



## Test Report

No.T32320250308SC

Date: Feb 16, 2023

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The following samples were submitted and identified by/on behalf of the client as:  
1.5V MERCURY FREE ALKALINE ZINC MANGANESE BUTTON CELL BATTERY

Case No. : CA323202504459

Style/ Item No. : G13/LR44/357/A76, LR44(EXP), LR44(HG, PB), G12/LR43/386/186,  
G11/LR721/362/162, G10/LR1130/189, G9/LR936/394/194,  
G8/1120/391/191, G7/LR927/395/195, G6/L920/371/171, G5/LR754/393/193,  
G4/LR626/SR626/377/177, G3/LR41/392/192, G2/LR726/SR726/196,  
G1/LR621/364/164, G0/LR521/SR521, LR932, LR732, LR632

Manufacturer :

Country of Origin : CHINA

Sample Receiving Date : FEB 07, 2023

Testing Period : FEB 07, 2023 – FEB 16, 2023



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Test Requested	Conclusion
1. European Directive 2006/66/EC and its amendments (Directive 2013/56/EU) – Lead, Cadmium and Mercury Content	PASS
2. US Public Law 104-142 (1996) Title II – Mercury-Containing Battery Management Act – Mercury Content	PASS
3. Mercury Requirement in Compliance with Various USA States Requirement	PASS

\*\*\*\*\* FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S) \*\*\*\*\*

Signed for and on behalf of  
SGS Hong Kong Ltd.



Lam Chi Ho, Jacko  
Senior Chemist



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**Test Results:**

**1. European Directive 2006/66/EC and its amendments (Directive 2013/56/EU) – Lead, Cadmium and Mercury Content**

Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013

Analysis was performed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) / Atomic Absorption Spectrometer (AAS) / Direct Mercury Analyzer (DMA)

For portable batteries:

Test Item(s)	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)
MDL (%)	0.001	0.001	0.0001
Labeling Requirement (%)	> 0.004	--	--
Permissible Limit (%)	--	0.002 <sup>#</sup>	0.0005
Specimen Description	Result(s) (%)		
1. Silvery button cell (LR44)	ND	ND	ND

- Note:
- % = percentage by weight
  - ND = Not Detected (lower than MDL)
  - 1% = 10000 mg/kg = 10000 ppm
  - > = greater than

The below note(s) is(are) applicable in case the relevant superscript(s) and symbol(s) was(were) shown in the result table:

- <sup>#</sup> = Not applicable to portable batteries and accumulators intended to use in emergency and alarm systems and medical equipments
- <sup>##</sup> = According to Directive 2006/66/EC, the corresponding chemical symbol beneath the cross-out wheeled bin logo is required if the heavy metal content in batteries and accumulators exceeded the values specified under labeling requirements.
- \* Exceeds Permissible Limit



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**2. US Public Law 104-142 (1996) Title II – Mercury-Containing Battery Management Act – Mercury Content**

Method: IEC 62321-4:2013+AMD1:2017

Analysis was performed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) / Direct Mercury Analyzer (DMA)

For Alkaline Manganese Button Cell

Test Item(s)	Mercury (Hg)
MDL (mg/cell)	10
Permissible Limit (mg/cell)	25
Specimen Description	Result(s) (mg/cell)
1. Silvery button cell (LR44)	ND

Note: - mg/cell = milligram per cell  
 - ND = Not Detected (lower than MDL)

The below note(s) is(are) applicable in case the relevant superscript(s) and symbol(s) was(were) shown in the result table:

- \* Exceeds Permissible Limit



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**3. Mercury Requirement in Compliance with Various USA States Requirement**

Method: With reference to EPA 3052: 1996 / Acid Digestion

Analysis was performed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) / Direct Mercury Analyzer (DMA)

Test Item(s)	Mercury (Hg)
MDL (mg/kg)	1
Requirement (mg/kg)	Prohibited
Specimen Description	Result(s) (mg/kg)
1. Silvery button cell (LR44)	ND

- Note:
- mg/kg = milligram per kilogram
  - ND = Not Detected (lower than MDL)
  - 1% = 10000 mg/kg = 10000 ppm

The below note(s) is(are) applicable in case the relevant superscript(s) and symbol(s) was(were) shown in the result table:

- \* Do not meet requirement



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Region	Act/Regulation	Scope	Effective Date
Connecticut State	Public Act 06-181 (HB 5446, 2006)	Button cell batteries containing mercury	July 1, 2011
		Button cell batteries used in Medical device for delivering insulin	January 1, 2015
		Silver oxide button cell batteries	July 1, 2012
Maine State	Public Law, Chapter 86 ( LD 1026, 124th Maine State Legislature)	Mercury-added button cell batteries: 1. Zinc- air button cell battery 2. Alkaline manganese button cell battery 3. Silver oxide button cell stamped with the designation SR357, SR 364, SR371, SR377, SR395, SR44W, SR621SW, SR626SW, SR920SW or SR927SW	January 1, 2012
		Mercury-added silver oxide button cell batteries	January 2, 2015
Rhode Island State	H 6396, Chapter 387 (2007)	Mercury-added button cell batteries	July 1, 2011
		Silver oxide button cell batteries	January 1, 2012
Ohio State	Chapter 3734: Solid and Hazardous Wastes RC § 3734. 64 "Sale of mercury-added novelty for promotional purposes"	Mercury-added novelty products intended mainly for personal or household enjoyment or adornment including but not limited to products intended for use as practical jokes, figurines, adornments, toys, games, cards, ornaments, yards statues and figures, candles, jewelry, holiday decorations, footwear, other items of apparel, or similar products	December 4, 2007
		Mercury-added novelty products containing removable button cell batteries	January 1, 2011



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**Remark:**

When statement of conformity is made, unless inherent in the requested specification or instructed by the applicant, the decision rule would be based on the non-binary statement with guard band (is equal to the expanded measurement uncertainty with a 95% coverage probability,  $w = U_{95}$ ) in ILAC-G8:09/2019 Clause 4.2.3.

“Pass - the measured value is within (or below / above) the acceptance limit, where the acceptance limit is below / above to the guard band.” or “Pass - The measured values were observed in tolerance at the points tested. The specific false accept risk is up to 2.5%.”

“Fail - the measured value is out of (or below / above) the tolerance limit added / subtracted to the guard band.” or “Fail - One or more measured values were observed out of tolerance at the points tested”. The specific false reject risk is up to 2.5%.

“Inconclusive – It is not possible to state the conformity. Either one or more measured values were observed in the portion of the expanded measurement uncertainty intervals at the points tested where the specific risk is up to 50%.”

**Sample Photo:**



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Sample as received



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Photo provided by client

SGS authenticate the photo on original report only



\*\*\* End of Report \*\*\*

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