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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 47292.1-2026

Lithium-ion battery good manufacturing practice - Part 1: General requirements

锂离子电池生产质量管理 第1部分：总体要求

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1 Scope

GB/T 47292.1-2026 is the Chinese national standard covering GMP for lithium-ion cells -

the quality management system, the environmental and cleanliness control on the line, the process control and traceability of every cell back to its materials and its equipment settings. A single metal particle in a cell can cause a fire a year later, which is why cell manufacture is being pushed towards pharmaceutical-style discipline. Part 1, first edition, in force from 1 April 2027, with Part 2 on material control. It was issued on 31 March 2026 and takes effect on 1 April 2027, as a first edition. 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 specifies the general requirements, quality objectives, quality planning, resource requirements, key process quality control, error-proofing and traceability management, nonconforming item management, change management, and product quality review and analysis in the lithium ion battery production process. This document applies to the production process quality management of manufacturers of power, energy storage and consumer lithium ion cells and lithium ion batteries.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 19000, Quality management systems - Fundamentals and vocabulary

GB 50073-2013, Code for design of clean room

GB/T 47292.2-2026, Lithium ion battery good manufacturing practice - Part 2. Battery material control

GB/T 47292.3-2026, Lithium ion battery good manufacturing practice - Part

3 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in GB/T 19000, apply.

3.1 lithium ion cell A rechargeable device that achieves the conversion between chemical energy and electrical energy through the movement of lithium ions between the positive electrode and the negative electrode. Note

1.It includes electrodes, separator, electrolyte, container and terminals, etc. Note

2.Lithium ion cell is also generally referred to as "cell".

3.2 lithium ion battery An energy storage device consisting of one or more electrically

connected cells or modules, capable of obtaining electrical energy from external sources and outputting electrical energy externally, and equipped with a battery management circuit. Note

1.The battery management circuit usually has the functions of management or protection against overcharge, overcurrent, over discharge and/or overtemperature, so as to ensure the safety, performance and/or service life of the battery. Note

2.The battery can be equipped with a protective enclosure and provided with terminals or other interconnection devices. Note

3.The battery is also generally referred to as "battery pack" or "battery system".

3.3 error-proofing An engineering technology and management method that prevents errors, defects or accidents occurring in products or systems caused by human negligence, operation errors or unintentional actions from the source through design measures or process control.

4 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply. FMEA. Failure Mode and Effect Analysis SPC. Statistical Process Control

5 General requirements

5.1 The enterprise shall establish and maintain a production quality management system for lithium ion cells or lithium ion batteries [hereinafter referred to as "lithium ion cells (batteries)"], and ensure that products or services conform to standards and meet customer requirements through quality planning, control and improvement.

5.2 The enterprise shall establish production quality management objectives for lithium ion cells (batteries), and specify the principles for objective formulation, evaluation indicators and management requirements for objectives.

5.3 The enterprise shall plan the production quality management of lithium ion cells (batteries), identify risk factors affecting quality and safety during the production process, and develop risk analysis, preventive measures and emergency management.

5.4 The enterprise shall establish resource management requirements for lithium ion cells (batteries), and specify the management of organizational responsibilities, personnel skills, production environment, production equipment, tooling and fixtures, as well as documentation.

5.5 The enterprise shall establish quality control specifications for key processes of lithium ion cells (batteries), including battery material quality monitoring, manufacturing process quality monitoring, finished product quality monitoring and product release requirements,

and shall establish control plans and management requirements for key parameters affecting product safety, quality and reliability. The requirements cover the manufacturing and packaging stages of lithium ion cells. The schematic diagram of the life cycle of lithium ion cells (batteries) is shown in Figure 1. Figure 1 - Schematic diagram of the life cycle of lithium ion cells (batteries)

5.6 The enterprise shall establish an error-proofing and traceability system for lithium ion cells (batteries), identify all materials (when one-to-one traceability of individual materials cannot be achieved, batch traceability may be applied), prevent confusion, misuse and release of nonconforming items, and achieve traceability throughout the product life cycle.

5.7 The enterprise shall standardize the management process for nonconforming items of lithium ion cells (batteries), including identification, isolation, disposition and records.

5.8 The enterprise shall establish a change management process for lithium ion cells (batteries), evaluate and manage changes affecting product quality, and specify the requirements for change application, evaluation, review, approval, implementation and records.

5.9 The enterprise shall establish a product quality review and analysis mechanism for lithium ion cells (batteries), including quality review, cause analysis, corrective and preventive actions, experience summary and horizontal deployment, so as to achieve effective problem resolution and continuous improvement.

6 Quality objectives

6.1 Objective formulation The formulation of production quality objectives shall comply with the following requirements.

a) Specificity. the production quality objectives shall be specified in detail;

b) Measurability. clear data shall be available as the basis for measuring the achievement of objectives;

c) Achievability. the objectives shall be designed in accordance with the actual capability and acceptance of the responsible parties, and conditions for implementation shall be available;

d) Relevance. the objectives shall be consistent with the company's quality policy and long-term and short-term objectives;

e) Time-bound. the specific time for achieving the objectives shall be specified.

6.2 Objective evaluation indicators The evaluation indicators for quality objectives include but are not limited to.

a) Failure rate at customer side and market side;