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

GB/T 46513-2025

**Electrochemical performance test of lithium ion battery cathode
materials - Test method for low temperature performance**

锂离子电池正极材料电化学性能测试 低温性能测试方法

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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. 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 China Nonferrous Metals Industry Association. This document is under the jurisdiction of the National Technical Committee on Standardization of Nonferrous Metals (SAC/TC243). This document was drafted by: Xi'an Yahongtai New Energy Technology Co., Ltd., Northwest Nonferrous Metals Research Institute, and Wanhua Chemical Group Co., Ltd. The company, Xiamen Tungsten New Energy Materials Co., Ltd., Sichuan Provincial Institute of Product Quality Supervision and Inspection, and Yichang Bangpu Recycling Technology Co., Ltd. The company, Qujing Defang Nanotechnology Co., Ltd., and Hefei Guoxuan High-Tech Power Energy Co., Ltd. The main drafters of this document are. Liu Yuanjian, Wu Yifang, Liu Yuanli, Li Wenbo, Liu Gengming, Ye Jianchu, Zeng Leiyang, Zhang Xicui, Yu Haijun, and Li Yineng. Wei Jiaxing, Tang Huaqiang, Yang Fan, Wu Qiao, Zhu Dandan. Electrochemical performance testing of lithium-ion battery cathode materials Low temperature performance test method

1 Scope

GB/T 46513-2025 is the Chinese national standard covering how a cathode material behaves in the cold - the coin or pouch cell built to a fixed recipe, the discharge at reduced temperature and the capacity retained against room temperature, the rate dependence, and the conditioning before each measurement. Cold performance is the practical limit on electric vehicles in northern China. First edition, in force from 1 May 2026. Issued on 5 October 2025, it has been in force since 1 May 2026.

This document describes a method for testing the low-temperature electrochemical performance of lithium-ion battery cathode materials. This document applies to low-carbon cathode materials such as lithium cobalt oxide, lithium nickel cobalt manganese oxide,

lithium nickel cobalt aluminum oxide, lithium iron phosphate, and lithium manganese iron phosphate used in lithium-ion batteries. Testing of temperature-sensitive electrochemical performance.

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 2900.1 Basic Terminology for Electrical Engineering

GB/T 8170 Rules for rounding off numerical values and the representation and determination of limiting values

GB/T 18287 General Specification for Lithium-ion Batteries and Battery Packs for Mobile Phones

GB/T 20252 Lithium Cobalt Oxide

GB/T 31484 Cycle life requirements and test methods for power batteries for electric vehicles

3 Terms and Definitions

The terms and definitions defined in GB/T 2900.1, GB/T 18287, GB/T 20252 and GB/T 31484, as well as the following terms and definitions, apply to this document. document.

3.1 Charge and discharge The process involves charging to the limiting voltage with a specified current, then switching to constant voltage charging; allowing it to stand for a period of time, and then discharging to the termination voltage with a specified current. [Source: GB/T 43092-2023, 3.1]

4 Symbols

The following symbols apply to this document. C. Battery discharge rate and rated capacity in 1 hour Current value corresponding to a 1C.1h discharge rate Current value corresponding to a 0.5C.2h discharge rate Current value corresponding to a 0.2C.5h discharge rate Current value corresponding to a discharge rate of 0.1C.10h Current value corresponding to a discharge rate of 0.05C.20h Current value corresponding to a discharge rate of 0.02C.50h