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**NATIONAL STANDARD OF THE
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**Secondary lithium cells and batteries used in electrical energy
storage systems - Safety requirements**

电能存储系统用锂蓄电池和电池组 安全要求

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1 Scope

GB 44240-2024 is the Chinese national standard on secondary lithium cells and batteries used in electrical energy storage systems - safety requirements, in the field of electrical engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 24 July 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 August 2025. Classification: ICS 29.220.99, CCS K82. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the safety requirements for secondary lithium cells and batteries used in electrical energy storage systems. The corresponding test methods are described. This document applies to secondary lithium cells and batteries used in electrical energy storage systems (hereinafter referred to as cells and batteries). The electrical energy storage system applications include, but are not limited to.

- a) Telecommunications;
- b) Central emergency lighting and alarm system;
- c) Stationary engine start-up;
- d) Photovoltaic system;
- e) Large-capacity energy storage. grid-connected/off-grid. The electrical energy storage systems listed above do not include all devices, and therefore devices not listed may also be included within the scope of this document. The batteries covered by this document typically have a rated energy of 100 kWh or higher. Safety requirements for batteries with a rated energy of 100 kWh or lower are specified in GB 40165.

2 Normative references

The following referenced documents are indispensable for the application of this document.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 2423.5, Environmental testing -- Part

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 secondary lithium cell A storage battery that generates electrochemical energy through lithium-ion insertion/extraction reactions or lithium redox reactions between the positive and negative electrodes. NOTE. Batteries typically contain an electrolyte in liquid, sol, or solid form, consisting of a mixture of lithium salt and organic solvent, and are encapsulated in metal or film. Because they lack a casing, external terminals, and electronic control devices, they cannot be used in equipment. [Source: IEC 63056.2020, 3.7]

3.2 large secondary lithium cell A secondary lithium cell with a total mass exceeding 500 g. NOTE. The term is referred to as large battery in this document.

3.3 cell block A group of batteries connected in parallel may or may not have protective devices [such as fuses or positive temperature coefficient thermistors (PTC)] and monitoring circuitry.

3.29 type test A test conducted on representative samples. It is used to determine whether its design and manufacture meet the requirements of this document. [Source: GB 4943.1-2022, 3.3.6.15, modified]

4 Test conditions

4.1 Applicability of the test The tests specified in this document shall be conducted only when safety is involved. Unless otherwise specified, samples are not required to be usable after testing.

4.2 Environmental conditions of the test Unless otherwise specified, tests shall generally be conducted under the following conditions.

- a) Temperature. $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
- b) Relative humidity. not greater than 75%.
- c) Atmospheric pressure. 86 kPa106 kPa.

4.3 Parameter measurement tolerance The accuracy of all control or measurement values relative to the specified or actual values shall be limited to the following tolerance range.

- a) Voltage. $\pm 0.5\%$.
- b) Current. $\pm 1\%$.

c) Temperature. $\pm 2^{\circ}\text{C}$.

e) Dimensions. $\pm 1\%$.

f) Mass. $\pm 1\%$. The above tolerances include the accuracy of the measuring instruments used, the testing methods employed, and all other errors introduced during the testing process.

4.4 Temperature measurement methods Thermocouple method is used to measure the surface temperature of the sample. The temperature test point is selected as the most unfavorable temperature point as the basis for test judgment. NOTE. Auxiliary methods, such as infrared devices, can be used to find the most unfavorable point.

4.5 Test charging/discharging program

4.5.1 Test charging program The battery is charged using one of the following methods.

a) Manufacturer-specified method;

b) Charge at $0.2I_t$. When the battery or battery terminal voltage reaches the charging limit voltage (U_{cl}), switch to constant voltage charging until the charging current is less than or equal to $0.02I_t$, then stop charging. Before charging, discharge the battery according to the method specified in 4.5.2. Let it stand for 10 min. For large batteries, let it stand for 30 min. Unless otherwise specified, method

a) is preferred. When information for method

a) is not available, method

b) shall be used.

4.5.2 Test discharging program The battery is discharged at a constant current of $0.2I_t$ until the end of discharge voltage (U_{de}). For batteries that cannot be discharged at a constant current of $0.2I_t$, discharge at the manufacturer's specified current is permitted.

4.6 Type test

4.6.1 Requirements for samples Unless otherwise specified, the test samples shall be representative of the products that the customer shall accept, including small-batch pilot production samples or products ready for delivery to the customer, and no more than 6 months after production. Neither the samples nor the products used in type test shall use recycled batteries. Unless otherwise specified, if the test requires the introduction of wires for testing or connection, the total resistance resulting from the introduction of wires for testing or connection shall be less than $20\text{ m}\Omega$.

4.6.6 Test sequence The battery test sequence shall follow Annex A.

4.6.7 Test criteria If all the test samples in a certain test pass the tests, the test is deemed