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GB/T 46512-2025

Lithium manganese iron phosphate

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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: Beijing Easpring Material Technology Co., Ltd., Shenzhen Defang Nano Technology Co., Ltd., and Xiamen Tungsten Co., Ltd. New Energy Materials Co., Ltd., Tianjin Guoan Mengguli New Materials Technology Co., Ltd., Hunan Changyuan Lithium New Energy Co., Ltd. Guizhou Zhongwei Xingyang Energy Storage Technology Co., Ltd., Hubei Wanrun New Energy Technology Co., Ltd., and Hefei Guoxuan High-Tech Power Energy Co., Ltd. Company, Fu'an Qingmei Energy Materials Co., Ltd., Yichang Bangpu Times New Energy Co., Ltd., Dangsheng Shudao (Panzhihua) New Materials Co., Ltd. Zhejiang Youshan New Energy Technology Co., Ltd., GEM Co., Ltd., Yuaneng Technology (Xiamen) Co., Ltd., and Henan Kelong New Energy Co., Ltd. Limited Liability Company, Guizhou Jinrui New Materials Co., Ltd., Guizhou Zhenhua New Materials Co., Ltd., Jinchuan Group Co., Ltd., Yichun Municipal Lithium Battery Industry Research Institute (Jiangxi Provincial Lithium Battery Product Quality Supervision and Inspection Center), Guolian Automotive Power Battery Research Institute Co., Ltd., and Central South China University, Lubei Wanrun Smart Energy Technology (Shandong) Co., Ltd. The main drafters of this document are. Zhang Xuequan, Liang Ce, Ren Quan, Wang Yujiao, Feng Ze, Sun Yan, Jiang Long, Wei Lei, Xie Zewei, Zhang Yuying, and Yang Jiaojiao. Lei Jie, Liu Xingliang, Yu Haijun, Sun Guoping, Fang Guiquan, Xu Kaihua, Yang Xiaolu, Cheng Di, Luo Wenzong, Hu Ansheng, Tang Pengjun, Deng Bei, Shen Xueling Zheng Junchao, Jin Qingqing, Yu Zhihao. Lithium manganese iron phosphate

1 Scope

GB/T 46512-2025 is the Chinese national standard covering LMFP cathode material - the manganese to iron ratio and the crystal phase, the particle size and the carbon coating, the specific capacity and the voltage plateau that make it denser in energy than LFP, and the impurity and moisture limits. LMFP is the material the industry is moving to for the next step in LFP-family energy density. First edition, in force from 1 May 2026. Issued on 5 October 2025, it has been in force since 1 May 2026.

This document specifies the product classification, technical requirements, test methods, inspection rules, marking, packaging, transportation, storage, and accompanying documents for lithium manganese iron phosphate. Line documents and order contents. This document applies to the production and inspection of lithium manganese iron phosphate, a cathode material used in lithium-ion batteries.

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 5162 Determination of tap density of metal powders

GB/T 5211.6 General Test Methods for Pigments and Extender Pigments - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 33822-2025 apply to this document.

4 Product Categories

Based on the molar fraction of manganese, the products are classified into LMFP5 (Mn molar fraction of 46%~< 56%). LMFP6 (Mn element mole fraction is 56%~< 66%), LMFP7 (Mn element mole fraction is 66%~

6 Determination of pH Value of Aqueous Suspensions

GB/T 5314 Sampling Methods for Powder Metallurgy

GB/T 19077 Particle size analysis by laser diffraction

GB/T 19587 Determination of specific surface area of solid substances by gas adsorption BET method

GB/T 23365 Electrochemical Performance Testing of Lithium Cobalt Oxide. Test Methods for First Discharge Specific Capacity and First Charge-Discharge Efficiency

GB/T 30904 X-ray diffraction method for crystal structure analysis of inorganic chemical products

GB/T 33822-2025 Nano Lithium Iron Phosphate

GB/T 41704-2022 Determination of Magnetic Foreign Matter Content and Residual Alkali Content in Cathode Materials for Lithium-ion Batteries

GB/T 43092 Electrochemical Performance Testing Method for Cathode Materials of Lithium-ion Batteries - High-Temperature Performance Testing

GB/T 44330 Determination of compacted density of lithium-ion battery cathode material powder

GB/T 45324 Determination of resistivity of powdered cathode materials for lithium-ion batteries

GB/T 45330 Determination of Moisture Content in Cathode Materials for Lithium-ion Batteries-Karl Fischer Coulometric Method YS/T 1006.2 Chemical Analysis Methods for Lithium Nickel Cobalt Manganese Oxide - Part

2.Determination of Multiple Element Contents - Inductively Coupled Plasma Phosphorus Sub-emission spectroscopy YS/T 1028.5 Chemical Analysis Methods for Lithium Iron Phosphate - Part

5.Determination of Calcium, Magnesium, Zinc, Copper, Lead, Chromium, Sodium, Aluminum, Nickel, Cobalt and Manganese Inductively Coupled Plasma Atomic Emission Spectrometry JCPDS(04-013-5289) Lithium Manganese Iron Phosphate X-ray Powder Diffraction Standard Pattern