

Test Report

Report No.: 180712104GZU-001

Date: Aug 06, 2018

Applicant: OREMA POWER CO., LTD

DaTang Industrial Park, XinFeng County, GanZhou City, JiangXi Province, China

Sample Description:

The following submitted sample(s) said to be:

Item Name : **Material of Sealed Type Lead-Acid Battery**
 Model No. : NA
 Date of Sample Received : Jul 17, 2018 & Jul 24, 2018
 Testing Period : Jul 17, 2018 to Jul 27, 2018

Tests conducted:

As requested by the applicant, refer to following page(s) for details.

Conclusion:

Tested Sample	Standard	Result
(1), (2), (3), (4)	Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive 2011/65/EU)	Pass
(1), (2), (3)	Phthalate content based on Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive (EU) 2015/863)	Pass
(5),(6)	94/62/EC and amendment 2004/12/EC & 2005/20/EC & 2013/2/EU & (EU) 2015/720 Directive (packaging waste) on toxic elements	Pass

Remark: = No test was conducted on section A. The results of section A were transferred from report 171016121GZU-001R1 dated in Nov 10, 2017

Authorized by:

For Intertek Testing Services Shenzhen Ltd. Guangzhou Branch:

Martin He
Senior Project Engineer



Section A:

Tests conducted:

1. RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result		
	(1)	(2)	(3)
Cadmium (Cd) Content (mg/kg)	ND	ND	ND
Lead (Pb) Content (mg/kg)	ND	ND	ND
Mercury (Hg) Content (mg/kg)	ND	ND	ND
Chromium (VI)(Cr ⁶⁺) Content (mg/kg)	ND	ND	ND
Polybrominated Biphenyls (PBBs)(mg/kg)			
Monobromobiphenyl (MonoBB)	ND	ND	ND
Dibromobiphenyl (DiBB)	ND	ND	ND
Tribromobiphenyl (TriBB)	ND	ND	ND
Tetrabromobiphenyl (TetraBB)	ND	ND	ND
Pentabromobiphenyl (PentaBB)	ND	ND	ND
Hexabromobiphenyl (HexaBB)	ND	ND	ND
Heptabromobiphenyl (HeptaBB)	ND	ND	ND
Octabromobiphenyl (OctaBB)	ND	ND	ND
Nonabromobiphenyl (NonaBB)	ND	ND	ND
Decabromobiphenyl (DecaBB)	ND	ND	ND
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)			
Monobromodiphenyl Ether (MonoBDE)	ND	ND	ND
Dibromodiphenyl Ether (DiBDE)	ND	ND	ND
Tribromodiphenyl Ether (TriBDE)	ND	ND	ND
Tetrabromodiphenyl Ether (TetraBDE)	ND	ND	ND
Pentabromodiphenyl Ether (PentaBDE)	ND	ND	ND
Hexabromodiphenyl Ether (HexaBDE)	ND	ND	ND
Heptabromodiphenyl Ether (HeptaBDE)	ND	ND	ND
Octabromodiphenyl Ether (OctaBDE)	ND	ND	ND
Nonabromodiphenyl Ether (NonaBDE)	ND	ND	ND
Decabromodiphenyl Ether (DecaBDE)	ND	ND	ND



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Testing Item	Result
	(4)
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	38
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI)(Cr ⁶⁺) Result (By Boiling Water Extraction on Metal) ($\mu\text{g}/\text{cm}^2$)	(Negative) < 0.10

Tested components:

- (1) Black plastic
- (2) Black resin
- (3) Brown resin
- (4) Silver color metal

ND = Not detected

mg/kg= milligram per kilogram

Negative = The Cr (VI) concentration is less than 0.10 $\mu\text{g}/\text{cm}^2$. The sample is negative for Cr (VI). The coating is considered a non- Cr (VI) based coating.

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

The above limits were quoted from 2011/65/EU for homogeneous material.

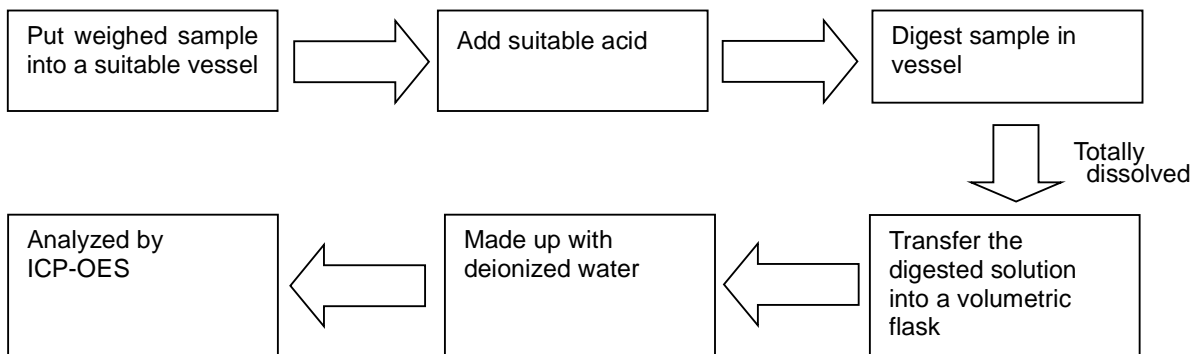
(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321-4 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI)(Cr ⁶⁺) Content	With reference to IEC 62321-7-2 Edition 1.0:2017, Hexavalent chromium – Determination of hexavalent chromium (Cr(VI) in polymers and electronics by the colorimetric method	10 mg/kg
Chromium (VI) (Cr ⁶⁺) Content	With reference to IEC 62321-7-1 Edition 1.0:2015, by boiling water extraction and determined by UV-VIS Spectrophotometer	0.10 $\mu\text{g}/\text{cm}^2$
Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321-6 edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg

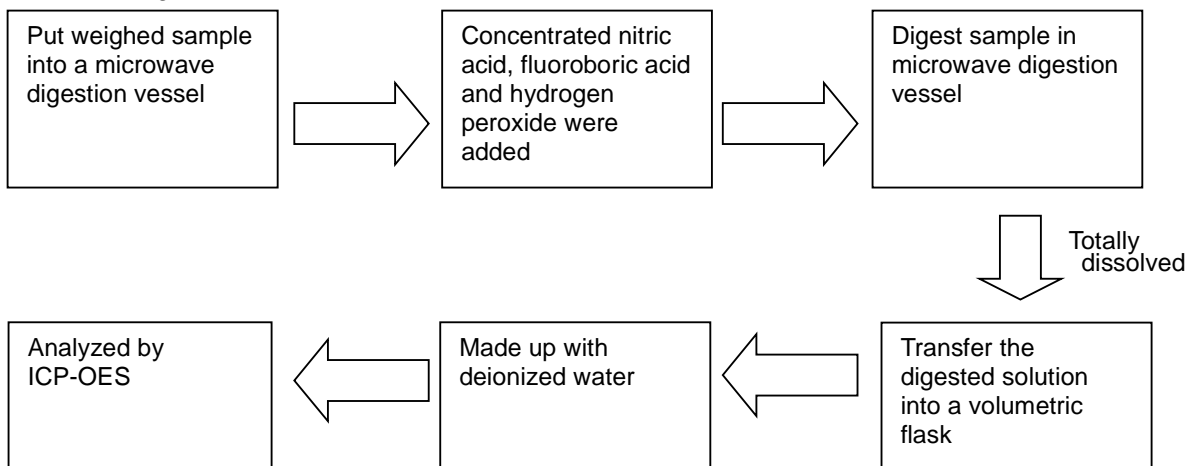


(D) Measurement Flowchart:

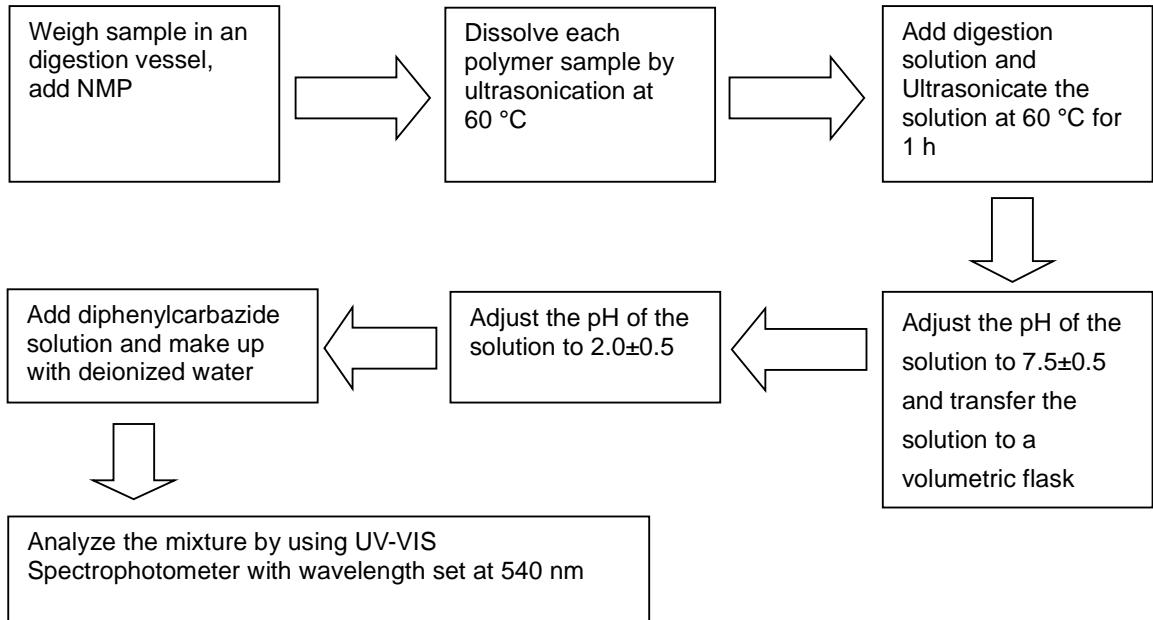
1. Test for Cd/Pb Contents



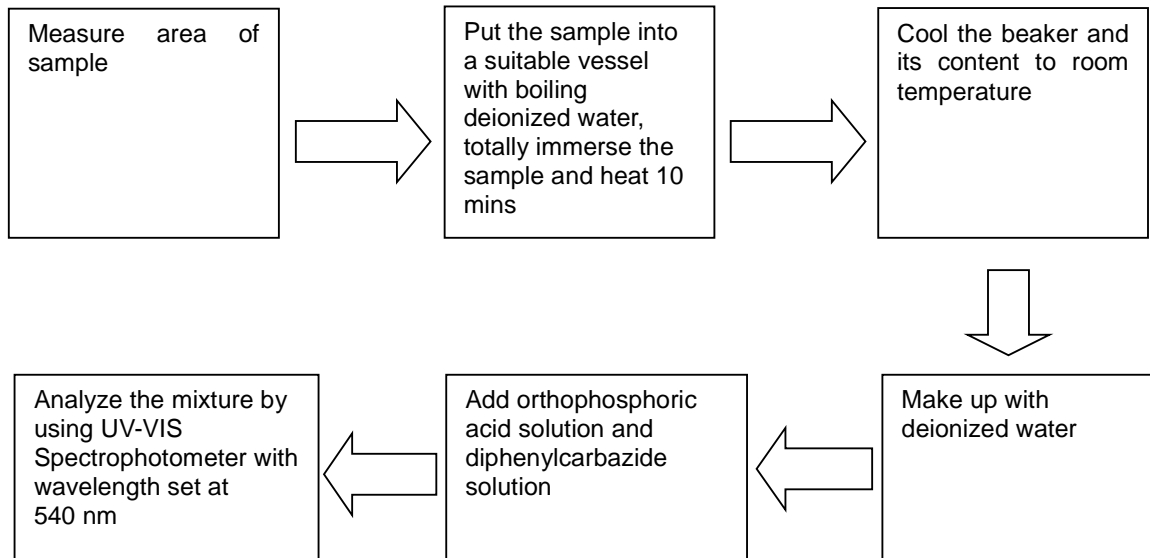
2. Test for Hg Content



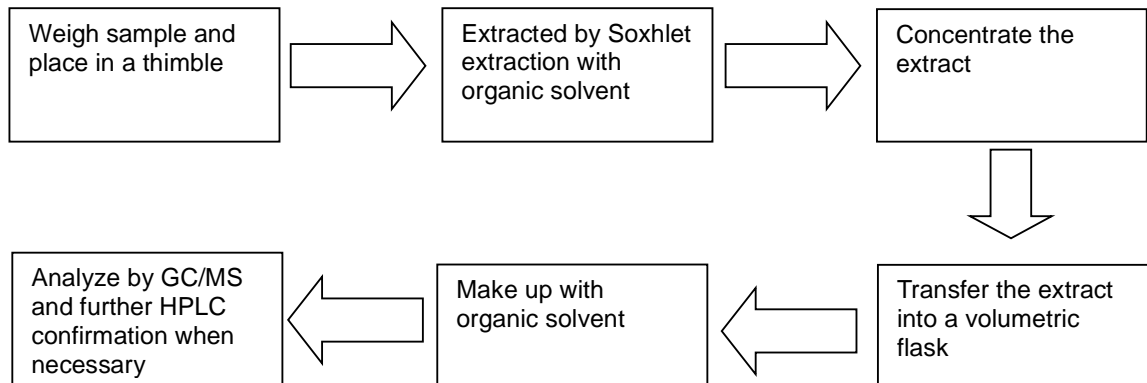
3. Test for Chromium (VI) (Cr⁶⁺) Content
Soluble polymers:



4. Test for Chromium (VI) (Cr⁶⁺) Content (Boiling Water Extraction)



5. Test for PBBs/PBDEs Contents



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Section B:
Tests conducted:

RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result		
	(1)	(2)	(3)
Phthalates(mg/kg)			
Bis(2-ethylhexyl)phthalate(DEHP)	ND	ND	ND
Butyl benzyl phthalate(BBP)	ND	ND	ND
Dibutyl phthalate(DBP)	ND	ND	ND
Diisobutyl phthalate(DIBP)	ND	ND	ND

Tested sample:

- (1) Black plastic
- (2) Black resin
- (3) Brown resin

ND = Not detected
mg/kg= milligram per kilogram

(B) RoHS Requirement:

Restricted Substances	Limits
Phthalates(DEHP, BBP, DBP, DIBP)	0.1% (1000 mg/kg)

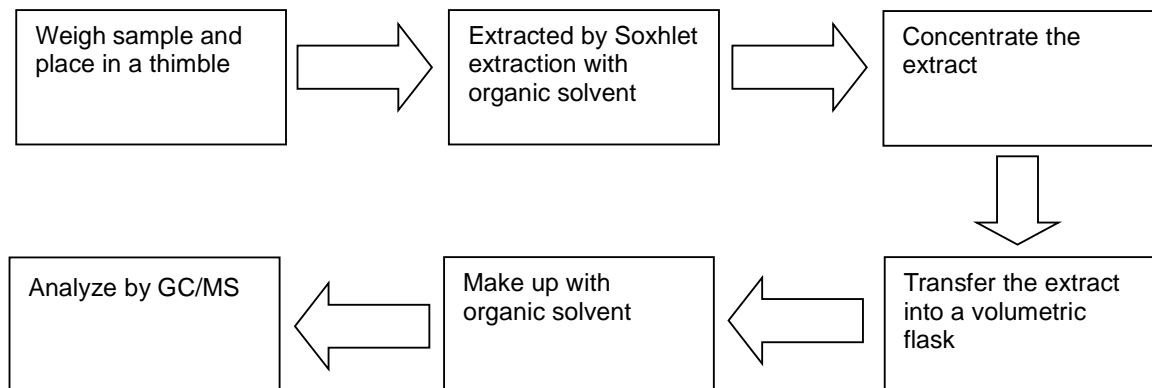
The above limits were quoted from 2011/65/EU and (EU) 2015/863 for homogeneous material.

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Phthalates(DEHP, BBP, DBP, DIBP) Content	With reference to IEC 62321-8 Edition 1.0:2017, by solvent extraction and determined by GC/MS	100mg/kg

(E) Measurement Flowchart:

Test for Phthalate Contents



Toxic Elements Analysis

As per 94/62/EC and amendment 2004/12/EC & 2005/20/EC & 2013/2/EU & (EU) 2015/720 Directive on packaging and packaging waste, Hexavalent Chromium was used alkaline digestion method and determined by UV-Visible Spectrophotometry; Lead, Cadmium and Mercury was used acid digestion method and determined by Inductively Coupled Argon Plasma Spectrometry.

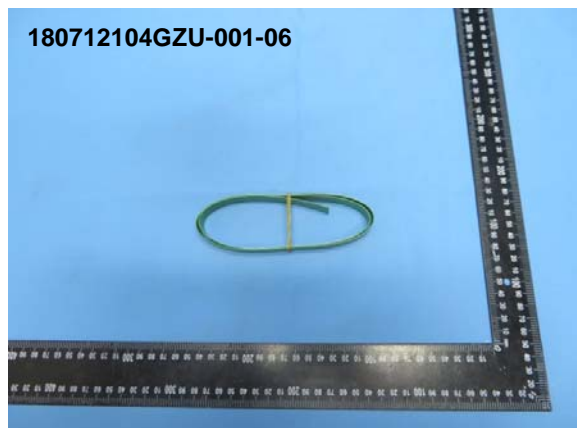
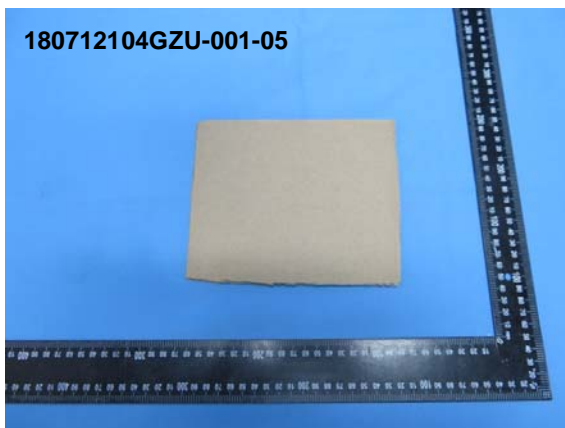
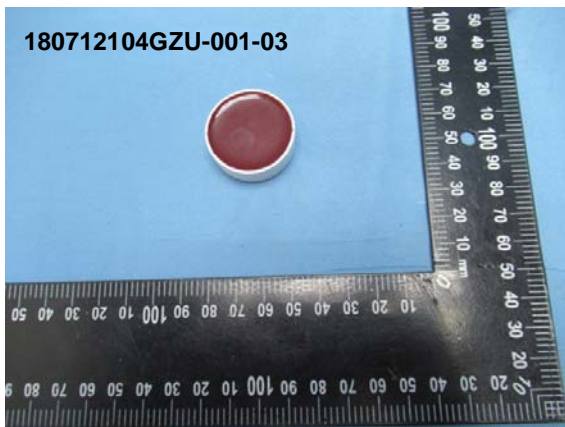
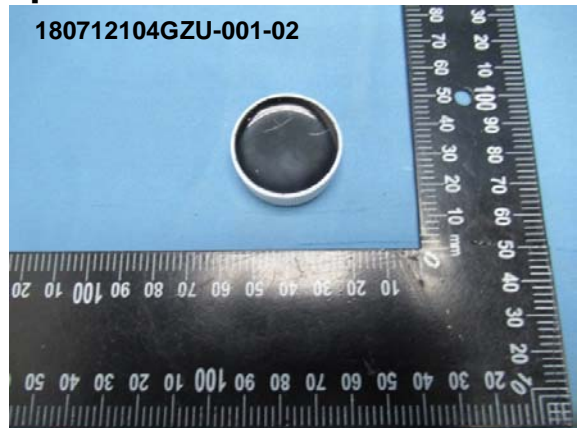
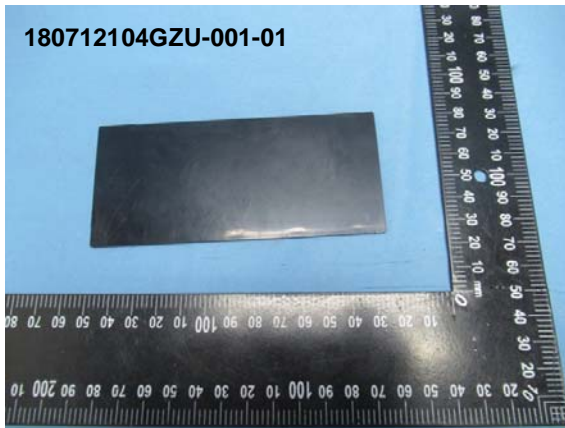
Element	Result (ppm)		Reporting limit (ppm)	Limit (ppm)
	Tested component			
	(5)	(6)		
Lead (Pb)	20	ND	5	--
Cadmium (Cd)	ND	ND	5	--
Mercury (Hg)	ND	ND	5	--
Chromium VI (Cr (VI))	ND	ND	1	--
Sum of Pb, Cd, Hg and Cr (VI)	20	ND	--	100

ppm = part per million = mg/kg
ND = Not detected

- Test Components:
(5) Brown paper board
(6) Green plastic



Sample photo



End of report

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