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**Lithium-ion batteries for electric road vehicles
(English Translation)**

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Foreword

There is currently no technical guidance document of lithium-ion batteries for electric road vehicles in our country and other countries. Therefore, the formulation of this technical guidance document refers to IEC 61960-2 Draft (21A/244/CD) "Lithium-Ion Batteries and Battery Packs Used by Portable Equipment"; in which, because only low-power lithium-ion batteries and battery packs are involved, which are different from high-power batteries and battery packs, therefore, appropriate addition-deletion are made in this respect. When determining the content of this technical guidance document, on the one hand, technical requirements of electric road vehicles are accorded with; on the other hand, the current level of lithium-ion batteries development in our country shall be taken into account as well; not only shall the current requirements be met, but also shall the long-term development be considered.

The Annex A of this technical guidance document is a suggestive annex.

This technical guidance document was proposed by State Administration of Machinery Industry.

This technical guidance document shall be under the jurisdiction of National Technical Committee of Automobile Standardization.

Drafting organizations of this technical guidance document. No.18 Electronic Research Institution of Ministry of Information Industry.

Participating drafting organizations of this technical guidance document. Beijing General Research Institute for Nonferrous Metals, Institute of Physics in Chinese Academy of Sciences.

Main drafters of this technical guidance document. Feng Xikang, Wang Jiqiang, Wu Guoliang, Xue Rongjian.

TECHNICAL GUIDANCE DOCUMENT OF NATIONAL
STANDARDIZATION OF PEOPLE'S REPUBLIC OF CHINA
Lithium-Ion Batteries for Electric Road Vehicles

1 Scope

This technical guidance document specifies the requirements, test methods, symbols, package, transportation and storage of lithium-ion batteries (hereinafter referred to as "batteries") for electric road vehicles (including electric automobiles, electric motorcycles, etc.).

This technical guidance document applies to lithium-ion batteries whose rated voltages are 21.6 V and 14.4 V for electric road vehicles.

2 Normative references

The following standards contain the provisions which, through reference in this technical guidance document, constitute the provisions of this technical guidance document. At the time of publication, the editions indicated are valid. All standards are subject to revision. The parties who are using this technical guidance document shall explore the possibility of using the latest version of the following standard.

GB/T 2900.11-1988 Terminology of cell or battery (eqv IEC 486.1986)

3 Definitions and symbols

This technical guidance document has added the following definitions, in addition to applying definitions in GB/T 2900.11.

3.1 Charge recovery

The ratio of discharge capacity TO the rated capacity of charged batteries which have been stored for a certain time at a certain temperature.

3.2 End current at charge

The current of batteries at the end of charging when the batteries are charged in specified constant voltage.

3.3 Specific characteristics

The ratio of electrical performance of batteries TO the unit mass of batteries, unit surface area or unit volume.

3.4 Explosion

Battery cell case is broken. Internal substances erupt from the battery and make a sound of explosion.

3.5 Fire

There is a fire in the shell of batteries.

3.6 Leakage

The original weight of batteries reduces over 0.1% due to the loss of liquid electrolyte.

3.7 Venting

Excessive internal pressure releases from batteries to avoid explosion.

3.8 Nominal energy

At temperature of $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$, discharged by 1I3 (A) current, the energy (Wh) that can be released from battery when reaching the final voltage. This value can be obtained from cover area integral of voltage-capacity curve, which requires 50 equivalent-value time-intervals at least, or be calculated directly by integrator.

3.9 Symbols

C3 - rated capacity of 3 hours.

I3 - discharge current of 3 hours, its value is $1/3C_3(A)$.

4.1 Classification

Batteries for electric road vehicles can be classified into prismatic batteries and cylindrical batteries.

4.2 Models

capacity (measured as per Ah). And charge retention can be expressed as the percentage of rated capacity.

6.10.5 Batteries use the charger provided or recommended by the manufacturing plant.

At $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$, stored batteries (6.10.2) are charged in 24 h until the end.

6.10.6 The batteries are discharged by 1I3 (A) current at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ until discharging

is stopped.

6.10.7 USE the figure of current value and discharge time in 6.10.6 to calculate capacity (measured as per Ah). And charge retention can be expressed as the percentage of rated capacity.

6.11.4 Batteries use the charger provided or recommended by the manufacturing plant

to charge at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$, until the end.

6.11.5 The batteries are discharged by 1I3 (A) current at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ until discharging

is stopped.

6.11.6 USE the current value and discharge time in 6.11.5 to calculate capacity (measured as per Ah). Charge retention can be expressed as the percentage of rated capacity. If the capacity is less than the specified value in 5.9, then it is allowed to repeat the two steps in 6.11.4 and 6.11.5 until the requirement is met.