



**BUREAU  
VERITAS**

# TEST REPORT

**Technical Report: (5220)006-0109**  
**技术报告**

January 13, 2020

Date Received: January 6, 2020  
样品收取日期

Page 1 of 10

Sample Description: Sample(s) received is/are stated to be:  
样品描述 Mercury Free Alkaline Button Cell

Color:  
颜色 /

Order No.:  
订单号 /

Model No.:  
型号

Age Grade:  
年龄组别 /

Vendor:  
卖方 /

Manufacturer:  
制造商

Buyer:  
买家 /

Test Period:  
所需工作周期

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)

Style No(s):  
款号 /

PO No.:  
采购订单号 /

Batch No.:  
批号 /

Product End Use:  
产品最终用途 /

Retest No.:  
复测试号 /

Supplier Reference:  
供应商参考 /

Country of Origin:  
原产地 China

Country of Destination:  
目的地 /

LA

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Consumer Product Services Division  
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**SUMMARY OF TEST RESULTS 测试结果摘要**

TEST REQUESTED 测试要求	CONCLUSION 结论	REMARK 备注
Total Mercury Content in Alkaline Manganese Button Cell - United States Public Law 104-142, Title II Mercury-Containing Battery Management Act, Section 203	PASS	
Total Mercury Content in Battery and Button Cell Battery - Canadian Environmental Protection Act, S.C. 1999, c. 33, Products Containing Mercury Regulations SOR/2014-254, Section 3	PASS	
Total Heavy Metals Content in Button Cells - European Parliament and Council Directive 2006/66/EC with Latest Amendment, Articles 4 and 21 According to 2013/56/EU	PASS	
Phthalates Content - European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments including (EU) 2015/863	PASS	
European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments 有关欧盟委员会针对电子产品的指令(电子电气禁用某些有害物质指令), 2011/65/EU	PASS 通过	

**REMARK**

If there are questions or concerns on this report, please contact:

(852) 2331 0330

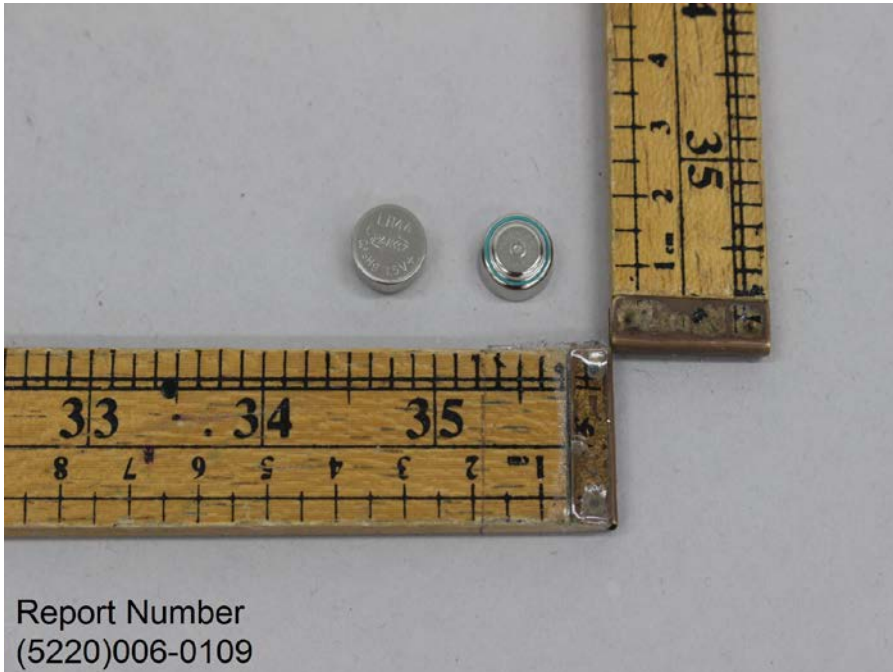
rohs.enquiry@hk.bureauveritas.com

BUREAU VERITAS HONG KONG LTD.

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MS. YANN LO  
MANAGER, ANALYTICAL

**Photo of the Submitted Sample**  
**所提交样品的照片**



**TEST RESULT****Total Mercury Content in Alkaline Manganese Button Cell - United States Public Law 104-142, Title II Mercury-Containing Battery Management Act, Section 203**

Tested Item(s) : 1 Silvery button cell (LR44, 1.5V)

Maximum Allowable Limit:		25 mg/cell		
-	Unit	Result		
Test Item(s)	-	1	-	-
Parameter	-	-	-	-
Total Mercury (Hg)	mg/cell	ND	-	-
Conclusion	-	PASS	-	-

Note / Key:

ND = Not detected

“&gt;” = Greater than

mg/cell = milligram(s) per cell

Detection Limit (mg/cell): 5

**Total Mercury Content in Battery and Button Cell Battery - Canadian Environmental Protection Act, S.C. 1999, c. 33, Products Containing Mercury Regulations SOR/2014-254, Section 3**

Tested Item(s) : 1 Silvery button cell (LR44, 1.5V)

Maximum Allowable Limit:		Prohibited <sup>[b]</sup> (0.0005 %)		
-	Unit	Result		
Test Item(s)	-	1	-	-
Parameter	-	-	-	-
Total Mercury (Hg)	%	ND	-	-
Conclusion	-	PASS	-	-

Note / Key:

ND = Not detected

“&gt;” = Greater than

% = percent

Detection Limit (%): 0.0001

Remark:

- <sup>[b]</sup> denoted as this limit is valid to button cell battery starting from January 1, 2016. Button cell battery manufactured or imported before January 1, 2016 has to comply with another total mercury requirement with the maximum allowable limit of 25 milligrams per cell according to Canadian Environmental Protection Act, S.C. 1999, c. 33, Products Containing Mercury Regulations SOR/2014-254, Schedule, Item 31 and labeling requirement as specified in Canadian Environmental Protection Act, S.C. 1999, c. 33, Products Containing Mercury Regulations SOR/2014-254, Sections 8 and 9
- Test Item(s) with total mercury content less than 0.0005 % should be considered as exempted as specified in Canadian Environmental Protection Act, S.C. 1999, c. 33, Products Containing Mercury Regulations SOR/2014-254, Section 2, Items (l) and (m).



**TEST RESULT**

**Total Heavy Metals Content in Button Cells - European Parliament and Council Directive 2006/66/EC with Latest Amendment, Articles 4 and 21 According to 2013/56/EU**

Tested Item(s) : 1 Silvery button cell (LR44, 1.5V)

Requirement(s):				
Parameter(s)		Maximum Allowable Limit		
Total Mercury (Hg)		0.0005 %		
Total Cadmium (Cd)		0.002 %		
Total Lead (Pb)		Information only <sup>[a]</sup>		
-	Unit	Result		
Test Item(s)	-	1	-	-
Parameter	-	-	-	-
Total Mercury (Hg)	%	< 0.0001	-	-
Total Cadmium (Cd)	%	< 0.001	-	-
Total Lead (Pb)	%	0.0056	-	-
Conclusion	-	PASS	-	-

Note / Key:

“<” = Less than  
% = percent

“>” = Greater than

Remark:

- Apart from this total heavy metals content requirement(s), button cell(s) has (have) to comply together with the appropriate labelling requirement(s) as specified in European Parliament and Council Directive 2006/66/EC with Latest Amendment, Article 21.
- <sup>[a]</sup> denotes as button cell(s) with total lead content exceeding 0.004 % has (have) to comply with the appropriate labelling requirement(s) as specified in European Parliament and Council Directive 2006/66/EC with Latest Amendment, Article 21.

## TEST RESULT

### Phthalates Content - European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments including (EU) 2015/863

**Test Method** : With reference to International Standard IEC 62321-8: 2017.

**Tested Item(s)** : 1 Silvery button cell (LR44, 1.5V)

<b>Maximum Allowable Limit :</b>	<b>Each of the listed phthalates : 0.1 %<sup>[a]</sup></b>			
Test Item(s)	Result			Conclusion
	Detected Analyte(s)	Conc.	Unit	
1	ND	ND	%	PASS

Note / Key :

ND = Not detected

“>” = Greater than

Conc. = Concentration

% = percent

1 % = 10 000 mg/kg

mg/kg = milligram(s) per kilogram = ppm = part(s) per million

Detection Limit ( % ) - Each of the listed phthalates : 0.005

Remark :

- The list of phthalates is summarized in table of Appendix.
- The testing approach is listed in table of Appendix.
- <sup>[a]</sup> denotes as this maximum allowable limit applies to:
  - Medical devices ( Including in vitro medical devices ) and monitoring and control instruments ( Including industrial monitoring and control instruments ) placed on the market on or after July 22, 2021.
  - Other products ( Except toys ) placed on the market on or after July 22, 2019.

## APPENDIX

<b>List of Phthalates [ European Parliament and Council Directive 2011/65/EU ] :</b>					
No.	Name of Analyte(s)	CAS-No.	No.	Name of Analyte(s)	CAS-No.
1	Butyl benzyl phthalate (BBP)	85-68-7	3	Di-2-ethylhexyl phthalate (Bis (2-ethylhexyl) phthalate) (DEHP)	117-81-7
2	Di-n-butyl phthalate (Dibutyl phthalate) (DBP)	84-74-2	4	Di-iso-butyl phthalate (Diisobutyl phthalate) (DIBP)	84-69-5
CAS-No. = Chemical Abstracts Service registry number					



**TEST RESULT 测试结果**

**European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments**  
**有关欧盟委员会针对电子产品的指令(电子电气禁用某些有害物质指令), 2011/65/EU**

**Test Method** : See Appendix.  
**测试方法** 见附录

**Tested Item(s)** : 1 Silvery button cell (LR44, 1.5V)  
**测试项目**

<b>See Analytes (Parameter) and their corresponding Maximum Allowable Limit (Req.) in Result Table</b> <b>分析物(参数)及其对应的最大允许限(要求) - 见结果表</b>	<b>Type I</b> 类 I	<b>Metallic material</b> 金属材料
	<b>Type II</b> 类 II	<b>Glass or ceramic material</b> 玻璃或陶瓷材料
	<b>Type III</b> 类 III	<b>Other non-metallic material except Type II</b> 其他非金属材料, 类 II 材料除外

-	Unit 单位	Req. 要求	Result 结果		
<b>Test Item(s) 测试项目</b>	-	-	1	-	-
<b>Type 类型</b>	-	III	III	-	-
<b>Parameter 参数</b>	-	-	-	-	-
Lead (Pb) 铅	mg/kg	1000	56.2	-	-
Cadmium (Cd) 镉	mg/kg	100	ND	-	-
Mercury (Hg) 汞	mg/kg	1000	ND	-	-
Chromium VI (Cr VI) 六价铬	mg/kg	1000	ND	-	-
PBBs 多溴联苯	mg/kg	1000	ND	-	-
MonoBB 一溴联苯	mg/kg	-	ND	-	-
DiBB 二溴联苯	mg/kg	-	ND	-	-
TriBB 三溴联苯	mg/kg	-	ND	-	-
TetraBB 四溴联苯	mg/kg	-	ND	-	-
PentaBB 五溴联苯	mg/kg	-	ND	-	-
HexaBB 六溴联苯	mg/kg	-	ND	-	-
HeptaBB 七溴联苯	mg/kg	-	ND	-	-
OctaBB 八溴联苯	mg/kg	-	ND	-	-
NonaBB 九溴联苯	mg/kg	-	ND	-	-
DecaBB 十溴联苯	mg/kg	-	ND	-	-
PBDEs 多溴二苯醚	mg/kg	1000	ND	-	-
MonoBDE 一溴二苯醚	mg/kg	-	ND	-	-
DiBDE 二溴二苯醚	mg/kg	-	ND	-	-
TriBDE 三溴二苯醚	mg/kg	-	ND	-	-
TetraBDE 四溴二苯醚	mg/kg	-	ND	-	-
PentaBDE 五溴二苯醚	mg/kg	-	ND	-	-
HexaBDE 六溴二苯醚	mg/kg	-	ND	-	-
HeptaBDE 七溴二苯醚	mg/kg	-	ND	-	-
OctaBDE 八溴二苯醚	mg/kg	-	ND	-	-
NonaBDE 九溴二苯醚	mg/kg	-	ND	-	-
DecaBDE 十溴二苯醚	mg/kg	-	ND	-	-
<b>Conclusion 结论</b>	-	-	PASS 通过	-	-



## TEST RESULT 测试结果

### European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments 有关欧盟委员会针对电子产品的指令(电子电气禁用某些有害物质指令), 2011/65/EU

Note / Key 注释:

ND = Not detected 未检出                      “>” = Greater than 大于                      Req. = Requirement 要求  
NR = Not requested 未要求                      mg/kg = milligram(s) per kilogram 毫克每千克

Detection Limit 检出限 (mg/kg):

For Type I - Each (Pb, Cd & Hg): 2.0

类 I - 各 (铅, 镉和汞): 2.0

For Type II - Each (Pb, Cd, Hg & Cr VI): 2.0

类 II - 各 (铅, 镉, 汞和六价铬): 2.0

For Type III - Metal, Polymers & Electronics - Each (Pb, Cd, Hg & Cr VI): 2.0; Each (PBBs & PBDEs): 50;  
Others - Each (Pb, Cd & Hg): 2.0; Cr VI: 3.0; Each (PBBs & PBDEs): 50

类 III - 金属, 聚合物及电子 - 各 (铅, 镉, 汞和六价铬): 2.0; 各 (多溴联苯和多溴二苯醚): 50;  
其他 - 各 (铅, 镉和汞): 2.0; 六价铬: 3.0; 各 (多溴联苯和多溴二苯醚): 50;

Remark 备注:

- The testing approach is listed in table of Appendix.  
测试方法 – 见附录。
- According to European Parliament and Council Directive 2011/65/EU, Article 5 “Adaptation of the Annexes to scientific and technical progress”, exemption(s) should be granted to the materials and components of Test Item(s) in the lists in Annexes III and IV of this directive.  
根据欧盟委员会 2011/65/EU 指令中, 条款 5“适应科学技术进步的附件”, 附件 III 和 IV 中列明的测试项目中的材料和部件可予以豁免。

END 结束



## APPENDIX 附录

List of Analytes and their Corresponding Test Methods [ European Parliament and Council Directive 2011/65/EU ]:		
分析物名单及其相应的测试方法 [ 欧盟委员会指令 2011/65/EU ]:		
No.	Name of Analytes 分析物名称	Test Method(s) 测试方法
1	Lead (Pb) 铅	With reference to International Standard IEC 62321-5: 2013. 参照国际标准 IEC 62321-5: 2013.
2	Cadmium (Cd) 镉	
3	Mercury (Hg) 汞	With reference to International Standard IEC 62321-4: 2017. 参照国际标准 IEC 62321-4: 2017.
4	Chromium VI (Cr VI) 六价铬	<p><b>Metal 金属:</b> With reference to International Standard IEC 62321-7-1: 2015. 参照国际标准 IEC 62321-7-1: 2015.</p> <p><b>Polymers and Electronics 聚合物及电子:</b> With reference to European Standard EN 62321-7-2: 2017 参照欧洲标准 EN 62321-7-2: 2017.</p> <p><b>Leather 皮革:</b> International Standard ISO 17075: 2007 国际标准 ISO 17075: 2007</p> <p><b>Other than Metal, Leather, Polymers and Electronics:</b> <b>非金属, 皮革, 聚合物及电子:</b> With reference to International Standard ISO 17075: 2007 参照国际标准 ISO 17075: 2007</p>
5	Polybromobiphenyls (PBBs) 多溴联苯 - Bromobiphenyl (MonoBB) - Dibromobiphenyl (DiBB) - Tribromobiphenyl (TriBB) - Tetrabromobiphenyl (TetraBB) - Pentabromobiphenyl (PentaBB) - Hexabromobiphenyl (HexaBB) - Heptabromobiphenyl (HeptaBB) - Octabromobiphenyl (OctaBB) - Nonabromobiphenyl (NonaBB) - Decabromobiphenyl (DecaBB)	With reference to International Standard IEC 62321-6: 2015. 参照国际标准 IEC 62321-6: 2015.
6	Polybromodiphenyl ethers (PBDEs) 多溴二苯醚 - Bromodiphenyl ether (MonoBDE) - Dibromodiphenyl ether (DiBDE) - Tribromodiphenyl ether (TriBDE) - Tetrabromodiphenyl ether (TetraBDE) - Pentabromodiphenyl ether (PentaBDE) - Hexabromodiphenyl ether (HexaBDE) - Heptabromodiphenyl ether (HeptaBDE) - Octabromodiphenyl ether (OctaBDE) - Nonabromodiphenyl ether (NonaBDE) - Decabromodiphenyl ether (DecaBDE)	
[a]	The principle of this method was evaluated and supported by two studies organized by IEC TC 111 WG3. These studies were focused on detecting the presence of Cr VI in the corrosion protection coatings on metallic samples. 该方法的原理是在由 IEC TC111 WG3 组织的两次研究中得到了充分评估并获得了认可。这些研究侧重于对金属样品上防腐涂层中六价铬的存在的检测(定性测试)。	

**Test Flowchart of Heavy Metals and Flame Retardants Content [ European Parliament and Council Directive 2011/65/EU ] :**  
**重金属和阻燃剂的测试流程图[ 欧盟委员会指令 2011/65/EU ]:**

