

Test Report

No.SZR150928002001

Date: Oct. 09, 2015

Page 1 of 8

Applicant : Shenzhen Tcbest Battery Industry Co.,Ltd.
Address : Floor5#, Building A6, Yintian Industrial,Xixiang Street, Bao'an
Shenzhen,China

The submitted sample and sample information was/were submitted and identified by/on the behalf of the client

Sample name : Alkaline Battery
Type /model : LR03,LR6
Manufacturer : /
Sample received date : Sep. 28, 2015
Testing period : Sep. 28, 2015 to Oct. 09, 2015

Test requested : 1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.
2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1:2013 and EN62321:2012, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) in the submitted samples.

According to the RoHS Directive 2011/65/EU

Test Method: Please refer to the following page(s).

Test Result(s): Please refer to the following page(s).

Tested by

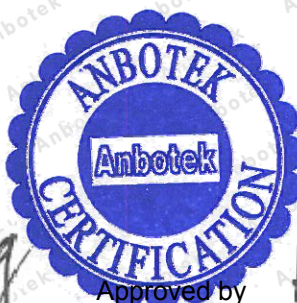
Sachen Chen

Inspected by

Jim Chang

Approved by

Rozong Luo



Shenzhen Anbotek Compliance Laboratory Limited

Address: E. 4F, Building A, Hourui No.3 Industrial Zone, Xixiang Sub-district, Bao'an District,
Shenzhen, China
Tel:(86)755-26066089 Fax:(86)755-26066021 Email:service@anbotek.com



Hotline
400-003-0500
www.anbotek.com

Test Report

No.SZR150928002001

Date: Oct. 09, 2015

Page 2 of 8

Test Method:
A. Screening test by XRF spectroscopy

XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013.

Element	Limit of IEC 62321-3-1:2013. Unit (mg/kg)		MDL	
	Polymers and metals	Composite material	Polymers	Other material
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma)$ $\leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma)$ $\leq OL$	10 mg/kg	50 mg/kg
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$	$LOD \leq (50-3\sigma) < X < (150+3\sigma)$ $\leq OL$	10 mg/kg	50 mg/kg
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma)$ $\leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma)$ $\leq OL$	10 mg/kg	50 mg/kg
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$	10 mg/kg	50 mg/kg
Br	$BL \leq (300-3\sigma) < X$	$BL \leq (250-3\sigma) < X$	10 mg/kg	50 mg/kg

Note:

-BL = Under the XRF screening limit

-OL = Further chemical test will be conducted while result is above the screening limit

-X= The symbol "X" marks the region where further investigation is necessary

 -3 σ = The reproducibility of analytical instruments

-LOD= Detection limit

B. Chemical Test

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead (Pb)/ Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0; EN62321:2012	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4:2013 Ed.1.0; EN62321:2012	ICP-OES	2 mg/kg
Hexavalent Chromium Cr(VI)	IEC 62321:2008 Ed.1 Annex B; EN62321:2012	UV-VIS	/
	IEC 62321:2008 Ed.1 Annex C; EN62321:2012	UV-VIS	2 mg/kg
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015 Ed.1.0; EN62321:2012	GC-MS	5 mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015 Ed.1.0; EN62321:2012	GC-MS	5 mg/kg

Shenzhen Anbotek Compliance Laboratory Limited

Address: E. 4F, Building A, Hourui No.3 Industrial Zone, Xixiang Sub-district, Bao'an District, Shenzhen, China

Tel:(86)755-26066089

Fax:(86)755-26066021

Email:service@anbotek.com



Hotline

400-003-0500

www.anbotek.com

Test Report

No.SZR150928002001

Date: Oct. 09, 2015


Page 3 of 8

Test Results:

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
1	Yellow skin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
2	Blue skin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
3	Silver metal shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
4	Black electrolyte	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
5	Gray electrolyte	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
6	Translucent plastic ring	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

Shenzhen Anbotek Compliance Laboratory Limited

Address: E. 4F, Building A, Hourui No.3 Industrial Zone, Xixiang Sub-district, Bao'an District, Shenzhen, China
 Tel:(86)755-26066089 Fax:(86)755-26066021 Email:service@anbotek.com

 **Hotline**
 400-003-0500
 www.anbotek.com

Test Report

No.SZR150928002001

Date: Oct. 09, 2015

Page 4 of 8

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
7	Silver metal bar	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
8	Silver metal cover	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
9	Every source electrolytic paper	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

Note:

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

 -Negative = Absence of Cr(VI) , the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.

 -Positive = Presence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is equal to or greater than 0.02 mg/kg with 50cm² sample surface area used.

Remark:

- The screening results are only used for reference.

- When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.

Shenzhen Anbotek Compliance Laboratory Limited

Address: E. 4F, Building A, Hourui No.3 Industrial Zone, Xixiang Sub-district, Bao' an District, Shenzhen, China

Tel:(86)755-26066089

Fax:(86)755-26066021

Email:service@anbotek.com


 Hotline
 400-003-0500
 www.anbotek.com

Test Report

No.SZR150928002001

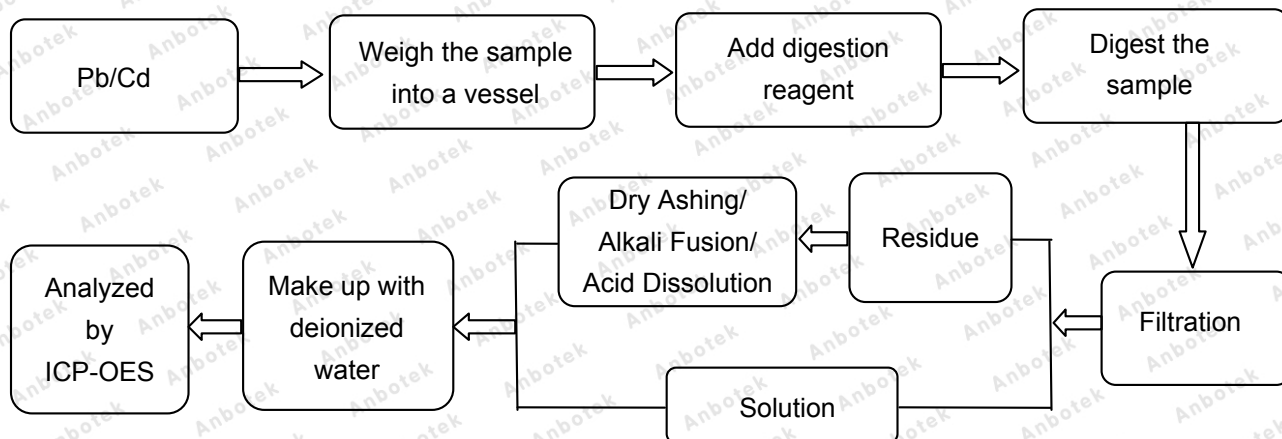
Date: Oct. 09, 2015

Page 5 of 8

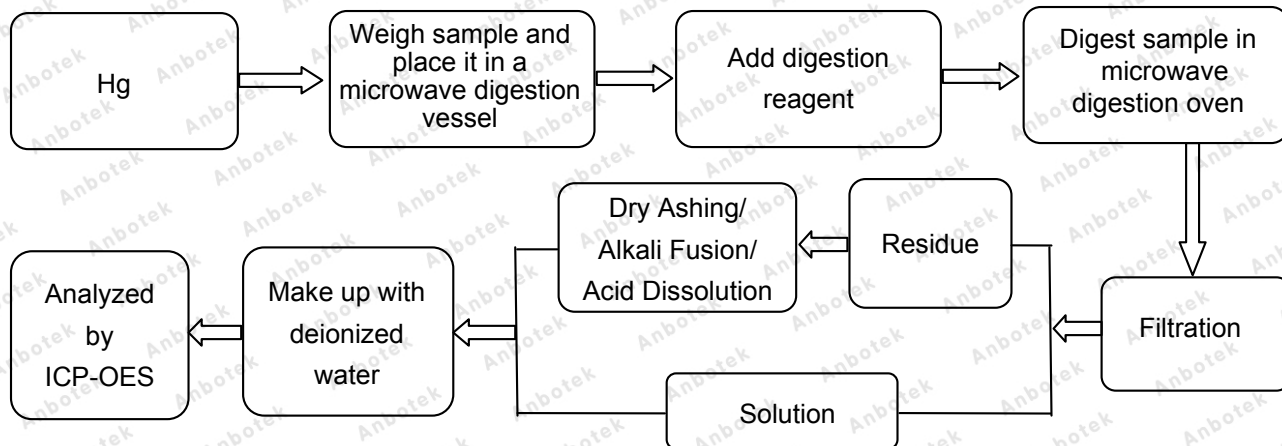
Test Process:

The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

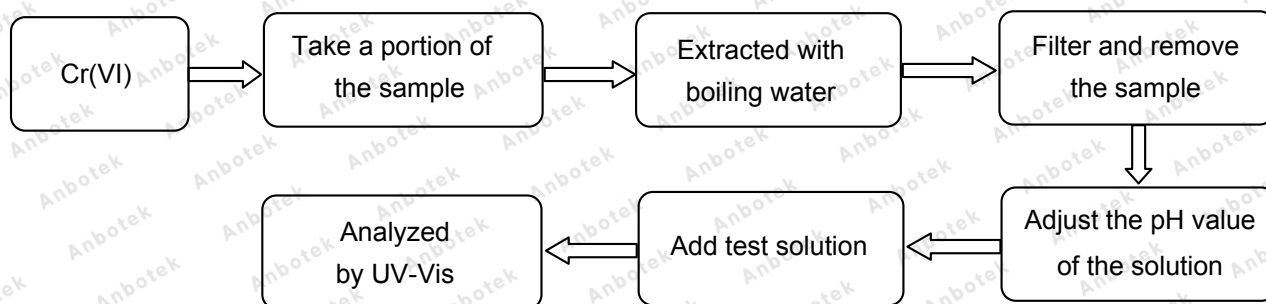
◆ IEC 62321-5:2013 Ed.1.0; EN62321:2012



◆ IEC 62321-4:2013 Ed.1.0; EN62321:2012




◆ IEC 62321:2008 Ed.1 Annex B; EN62321:2012



Shenzhen Anbotek Compliance Laboratory Limited

Address: E. 4F, Building A, Hourui No.3 Industrial Zone, Xixiang Sub-district, Bao'an District, Shenzhen, China
Tel:(86)755-26066089 Fax:(86)755-26066021 Email:service@anbotek.com

 Hotline
400-003-0500
www.anbotek.com

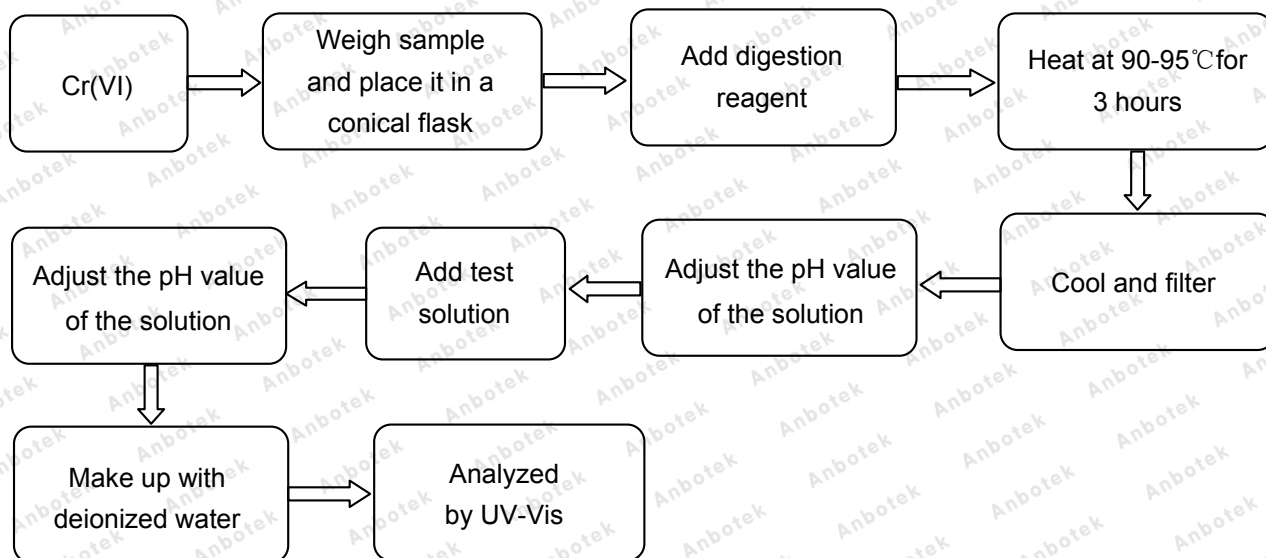
Test Report

No.SZR150928002001

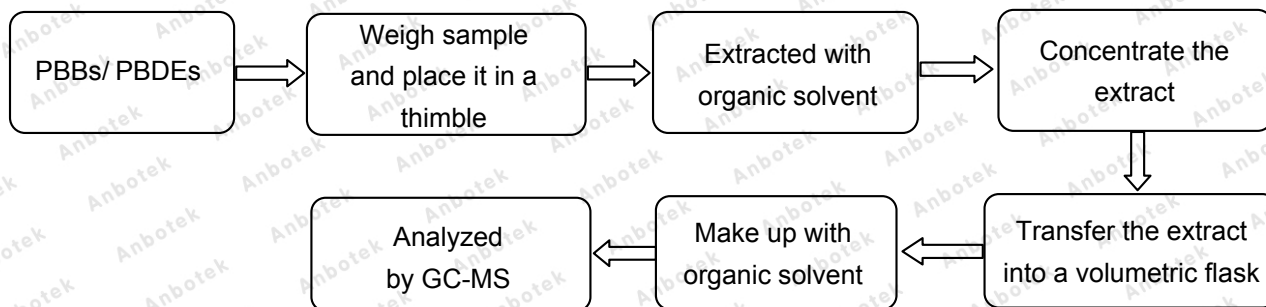
Date: Oct. 09, 2015

Page 6 of 8

◆ IEC 62321:2008 Ed.1 Annex C; EN62321:2012



◆ IEC 62321-6:2015 Ed.1.0; EN62321:2012



Test Report

No.SZR150928002001

Date: Oct. 09, 2015

Page 7 of 8

Photograph of Sample



Photo(s) of the tested component(s)



Test Report

No.SZR150928002001

Date: Oct. 09, 2015

Page 8 of 8



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

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of Anbotek, this report can't be reproduced except in full.