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

GB/T 18333.2-2015

Zinc-air batteries for electric road vehicle

电动汽车用锌空气电池

(English Translation)

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Table of Contents

Foreword...	3
1 Scope...	4
2 Normative references...	4
3 Terms and definitions...	4
4 Symbol...	5
5 Requirements...	6
6 Test methods...	8
7 Testing rules...	17
8 Marks, packaging, transport and storage...	18

Foreword

This Standard was drafted in accordance with the rules specified in GB/T 1.1-2009.

This Standard replaces GB/Z 18333.2-2001 Zinc-air batteries for electric road vehicle. As compared with GB/Z 18333.2-2001, besides the editorial changes, the main technical changes are as the follows.

- MODIFY the applicable scope of this Standard;
- MODIFY the test object and the corresponding test items; as for the cell, it mainly assesses the safety performance; as for the module, it assesses the electrical performance and safety performance;
- ADD the I5 detection capacity, I3 detection power characteristics, high & low temperature discharge capacity, charge retention, and battery repetitiveness after replacing the negative electrode and the electrolyte;
- ADD the safety performance requirements and test methods of the cell (see 5.1.10 and 6.2.10);
- ADD battery module, appearance, polarity, dimension and mass, pourability, discharge performance, safety performance, vibration

resistance requirements and test methods (see 5.2 and 6.3);

- MODIFY the service life requirements and test methods for the air cathode (see 5.1.9 and 6.2.9).

This standard was proposed by the Ministry of Industry and Information Technology.

This standard shall be under the jurisdiction of National Automotive Standardization Technical Committee (SAC/TC 114).

The drafting organizations of this Standard. Wuhan Hongyuan Weili New Energy Technology Co., Ltd., Dongfeng Yangtse (Wuhan) Co., Ltd., Tianjin University, China Electronics Technology Group Corporation 18th Research Institute, China Automotive Technology Research Center.

1 Scope

This standard specifies the terms and definitions, symbols, requirements, test methods, inspection rules, marks, packaging, transport and storage of the zinc-air batteries for electric vehicles (abbreviated as battery).

This standard applies to the zinc-air battery used for the electric vehicles which are supplemented energy through mechanical switching methods.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this Standard.

GB/T 2423.17-2008 Environmental testing for electric and electronic products - Part 2. Test method - Test Ka. Salt mist (IEC 60068-2-11. 1981, IDT)

GB/T 2900.41 Electrotechnical terminology - Primary and secondary cells and batteries [IEC 60050 (482). 2003, IDT]

GB/T 19596 Terminology of electric vehicles

3 Terms and definitions

The terms and definitions as defined in GB/T 2900.41 and GB/T 19596 as well as those shown below are applicable to this document.

3.1

Zinc air battery

It is a device which uses the oxygen in the air as the cathode active substance, the zinc as the anode active substance, the alkaline solution as electrolyte, so as to convert the chemical energy into electrical energy.

3.2

Mechanical switching zinc air battery

It refers to the zinc air battery which realizes energy supplementation through mechanically replacing the zinc electrode and electrolyte.

3.3

Cell

It refers to a basic unit device which directly converts the chemical energy into electrical energy. It is composed of electrode, diaphragm, electrolyte, housing and terminal; AND meanwhile it has multiple energy replenishment process design.

3.4

Module

It refers an assembly which combines more than one cell through series connection, parallel connection, and series & parallel combined connection, only has one pair of positive & negative output terminals, AND is used as a power supply. It is allowed for this assembly to be with an electronic control system.

3.5

Rated capacity

It is the energy (Wh) discharged by the cell under room temperature at I5 (A)

current until reaching to the final voltage, which is supplied by the enterprise, hereinafter shortly referred to as the rated capacity.

4 Symbol

The following symbols apply to this document.

C5 - The 5-hour rated capacity, in the unit of ampere hour (Ah);

C5' - The 5-hour actual capacity after standing for 7 days, in the unit of ampere hour (Ah);

I5 - The 5-hour rate discharge current, its value is equal to $C5/5$, in the unit of ampere (A);

I3 - The 3-hour rate discharge current, its value is equal to $C3/3$, in the unit of ampere (A);

It shall conduct test within 1 month after the zinc electrode is fabricated. Before test, all the battery cases shall be injected of electrolyte solution, AND be standing for over 24 hours. In all the soaked battery cases, RE-INJECT new electrolyte solution, and PLACE in the zinc electrode to be tested, which form the cell or module test sample, AND it shall be under full charge state.

6.2.1 Appearance

Visual inspection

6.2.2 Polarity

USE the voltmeter to check the terminal voltage of the cell under test, to see whether it is consistent with the terminal polarity identification.

6.2.4 Pourability

TILT the cell under test from the height direction (Y direction) along the horizontal direction (X direction) for 90° ; HOLD it for 30 s; CONDUCT visual inspection.