



TEST REPORT

Applicant: Shenzhen Heng Jin Battery Technology CO.,LTD.
Address: 7/F, NO.41, Paotai Road, Lisonglang First Industrial Zone,
 Gongming Street, Guangming New District, Shenzhen, China

The following sample(s) was/were submitted and identified on behalf of the client as:

Product name: Polymer Li-ion Battery
Model: See the attachment
Manufacturer: Shenzhen Heng Jin Battery Technology CO.,LTD.
Address: 7/F, NO.41, Paotai Road, Lisonglang First Industrial Zone,
 Gongming Street, Guangming New District, Shenzhen, China

Sample Received Date: Jul. 21, 2015
Testing Period: Jul. 21, 2015~ Jul. 23, 2015

Test Requirement:

As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF. When screening results exceed the XRF screening limit in IEC62321-3-1: 2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs) and Polybrominated Diphenyl Ethers(PBDEs) in the submitted samples in accordance with Regulation 2011/65/EU.

Conclusion:

Pass

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

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

Tested by Frank Reviewed by: Cathy
 Approved by: Mark Lion Date: 2015-07-27





Attachment:

803282, 18650, 302530, 381423, 402030, 451025, 501215, 503035, 602040, 752535, 103450, 302533, 382770, 402035, 451028, 501220, 503040, 602530, 752540, 104046, 302535, 383048, 402040, 451137, 501224, 503450, 602533, 753040, 105070, 302540, 383480, 402525, 451215, 501230, 505573, 602535, 754270, 105080, 303030, 401015, 402533, 451218, 501235, 505590, 603030, 755080, 106490, 303035, 401020, 402535, 451220, 501240, 506495, 603035, 782025, 252326, 303040, 401025, 402880, 451235, 501430, 551525, 603040, 802025, 252540, 321220, 401030, 403035, 451419, 501515, 551835, 606090, 802030, 261224, 322030, 401120, 403040, 452030, 501520, 552025, 652530, 802530, 283040, 327295, 401215, 403048, 452530, 501630, 552035, 653040, 802535, 283885, 350926, 401225, 404522, 452535, 501730, 552530, 655070, 802540, 300820, 351025, 401230, 405070, 452777, 502020, 552535, 655085, 803035, 301030, 352020, 401430, 405085, 453040, 502025, 555080, 655570, 803040, 301220, 352030, 401515, 406198, 455583, 502030, 562438, 702025, 301230, 352035, 401520, 411547, 463443, 502035, 582728, 702030, 805080, 301423, 352323, 401730, 421030, 471535, 502528, 601115, 702050, 806090, 301535, 352530, 401737, 422035, 472228, 502530, 601630, 702530, 852030, 302020, 353035, 402020, 423040, 475070, 502535, 602020, 703643, 855590, 302030, 353040, 402023, 425572, 481730, 502540, 602025, 706090, 902030, 302323, 381018, 402025, 441518, 501035, 503030, 602030, 752035, 902360, 902830, 903033, 906090, 955678, 1166121, 3766125, 5565113, 5566121, 6065113, 7050100, 7565113, 7566121, 7566125, 8062100



Test Result(s):

1. 18650 battery

Sample No.	Sample Description	Tested Items	XRF Screening Test	Chemical Test (mg/kg)	Conclusion
1	Purple plastic wire jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
2	Silvery metal shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
3	White translucent plastic ring	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

2. 803282 battery

Sample No.	Sample Description	Tested Items	XRF Screening Test	Chemical Test (mg/kg)	Conclusion
4	Yellow transparent adhesive tape	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
5	Red paper sheet	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
6	Red plastic wire jacket(thin)	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

Shenzhen NTEK Testing Technology Co., Ltd.

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7	Black plastic wire jacket(thin)	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
8	Wire core	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
9	Tin solder	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
10	Cathode foil	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
11	Anode foil	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
12	Graphite	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
13	Electrolyte	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
14	Electrolytic paper	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

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15	Green transparent adhesive tape	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

- Note:
- N.D. = Not Detected (<MDL)
 - MDL = Method Detection Limit
 - mg/kg = ppm = parts per million
 - /=Not Regulated or Not Applicable
 - BL = Under the XRF screening limit
 - IN = Further chemical test will be conducted when the screening result inconclusive
 - OL = Further chemical test will be conducted while the result is above the screening limit.
 - 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:
- 1.The screening results are only used for reference.
 - 2.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.

Test Method:

1. 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	$BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$	$LOD < X < (150+3\sigma) \leq OL$	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.

-3σ= The reproducibility of analytical instruments

-LOD= Detection limit

2. Chemical Test

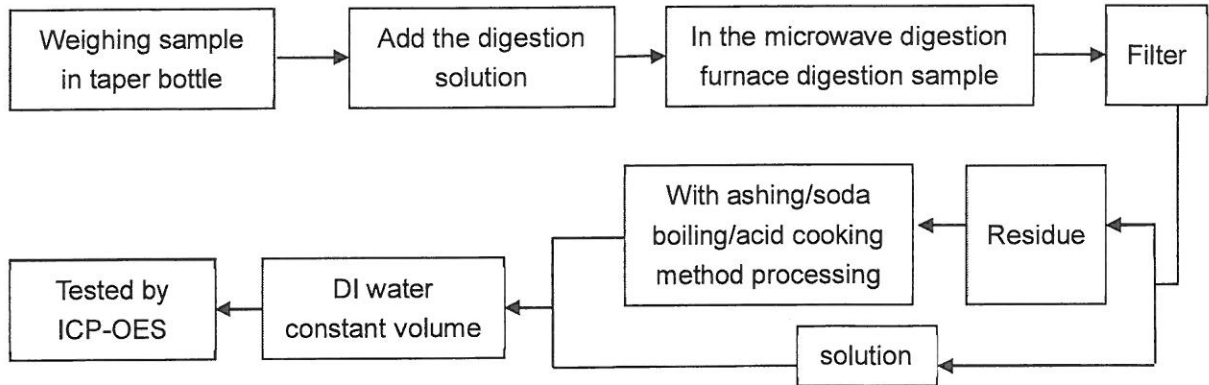
Test item	Pretreatment method	Test instrument	MDL
Lead(Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg
Cadmium(Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg
Mercury(Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES	2 mg/kg
Chromium(Cr VI)	IEC 62321:2008 Ed.1	UV-Vis	2 mg/kg
PBBs/ PBDEs	IEC 62321:2008 Ed.1 Annex A	GC-MS	5 mg/kg

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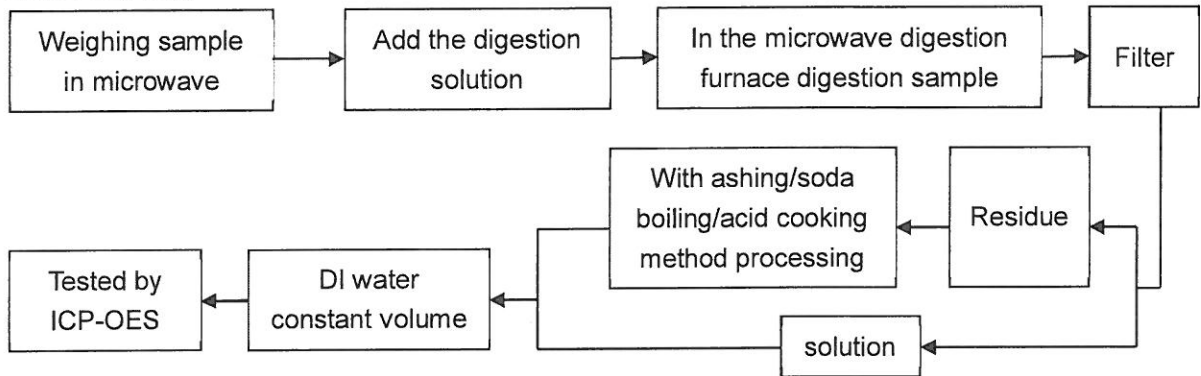
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Test Flow:

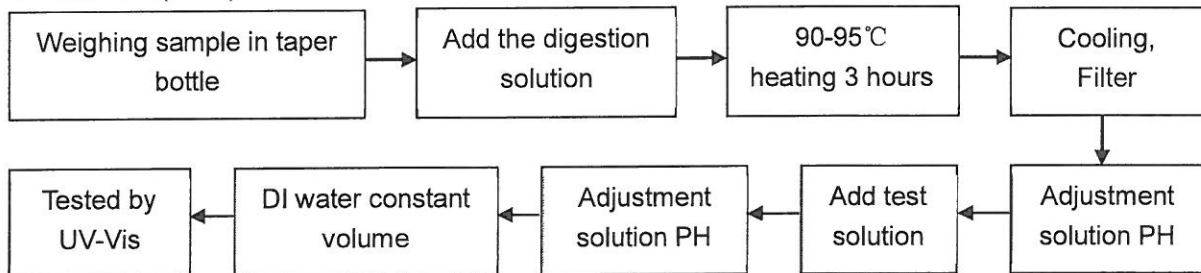
1. Lead(Pb), Cadmium(Cd)



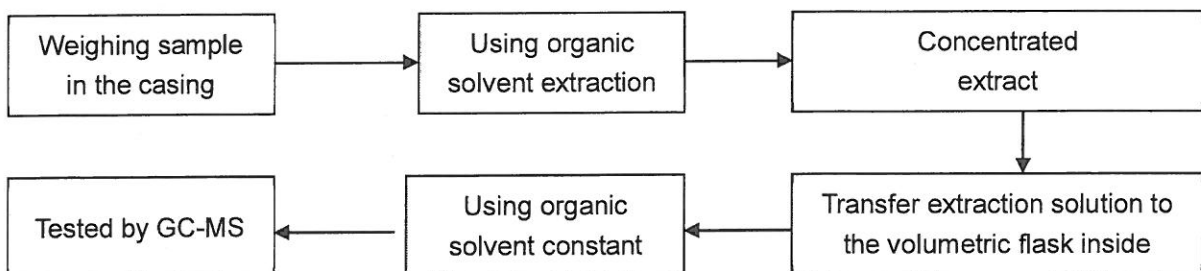
2. Mercury (Hg)



3. Chromium(Cr VI)



4. PBBs/ PBDEs



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Sample photo(s):

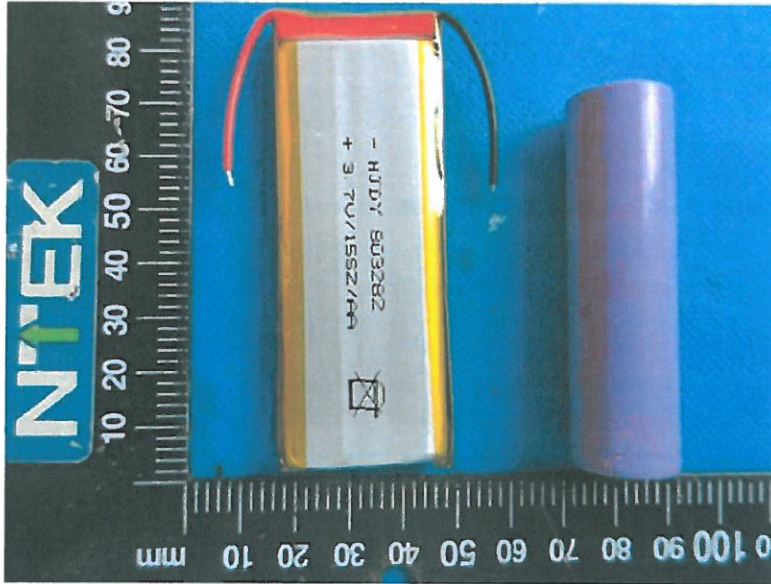


Fig.1

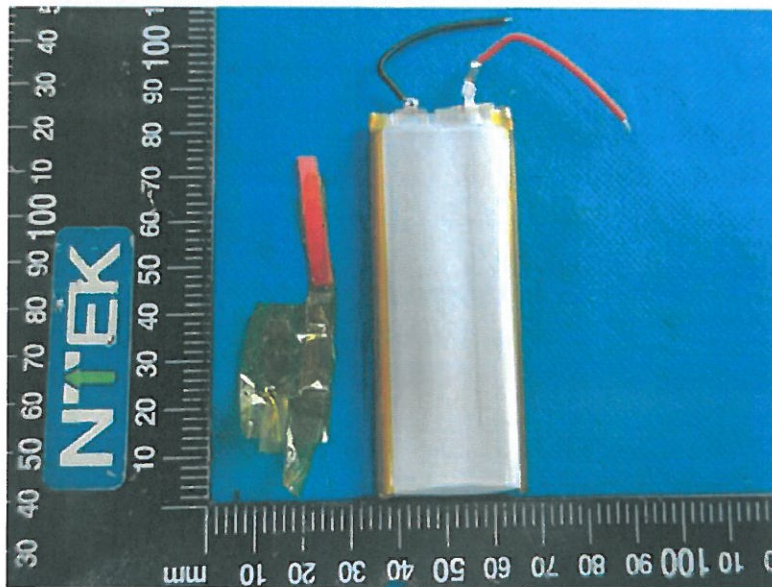


Fig.2

101 101 101



Fig.3

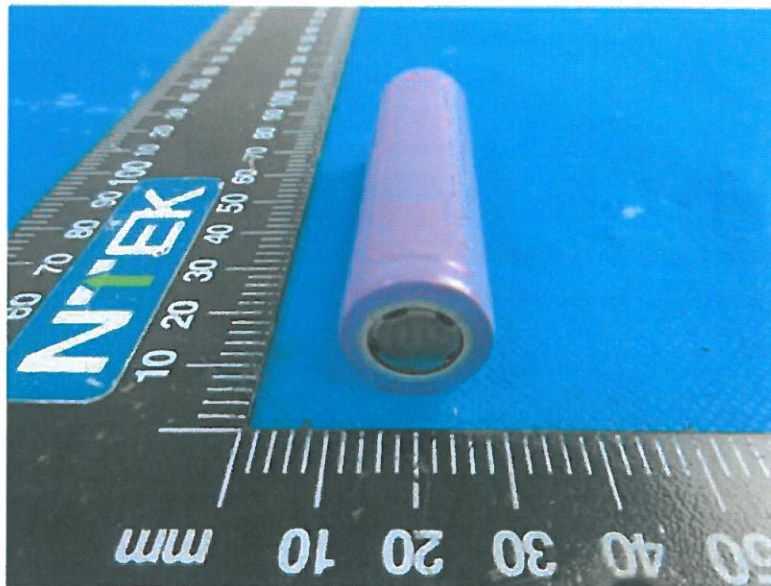


Fig.4

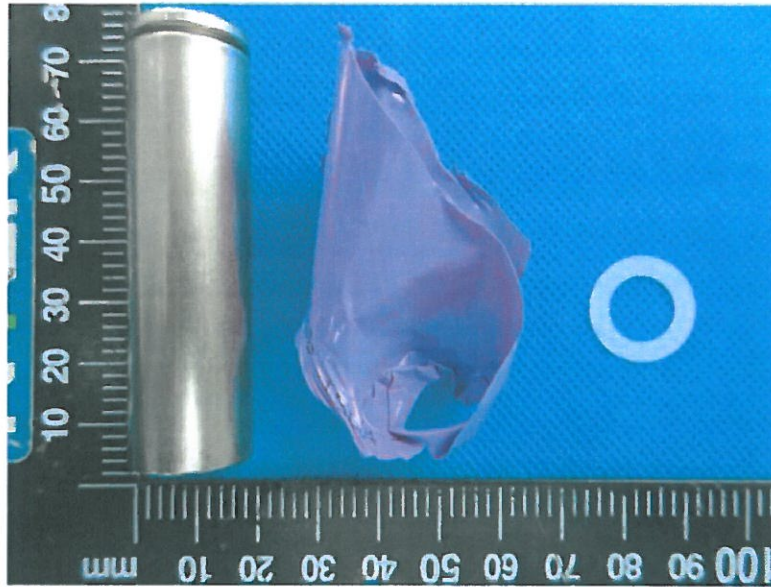


Fig.5

****End of Report****

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