

TEST REPORT



Report No.: A1907200-C01-R04

Date: July 31, 2019

Page 1 of 6

Applicant: Dongguan Dirui Electronic Technology Co., Ltd.
Address: Silicon Valley Industrial Park 509, 64 Dezheng Middle Road, Xiaobian, Chang'an Town, Dongguan City, Guangdong Province

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

Sample Name Filter element
Model No. LF_01_Filter
Reference Information CubF_01_Filter, CorF_01_Filter, Luce_01_Filter , CW-PLA_Filter
Manufacturer Dongguan Dirui Electronic Technology Co., Ltd.
Sample Received Date July 18 , 2019
Testing Period July 18 – 31, 2019
Test Method & Test Result Please refer to following pages.

Test Requested

As specified by client, according to RoHS Directive 2011/65/EU with amendment (EU) 2015/863 to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Phthalates(DBP, BBP, DEHP, DIBP) in the tested materials of the submitted sample(s).

Result

Pass

Tested by:

Shouyan Zhang

Approved by:

Dinglin

Reviewed by:

Tony Gmy

Date of issue:

July 31, 2019



TEST REPORT



Report No.: A1907200-C01-R04

Date: July 31, 2019

Page 2 of 6

Test Method

(1) XRF screening limits for regulated elements according to IEC 62321-3-1:2013 (Unit: mg/kg)

Element	Polymers	Metals	Composite material
Pb	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
Cd	$BL \leq (70-3\sigma) < X$ $< (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X$ $< (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$
Br	$BL \leq (300-3\sigma) < X$	N/A	$BL \leq (250-3\sigma) < X$

(2) Chemical screening limits for Phthalates

Test Item(s)	Screening limits(Unit: mg/kg)
Dibutyl phthalate(DBP)	$BL \leq 600 < IN$
Benzylbutyl phthalate(BBP)	$BL \leq 600 < IN$
Di-2-ethylhexyl phthalate(DEHP)	$BL \leq 600 < IN$
Diisobutyl phthalate(DIBP)	$BL \leq 600 < IN$

(3) Chemical Test

Test Item	Test Method	Test Instrument	MDL (mg/kg)	EU RoHS Limit (mg/kg)
Lead (Pb)	IEC 62321-5:2013	ICP-OES	2	1000
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	2	100
Mercury (Hg)	IEC 62321-4:2013 +AMD1:2017	ICP-OES	2	1000
Hexavalent Chromium (Cr(VI))	IEC 62321-7-2:2017 (non-metal)	UV-Vis	8	1000
	IEC 62321-7-1:2015 (metal)	UV-Vis	0.1($\mu\text{g}/\text{cm}^2$)	/
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS	5	1000
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS	5	1000
Phthalates(DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS	50	1000

Remark: BL = Below the screening limit, OL = Over the screening limit
 X = The range of needing to do further testing, IN= Inconclusive
 MDL = Method Detection Limit, N/A = Not applicable
 3σ = The reproducibility of analytical instruments, LOD = Detection limit



TEST REPORT

Report No.: A1907200-C01-R04

Date: July 31, 2019

Page 3 of 6

Tested Sample/Part Description

No.	Component Description	No.	Component Description
1	White plastic	3	White cotton belt
2	White cotton	4	Black solid desiccant

Test result

(1) Screening Result

Tested Item(s)	Screening Result (mg/kg)			
	1	2	3	4
Lead (Pb)	BL	BL	BL	BL
Cadmium (Cd)	BL	BL	BL	BL
Mercury (Hg)	BL	BL	BL	BL
Total Chromium (Cr)	BL	BL	BL	BL
Total Bromine (PBBs & PBDEs)	BL	BL	BL	BL
Dibutyl phthalate(DBP)	BL	BL	BL	BL
Benzylbutyl phthalate(BBP)	BL	BL	BL	BL
Di-2-ethylhexyl phthalate(DEHP)	BL	BL	BL	BL
Diisobutyl phthalate(DIBP)	BL	BL	BL	BL

Remark: N.D. = Not Detected, MDL = Method Detection Limit
mg/kg = ppm = parts per million, 1000 mg/kg = 0.1%
IN= Inconclusive, Further chemical test, X = The range of needing to do further testing
N/A= Not applicable, BL = Below the screening limit
OL = Further chemical test will be conducted while the result is over the screening limit.
* = The screened result was found and further chemical test was suggested
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 REPORT

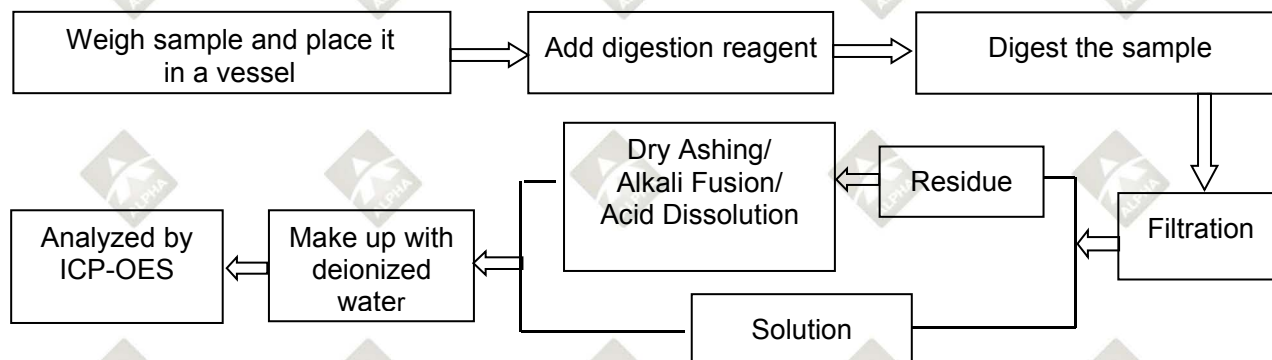
Report No.: A1907200-C01-R04

Date: July 31, 2019

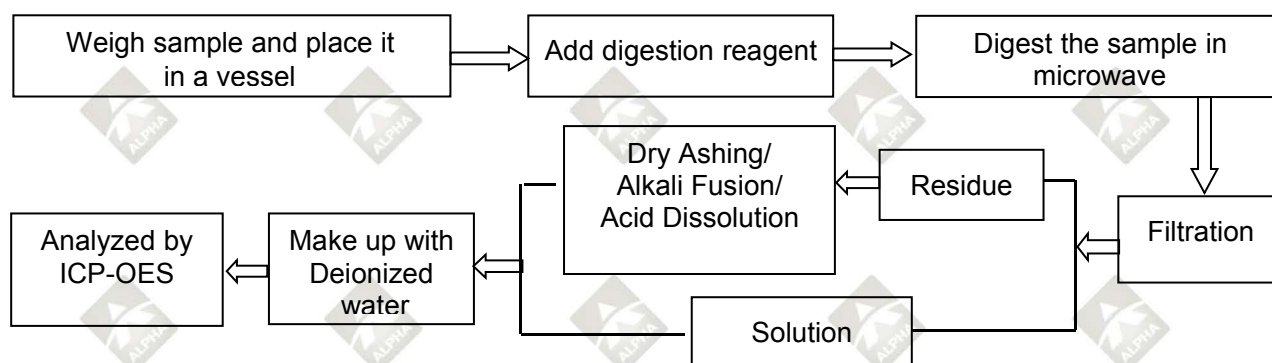
Page 4 of 6

Test Process

1. Lead(Pb), Cadmium(Cd), Chromium(Cr)

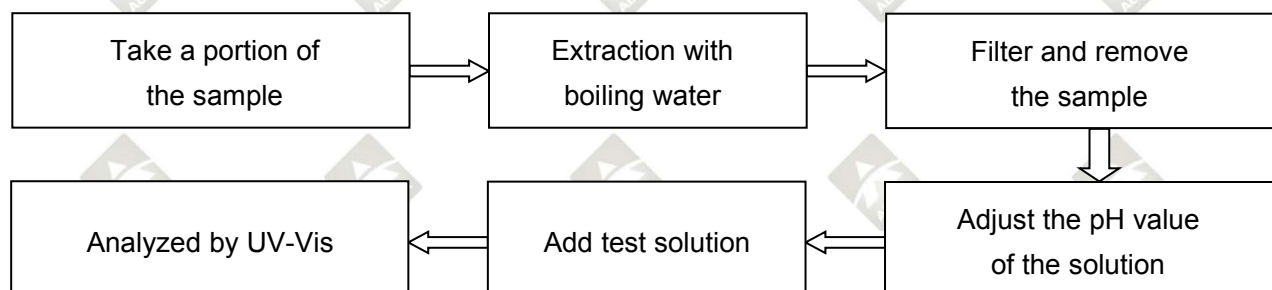


2. Mercury(Hg)



3. Hexavalent Chromium (Cr (VI))

(1) IEC 62321-7-1:2015 Plating/Metal sample(s)





TEST REPORT

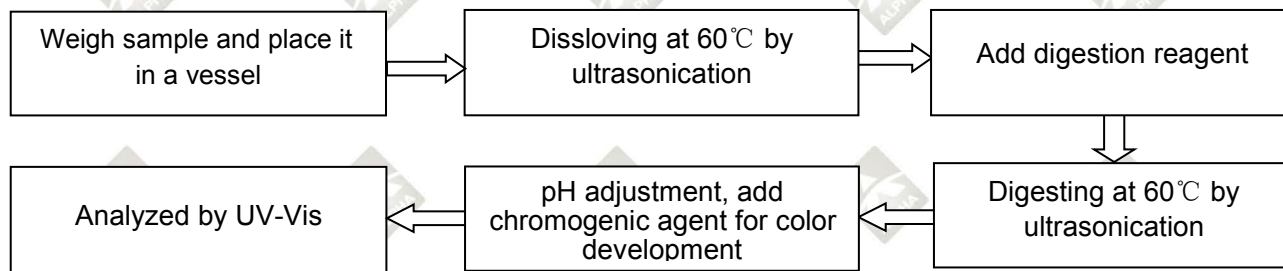
Report No.: A1907200-C01-R04

Date: July 31, 2019

Page 5 of 6

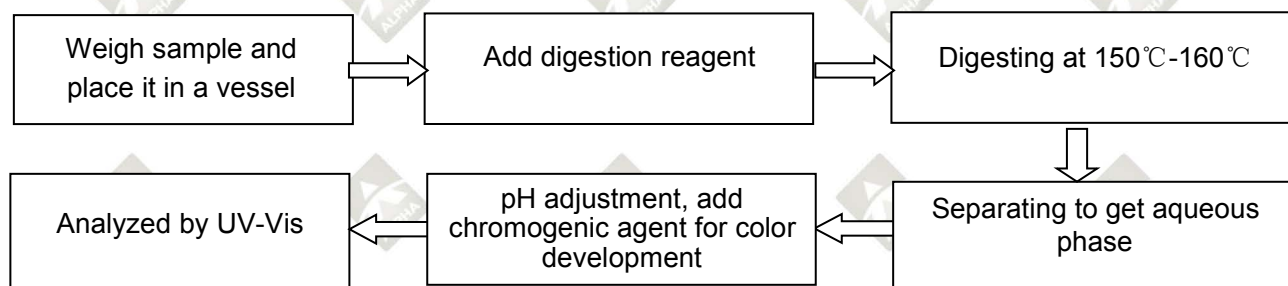
(2) IEC 62321-7-2:2017

Non-metal sample(s) (Material ABS/PC/PVC)

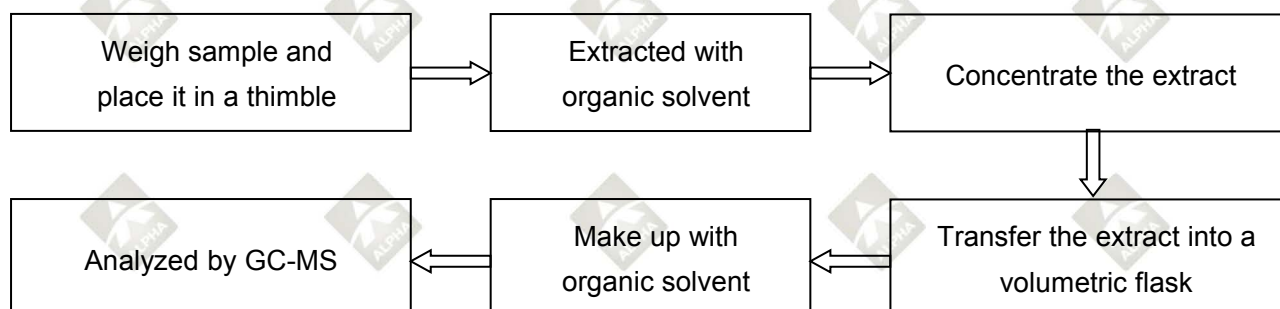


(3) IEC 62321-7-2:2017

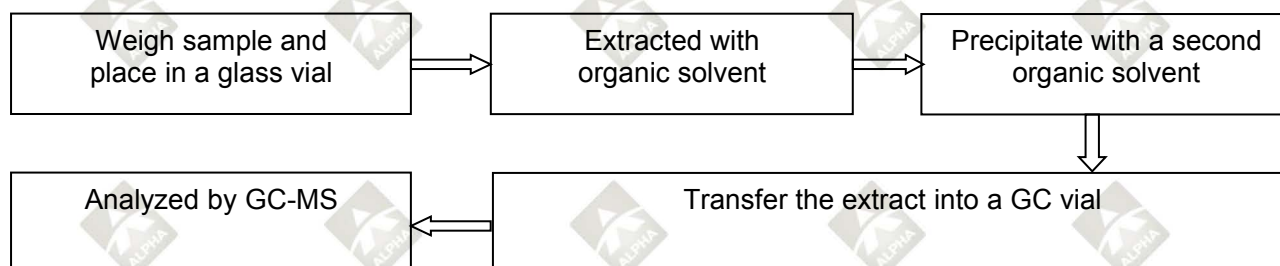
Non-metal sample(s) (Others)



4. Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



5. Phthalates(DBP/BBP/DEHP/DIBP)



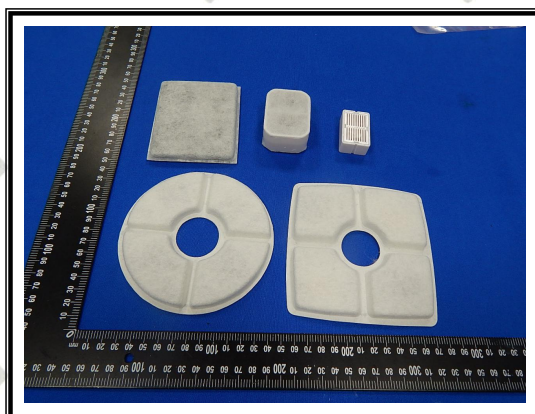
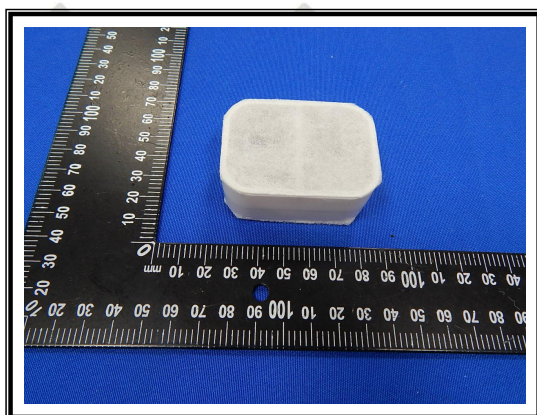
TEST REPORT

Report No.: A1907200-C01-R04

Date: July 31, 2019

Page 6 of 6

Tested sample photo(s)



--- End of report ---

Statement:

1. The sample(s) and sample Information was/were provided by the client who should be responsible for the authenticity which ALPHA hasn't verified.
2. The result(s) shown in this report refer(s) only to the sample(s) tested.
3. Without written approval of ALPHA, this report can't be reproduced except in full.