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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 20155-2026

Replacing GB/T 20155-2018

Determination of mercury, cadmium and lead in batteries

电池中汞、镉、铅含量的测定

Issued on: July 30, 2026 **Implemented on: February 1, 2027**

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Standardization Administration of the PRC

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Foreword

This document was issued on 30 July 2026 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 February 2027.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies.

It is classified under ICS 29.220.10 and Chinese classification K 82.

The document runs to 19 pages. The identification, the dates, the classification and the table of contents on this page are taken from the cover and the printed contents of the standard itself.

This document was drafted in accordance with GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document replaces GB/T 20155-2018 "Determination of mercury, cadmium and lead in batteries". Compared with the 2018 edition, apart from structural adjustments and editorial changes, the main technical changes are as follows:

-- the scope has been changed (see Clause 1; Clause 1 of the 2018 edition);

-- a clause of terms and definitions has been added (see Clause 3);

-- "Test methods - summary" has been deleted (see Clause 3 of the 2018 edition);

-- the safety conditions have been changed (see 4.2; 4.2 of the 2018 edition);

-- the general reagents and apparatus have been changed (see Clause 5; Clause 5 of the 2018 edition);

-- the requirements on samples have been changed (see Clause 6; Clause 6 of the 2018 edition);

-- "Determination of cadmium and lead - Method 3: Inductively coupled plasma mass spectrometry (ICP-MS)" has been added (see Clause 11);

-- the correlation coefficient of the working curve has been changed (see 12.1; 11.1 of the 2018 edition).

Attention is drawn to the possibility that some elements of this document may be the subject of patent rights. The issuing body assumes no responsibility for identifying them.

This document was proposed by the China National Light Industry Council.

It is under the jurisdiction of the National Technical Committee on Primary Cells and Batteries of Standardization Administration of China (SAC/TC 176).

The drafting organisations include Fujian Nanping Nanfu Battery, the Light Industry Chemical Power Sources Research Institute, Zhengzhou University of Light Industry, Zhejiang Mustang Battery, Ningbo Jinshan Shuanglu Battery, Hangzhou Changming Battery, Sichuan Changhong New Energy Technology, the Suzhou Institute of Product Quality Supervision and Inspection, Zhejiang Hengwei Battery, Guangzhou Tiger Head Battery Group, EVE Energy and Guangzhou Great Power Energy, together with some fifteen further battery makers and testing bodies.

This document was first issued in 2006 as GB/T 20155-2006 and first revised in 2018; the present edition is the second revision.

1 Scope

GB/T 20155 specifies how mercury, cadmium and lead are measured in batteries. These are the three metals battery legislation restricts worldwide, and a declaration of compliance is worth only as much as the method behind it. The document describes the methods of test for the mercury, cadmium and lead content of batteries, and applies to the determination of

that content in small sealed primary batteries conforming to GB/T 8897.2 whose single cell mass does not exceed 200 g. It gives two independent routes for mercury, cold vapour atomic absorption spectrometry and atomic fluorescence spectrometry, and three for cadmium and lead, flame atomic absorption spectrometry, ICP-OES and, new in this edition, ICP-MS, so that a laboratory can use the instrument it has and still produce a comparable figure. It also covers the test conditions including safety, the general reagents and apparatus, the treatment of the sample, which is where a battery differs from an ordinary test item, and the quality assurance and control and the test report that make a result defensible. The 2026 edition replaces GB/T 20155-2018. For a manufacturer or importer of batteries this is the method a Chinese conformity assessment or a customs check will refer to.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through normative reference in the text. For dated references, only the edition corresponding to that date applies. For undated references, the latest edition, including all amendments, applies.

GB/T 603 Chemical reagent - Preparations of reagent solutions for use in test methods.

GB/T 6682 Water for analytical laboratory use - Specification and test methods.

GB/T 8170-2008 Rules of rounding off for numerical values and expression and judgement of limiting values.

GB/T 8897.2 Primary batteries - Part 2: Physical and electrical specifications.

3 Terms and definitions

This document contains no terms and definitions requiring definition.

4 Test conditions

4.1 Environmental conditions. Unless otherwise specified, the determination shall be carried out in the following environment: a) temperature, 15 degrees Celsius to 35 degrees Celsius; b) relative humidity, 30 % to 90 %; c) atmospheric pressure, 86 kPa to 106 kPa.

4.2 Safety conditions. Eye protection shall be worn to prevent personal injury. The determination shall be carried out by qualified and experienced technical personnel.

The document opens with a warning: the hydrochloric acid and the nitric acid used in this document are volatile and corrosive; avoid inhalation and contact with the skin, rinse immediately with plenty of water if splashed, and seek medical attention in serious cases.

5 General reagents and apparatus

5.1 Reagents and materials. Unless otherwise stated, reagents of at least analytical grade and grade 2 water conforming to GB/T 6682 shall be used in the analysis; for micro and trace analysis, guaranteed reagent or spectroscopically pure reagents are preferred. Unless otherwise stated, the preparations and products used in the test are prepared in accordance with GB/T 603.

The clause then lists the reagents and their preparation, among them hydrochloric acid and nitric acid at several dilutions, potassium dichromate solution, and the mercury, cadmium and lead standard solutions and the working solutions derived from them, each given both as a certified reference material to be purchased and as a preparation from the pure metal or salt.

5.2 Apparatus. The clause specifies the instruments required by each of the five methods: the cold vapour atomic absorption spectrometer, the atomic fluorescence spectrometer, the flame atomic absorption spectrometer, the ICP-OES instrument and the ICP-MS instrument, together with the general laboratory glassware and the digestion equipment.