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

GB 24427-2021

Replacing GB 24427-2009

**Content limitation of mercury, cadmium and lead for zinc anode
primary battery**

锌负极原电池汞镉铅含量的限制要求

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1 Scope

GB 24427-2021 is the Chinese national standard on content limitation of mercury, cadmium and lead for zinc anode primary battery, in the field of electrical engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 30 April 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 November 2021. Classification: ICS 29.220.10, CCS K82. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the limit requirements, inspection methods, and conformity determination requirements for mercury, cadmium and lead contents in standardized zinc-manganese dioxide batteries, zinc-silver oxide batteries, and zinc-air batteries. This document is applicable to the production, testing and acceptance of standardized zinc-manganese dioxide batteries, zinc-silver oxide batteries, zinc-air batteries and batteries composed of multiple single cells.

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) is applicable to this document.

GB/T 8897.1 Primary Batteries - Part 1: General

GB/T 8897.2 Primary Batteries - Part 2: Physical and Electrical Specifications

GB/T 8897.3 Primary Batteries - Part 3: Watch Batteries

GB/T 20155 Determination of Mercury, Cadmium and Lead in Battery

3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

3.1 Primary cell The basic functional unit of the power supply that is designed according to the non-chargeable design and directly converts chemical energy into electrical energy.
NOTE: It consists of electrodes, electrolytes, containers, terminals, and usually an isolation layer.

3.2 Primary battery A battery that is composed of one or more single primary cells equipped with necessary devices (such as housing, terminal, sign and protection device).

3.3 Button battery A cylindrical battery with a total height smaller than its diameter, resembling a button or coin.

3.4 Small button battery Button battery with a mass of less than 1g.

3.5 Mercury-free battery Button battery with mercury content no greater than 5µg/g, and other batteries with mercury content no greater than 1µg/g.

3.6 Cadmium-free battery Battery with cadmium content no more than 20µg/g.

3.7 Lead-free battery Battery with lead content no more than 40µg/g.

3.8 Zinc anode primary battery Primary battery that takes zinc as the anode, includes but not limited to zinc-manganese dioxide batteries, zinc-silver oxide batteries, and zinc-air batteries.

4 Standardized Zinc-Silver Oxide, Zinc-Air, Zinc-

Manganese Dioxide Button Batteries

4.1 Zinc-silver oxide button batteries Zinc-silver oxide button batteries standardized in GB/T 8897.2 include SR41, SR42, SR43, SR44, SR48, SR54, SR55, SR57, SR58, SR59, SR60, SR62, SR63, SR64, SR65, SR66, SR67, SR68, SR69 batteries. Zinc-silver oxide button batteries standardized in GB/T 8897.3 include SR516, SR521, SR527, SR614, SR616, SR621, SR626, SR712, SR714, SR716, SR721, SR726, SR731, SR736, SR754, SR916,

SR920, SR927, SR936, SR1126, SR1130, SR1136, SR1142, SR1154 batteries.

--- If the mercury, cadmium, and lead contents of one sample battery are higher than the limit requirements in Table 1, while that of the other sample battery is lower than the limit requirements in Table 1, then another two sample batteries are retested. If there is still sample battery fails to meet the requirements in the second time, it shall be determined that the mercury, cadmium and lead contents do not meet the requirements.

7.3 The battery mass is less than 1g (small button battery) Two sample batteries are tested each time; and each sample batteries are composed of several batteries with a mass of no more than 1g. The judgment shall be carried out according to 7.2.

8 Marking

8.1 Identification It shall be according to the marking requirements in GB/T 8897.1.

8.2 Identification of hazardous substances

8.2.1 Identification of mercury content When the mercury content of button batteries is no more than 5µg/g, and the mercury content of other batteries is no more than 1µg/g, it can be marked as "mercury-free battery".

8.2.2 Identification of cadmium content When the cadmium content of the battery is no more than 20µg/g, it can be marked as "cadmium-free battery".

8.2.3 Identification of lead content When the lead content of the battery is no more than 40µg/g, it can be marked as "lead-free battery".

8.2.4 Identification of multi-component hazardous substance If it meets the hazardous substance limit requirements in

8.2.1 And

8.2.2 at the same time, it can be marked as "mercury-free and cadmium-free batteries"; if it meets the hazardous substance limit requirements in

8.2.3 at the same time, it can be marked as "mercury-free and lead-free batteries"; if it meets the hazardous substance limit requirements in 8.2.1,