 7.3;

---Appendix A of IEC 62973-5:2023 has been deleted.

The technical differences between this document and IEC 62973-5:2023, and the reasons therefor, are as follows.

---The scope has been modified (see Chapter 1) to suit my country's technological conditions;

---GB/T 2900.41 and GB/T 46713.1-2025 have been added as introductory reference documents for the chapter on terms and definitions (see page 3).

Chapter), to adapt to my country's technological conditions;

---Added requirements that the product must meet the drawings (see 4.2), based on the actual situation in China;

---The naming requirements for individual cells and battery systems have been changed (see 4.3.2), and will be implemented according to the actual situation in China;

---The description of the battery system has been revised to directly reference general requirements, electromagnetic compatibility provisions have been added, and normative references have been increased.

The standards GB/T 24338.4, GB/T 21563-2018, and GB/T 21413.1-2018 (see 4.4.1) should be followed to conform to domestic practices.

Condition;

---IEC 62973-1:2018 (see 4.5.1, Table 1, 4.5.3, 4.5.5) has been replaced by the normatively referenced GB/T 46713.1-2025.

(4.6.2, 5.2, 5.3, 5.4, 7.2.1, Chapter 8, 9.3.7) The consistency level between the two files is "modified," indicating changes to the system power.

The technical requirements for pressing and palletizing should be adapted to my country's technical conditions.

---Added the implementation standard upon which the overall discharge requirements are based (see 4.5.3.1), distinguishing between test requirements and test methods, to facilitate reference to the standard.

Follow the instructions.

---The requirements for charge retention have been modified (see 4.5.4) to suit domestic conditions;

---The responsible party for providing battery parameters has been changed (see Table 2),

and management requirements are no longer described in the standard to conform to domestic realities;

---IEC 62928:2017 (see 4.6.1, 4.10, 8.1, 9.3.2) has been replaced by the normatively referenced GB/T 44386-2024.

(9.3.4~9.3.6, 9.3.9, 9.3.10.4) The consistency between the two documents is modified, and the test requirements have been changed to suit my needs.

The country's technological conditions;

---Special test execution standards have been added to the safety and protection requirements (see 4.6.1), distinguishing between test requirements and test methods for easier understanding.

The standard should be followed.

---The battery depth discharge parameters have been modified (see 4.6.2), and should be implemented according to the actual situation in China;

---The special usage conditions for the battery system have been modified (see 4.6.4), and should be implemented according to the actual situation in China;

---The fire protection requirements have been changed (see 4.7) to align with the general requirements for auxiliary power supply system batteries;

---The charging characteristics have been modified (see 4.9) to suit the actual situation in China;

---The battery management system requirements have been changed (see 4.10) to suit domestic conditions;

---The location of the battery system on the locomotive and rolling stock has been changed (see 5.3), clarifying the locations where it should not be placed to ensure safety;

---The ventilation requirements for the battery enclosure have been changed (see 5.5) to facilitate standard compliance;

---Maintenance has been modified (see 6.4) to better suit domestic conditions;

---The requirements for safety signs have been changed (see 7.1.1, 7.1.2), and the normative reference to ISO 7010 has been removed, based on the actual situation in China.

implement;

---Additional information has been added (see 7.3) to facilitate the implementation of the standard domestically;

---The general rules for testing have been revised (see 9.1) to conform to domestic

conditions;

---The description of the battery internal short circuit test has been changed to "internal short circuit test" and "thermal diffusion test", and footnote c has been added to specify the internal short circuit of a single cell.

The road test is optional, while the thermal diffusion test is mandatory. The factory inspection test items in the 25°C discharge performance test have been changed.

The image was modified, and footnote a was deleted, while the measurement requirements for footnote b were clarified (see Table 3) to conform to the actual situation in China;

---The accuracy requirements have been changed (see 9.2) to align with other standards in the series;

---The general rules for type testing and factory inspection have been revised (see 9.3.1) to conform to domestic realities and facilitate the implementation of the standard;

---Added high-temperature charge retention and capacity recovery tests for batteries, and removed the requirement for negotiation between the supplier and the buyer (see 9.3.2), thus improving the product.

Environmental adaptability and battery operating characteristics under high-temperature conditions;

---The source of the initial SOC in the test has been changed (see 9.3.4.2) to be consistent with similar domestic standards;

---The requirement for battery manufacturers to report test results has been removed (see 9.3.5.2), aligning with similar domestic standards;

---The visual inspection has been modified (see 9.3.6.1), and duplicate content from international standards has been removed to facilitate standard implementation;

---The test method for separation units with a mass greater than 500 kg has been modified (see 9.3.6.3) to align with similar domestic standards;

---IEC 60529 (see 9.3.6.4) has been replaced with the normatively referenced GB/T 4208 to adapt to my country's technical conditions;

---The content regarding negotiations between supply and demand parties (see 9.3.6.4 and 9.3.8) has been removed to better reflect the actual situation in China;

---A temperature shock test has been added, and the content for negotiation between the supplier and the buyer has been removed (see 9.3.10.2), based on the actual situation in China.

The following editorial changes have been made to this document.

---The ISO and IEC terminology databases have been removed (see Chapter 3);