

The following sample(s) was/were submitted and identified on behalf of the clients as : MERCURY FREE ALKALINE BUTTON CELL

SGS Job No. : 5155368 - HK  
Colour : SILVERY  
Item No Given by Client : L521C (AG0, 379, LR63, LR521) L621C (AG1, 364, LR60, LR621)  
L726C (AG2, 396, LR59, LR726) L736C (AG3, 392, LR41, LR736)  
L626C (AG4, 377, LR66, LR626) L754C (AG5, 393, LR48, LR754)  
L921C (AG6, 370, LR69, LR921) L926C (AG7, 395, LR57, LR926)  
L1121C (AG8, 391, LR55, LR1121) L936C (AG9, 394, LR45, LR936)  
L1131C (AG10, 390, LR54, LR1131, LR1130)  
L721C (AG11, 344, LR58, LR721) L1142C (AG12, 386, LR43, LR1142)  
L1154C (AG13, LR44, 357, LR1154) L416C (LR416, 416)  
L516C (LR516, 317, 516) L616C (LR616, LR65, 321, 616) LR932 LR732

Manufacturer :  
Country of Origin : CHINA  
Country of Destination : EUROPE, USA  
Date of Sample Received : 14 Dec 2022  
Testing Period : 14 Dec 2022 - 21 Dec 2022  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Conclusion : The submitted battery sample does not exceed the limit mentioned in Directive 2006/66/EC and its Article 4 amendment of Directive 2013/56/EU.  
The submitted battery sample complies with the Mercury content requirements of the US Mercury - Containing Battery Management Act Public Law No 104-142 (1996).  
Based on the performed tests on submitted samples, the results comply with Canada Consumer Product Safety Act(S.C. 2010, c. 21) , Mercury Regulations (SOR/2014-254).

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## Test Report

No. HKTEC2206558501

Date: 03 Jan 2023

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Signed for and on behalf of  
SGS Hong Kong Limited.



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Chan Chun Kit, Dickson  
Manager EET

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Test Results :

### Test Part Description :

Specimen No.	SGS Sample ID	Description
1	HKT22-065585.001	Metal part
2	HKT22-065585.002	Core part
3	HKT22-065585.003	Button cell

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

### Directive 2006/66/EC and its Article 4 amendment of Directive 2013/56/EU– Heavy Metals Content in Batteries and Accumulators

Test Method : Acid digestion method-CTS-EC-109-1. Analysis was performed by ICP-OES/ICP-MS/AAS.  
(Decision Rule: please refer to appendix 1: Category 1)

Test Item(s)	Limit	Unit	MDL	003
Lead (Pb)	-	%	0.0010	ND
Cadmium (Cd)	0.0020	%	0.0010	ND
Mercury (Hg)	0.0005	%	0.0001	ND
<b>Conclusion</b>				<b>PASS</b>

Notes :

- (1) Results shown are of total weight of the battery sample.
- (2) According to the directive 2006/66/EC and its Article 4 amendment of Directive 2013/56/EU, all types of battery shall include the chemical symbol Lead when containing more than 0.004% of Pb.

### US Public law 104-142

Test Method : Acid digestion method-CTS-EC-109-1. Analysis was performed by ICP-MS/AAS. (Decision Rule: please refer to appendix 1: Category 1)

Test Item(s)	Limit	Unit	MDL	003
Mercury (Hg)	25	mg/cell	0.1	ND
<b>Conclusion</b>				<b>PASS</b>

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### Notes :

1. According to US Mercury-containing Battery Management Act, Public Law No.104-142(1996) SEC 203 the limitation on mercury content in alkaline-manganese button cell shall be 25 milligrams per button cell
2. MDL(Method Detection Limit) = 0.1mg/kg
3. Results shown are of total weight of the battery sample

### Canada Consumer Product Safety Act (S.C. 2010, c. 21), SOR/2014-254- Mercury (Hg)

Test Method : With reference to SGS in-house method - CTS-EC-109-02, analysis was performed by ICP-MS.  
(Decision Rule: please refer to appendix 1: Category 1)

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>	<u>002</u>
Mercury (Hg)	5	mg/kg	0.1	ND	ND
<b>Conclusion</b>				<b>PASS</b>	<b>PASS</b>

### RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to SGS in-house method-CTS-EC-109-1, IEC62321-7-2:2017, IEC62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Cadmium (Cd)	100	mg/kg	10	ND
Lead (Pb)	1,000	mg/kg	10	ND
Mercury (Hg)	1,000	mg/kg	1	ND
Hexavalent Chromium (Cr(VI))	1,000	mg/kg	8	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Dibutyl phthalate (DBP)	1,000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1,000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1,000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1,000	mg/kg	50	ND

### Notes :

- (1) Quoted limit is referred to RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU. According to the document of Frequently Asked Questions on RoHS and WEEE published from European Commission in May 2005, the battery does not apply to RoHS Directive.
- (2) The measurement report of the expanded uncertainty with confident level 95% by coverage factor  $k=2$ , is 20% for each analyte of for Cd, Pb, Hg and Cr(VI).
- (3) The measurement report of the expanded uncertainty with confident level 95% by coverage factor  $k=2$ , is 30% for each analyte of for PBBs and PBDEs.
- (4) The measurement report of the expanded uncertainty with confident level 95% by coverage factor  $k=2$ , is 25% for each analyte of for DBP, BBP, DEHP and DIBP.

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**Appendix 1**

Category	Decision Rule Statement
1	<p>The decision rule for conformity reporting is based on the non-binary statement with guard band (is equal to the expanded measurement uncertainty with a 95% coverage probability, <math>w = U95</math>) in ILAC-G8:09/2019 Clause 4.2.3.</p> <p>A. "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%."</p> <p>B. "Conditional Pass - The measured values were observed in tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values exceeded / out of tolerance. When the measured result is close to the tolerance, the specific false accept risk is up to 50%."</p> <p>C. "Conditional Fail - One or more measured values were observed out of tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values were in tolerance. When the measured result is close to the tolerance, the specific false reject risk is up to 50%."</p> <p>D. "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%.</p>
2	<p>The decision rule for conformity reporting is based on BS EN 1811:2011+A1:2015: Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin in Section 9.2 interpretation of results.</p>
3	<p>The decision rule for conformity reporting is based on the general consideration of simple acceptance as stated in ISO/IEC Guide 98-3: "Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM 1995)", and more specifically for analytical measurements to the EURACHEM/CITAC Guide 2012 "Quantifying Uncertainty in Analytical Measurement".</p>
4	<p>The decision rule for conformity reporting is according to the IEC 62321-7-1 Edition 1.0 2015-09 Section 7: Table 1-(comparison to standard and interpretation of result)</p>
5	<p>The decision rule for conformity reporting is according to the IEC 62321-3-1 Edition 1.0 2013-06 Annex A.3 interpretation of result.</p>
6	<p>The decision rule for conformity reporting is according to the GB/T 26125-2011 Annex A to H</p>
7	<p>The decision rule for conformity reporting is according to the requested specification or standard (ASTM F963-17 section 4.3.5)</p>
8	<p>The decision rule for conformity reporting is according to the requested specification or standard (AS/NZS ISO 8124 Part 3 section 4.2)</p>
Remark	<p>If the decision rule is not feasible to be used and the uncertainty of the result is able to be provided, the uncertainty range of the result will be shown in the report. Otherwise, only result will be shown in the report.</p>

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Sample photo:



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

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