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**NONFERROUS METALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YS/T 798-2012

**Lithium nickel cobalt manganese oxide
(English Translation)**

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Table of Contents

Foreword...	3
1 Scope...	4
2 Normative references...	4
3 Terms and definitions...	5
4 Requirements...	5
5 Test methods...	7
6 Inspection rules...	8
7 Marking, packaging, transportation, storage and quality certificate...	10
8 Contract (or order form) content...	11

Foreword

This Standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard shall be under the jurisdiction of National Technical Committee

243 on Nonferrous Metals of Standardization Administration of China (SAC/TC

243).

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Lithium nickel cobalt manganese oxide

1 Scope

This Standard specifies the terms and definitions, requirements, test methods, inspection rules, marking, packaging, transportation, storage, quality certificate and contract (or order form) content of lithium nickel cobalt manganese oxide.

This Standard applies to lithium nickel cobalt manganese oxide as the positive active material for lithium ion batteries.

2 Normative references

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

For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB/T 1717 Determination of pH value of an aqueous suspension of pigments

GB/T 5162 Metallic powders - Determination of tap density

GB/T 5314 Powders for powder metallurgical purposes - Sampling

GB/T 6283 Chemical products - Determination of water Karl - Fischer method (general method)

GB/T 19077.1 Particle size analysis - Laser diffraction methods - Part 1.

General principles

GB/T 19587 Determination of the specific surface area of solids by gas adsorption using the BET method

GB/T 20252-2006 Lithium cobalt oxide

GB/T 23365 Electrochemical performance test of lithium cobalt oxide - Test method for specific capacity and charge-discharge efficiency of the first cycle

3 Terms and definitions

The terms and definitions in GB/T 20252-2006 apply to this document.

4.2 Appearance quality

The appearance of the product shall be gray-black powder, with uniform color, no agglomeration, and no inclusions.

4.3 Crystal structure

The crystal structure of the product shall comply with the JCPDS standard (09-0063).

4.4.1 Tap density

The tap density of the product is not less than 1.8 g/cm³.

4.5 pH value

The pH value of the product is not more than 10.0~12.5.

4.6.1 First discharge specific capacity

The first discharge specific capacity of the product under the specified conditions shall not be less than 140 mA · h/g.

4.7 Other requirements

If the purchaser has special requirements for lithium nickel cobalt manganese oxide, it can be negotiated between the supplier and the purchaser.

5.2 Appearance quality

The appearance quality of the product is inspected visually.

5.3 Crystal structure

The crystal structure of the product is detected using an X-ray powder diffractometer.

5.4.1 Tap density

The tap density of the product is determined in accordance with the provisions of GB/T 5162.

5.5 pH value

The pH value of the product is determined in accordance with the provisions of GB/T 1717.

5.6.1 First discharge specific capacity

The first discharge specific capacity of the product is determined with reference to the regulations of GB/T 23365.

6.1.1 The product shall be inspected by the supplier. It shall be ensured that the product quality meets the requirements of this Standard and the contract (or order form). It shall fill in the product quality certificate.

6.2 Lot grouping

Products shall, in lots, be submitted for acceptance. Each lot shall be composed of the same mixture. The weight of each lot shall not be greater than 5 t.

6.4.1 If one of the product's chemical composition, water, molar ratio of Li to Ni+Co+Mn content in the chemical composition, crystal structure, tap density, particle size distribution, specific surface area, and pH value is nonconformity, the lot is judged to be nonconformity.

6.4.2 If the inspection of appearance quality is nonconformity, this drum of products is judged to be nonconformity.

3 of them are randomly selected for the inspection of first discharge specific

capacity and first charge-discharge efficiency. If the performance of 2 batteries fails to meet the requirements of this Standard, it is allowed to take another 3 batteries for repeated tests. If there are still 2 batteries whose performance does not meet the requirements of this Standard, the lot is deemed nonconformity.