

TEST REPORT

Report No: SZ180810331EN

Report Date: 2018/8/24

Applicant: UTOP Electronic (Guangzhou) Co., Ltd.

Address: NO.51 Shi Nan Road Huijiang Village Dashi town Panyu area,Guangzhou city,china.

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

Sample Name Transformer series

Sample Received Date 2018.8.20

Testing Period 2018.8.20-2018.8.24

Test Requirement(s):

Test Item(s)	Test Standard(s)	Conclusion
1 Lead (Pb),Cadmium (Cd),Mercury (Hg) and Hexavalent Chromium (Cr(VI))	2011/65/EU	Pass
2 Polybrominated Biphenyls(PBBs) and PolybrominatedDipheny Ethers (PBDEs) Content	2011/65/EU	Pass
3 Phthalates content	2011/65/EU & (EU)2015/863	Pass
4 Halogen test	IEC 61249-2-21:2003	Pass

Note:"EN" denotes English report.

***** For Further Details, Please Refer To the Following Page(s) *****

Approved by:

Vargas He
Lab Director

Shenzhen IMPAQ Testing Technology Co., Ltd



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1. Lead (Pb), Cadmium (Cd), Mercury (Hg) and Hexavalent Chromium (Cr(VI))

With reference to IEC 62321-4:2013/IEC 62321-5:2013/ IEC 62321-7-2: 2017, and analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and UV-Vis spectrophotometer

Test Item(s)	Result(s)	MDL	Limit
	001		
Lead(Pb)(mg/kg)	19.2	2.0	≤ 1000
Cadmium(Cd)(mg/kg)	N.D.	2.0	≤ 100
Mercury(Hg)(mg/kg)	N.D.	2.0	≤ 1000
Hexavalent Chromium(Cr(VI))(mg/kg)	N.D.	2.0	≤ 1000

Note: The sample(s) had been digested totally tested for Lead, Cadmium, Mercury

- "MDL" denotes Method Detection Limit
- "N.D." : denotes Not Detected (<MDL)
- "mg/kg" : denotes milligram per kilogram

2. Lead (Pb), Cadmium (Cd), Mercury (Hg) and Hexavalent Chromium (Cr(VI))

With reference to IEC 62321-4:2013/IEC 62321-5:2013/IEC62321-7-1:2015, and analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and UV-Vis spectrophotometer.

Test Item(s)	Result(s)	MDL	Limit
	002		
Lead(Pb)(mg/kg)	N.D.	2.0	≤ 1000
Cadmium(Cd)(mg/kg)	N.D.	2.0	≤ 100
Mercury(Hg)(mg/kg)	N.D.	2.0	≤ 1000
Hexavalent Chromium(Cr(VI))(μg/cm ²)	N.D.	0.10	--

Note: The sample(s) had been digested totally tested for Lead, Cadmium, Mercury

- "MDL" denotes Method Detection Limit
- "N.D." : denotes Not Detected (<MDL)
- "mg/kg" : denotes milligram per kilogram
- The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13μg/cm². The sample coating is considered to contain Cr (VI),
- The sample is negative for Cr(VI) if the Cr(VI) is N.D. (concentration is less than 0.10μg/cm²). The sample coating is considered a non-Cr(VI) base coating,
- The result between 0.10 μg/cm² and 0.13 μg/cm² is considered to be inconclusive unavoidable coating variations may influence the determination.

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3. Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content

With reference to IEC 62321-6: 2015, and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS).

Test Item(s)	Result(s)	MDL	Limit
	001		
Monobromobiphenyl (1Br-PBB)(mg/kg)	N.D.	5.0	--
Dibromobiphenyl (2Br-PBB)(mg/kg)	N.D.	5.0	--
Tribromobiphenyl (3Br-PBB)(mg/kg)	N.D.	5.0	--
Tetrabromobiphenyl (4Br-PBB)(mg/kg)	N.D.	5.0	--
Pentabromobiphenyl (5Br-PBB)(mg/kg)	N.D.	5.0	--
Hexabromobiphenyl (6Br-PBB)(mg/kg)	N.D.	5.0	--
Heptabromobiphenyl (7Br-PBB)(mg/kg)	N.D.	5.0	--
Octabromobiphenyl (8Br-PBB)(mg/kg)	N.D.	5.0	--
Nonabromobiphenyl (9Br-PBB)(mg/kg)	N.D.	5.0	--
Decabromobiphenyl (10Br-PBB)(mg/kg)	N.D.	5.0	--
Sum of Polybrominated Biphenyls (mg/kg)	N.D.	--	≤ 1000
Monobromodiphenyl ether (1Br-PBDE)(mg/kg)	N.D.	5.0	--
Dibromodiphenyl ether (2Br-PBDE)(mg/kg)	N.D.	5.0	--
Tribromodiphenyl ether (3Br-PBDE)(mg/kg)	N.D.	5.0	--
Tetrabromodiphenyl ether (4Br-PBDE)(mg/kg)	N.D.	5.0	--
Pentabromodiphenyl ether (5Br-PBDE)(mg/kg)	N.D.	5.0	--
Hexabromodiphenyl ether (6Br-PBDE)(mg/kg)	N.D.	5.0	--
Heptabromodiphenyl ether (7Br-PBDE)(mg/kg)	N.D.	5.0	--
Octabromodiphenyl ether (8Br-PBDE)(mg/kg)	N.D.	5.0	--
Nonabromodiphenyl ether (9Br-PBDE)(mg/kg)	N.D.	5.0	--
Decabromodiphenyl ether (10Br-PBDE)(mg/kg)	N.D.	5.0	--
Sum of Polybrominated Diphenyl Ethers (mg/kg)	N.D.	--	≤ 1000

Note: - "MDL" denotes Method Detection Limit

- "N.D." : denotes Not Detected (<MDL)

- "mg/kg" : denotes milligram per kilogram

4. Phthalates content

With reference to IEC 62321-8:2017, and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS).

Test Item(s)	Result(s)	MDL	Limit
	001		
Di(2-ethylhexyl) phthalate (DEHP)(%)	N.D.	0.005	≤ 0.1
Dibutyl phthalate (DBP)(%)	N.D.	0.005	≤ 0.1
Benzyl butyl phthalate (BBP)(%)	N.D.	0.005	≤ 0.1
Diisobutyl phthalate (DIBP)(%)	N.D.	0.005	≤ 0.1

Note: - "MDL" denotes Method Detection Limit

- "N.D." : denotes Not Detected (<MDL)

- "%" : Denotes Percentage Based On Weight Of Sample

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5.Halogen test

With reference to BS EN 14582:2016, Test Halogen (F, Cl, Br and I) Content

Test Item(s)	Result(s)	MDL	Limit
	001		
F(mg/kg)	N.D.	50	---
Cl(mg/kg)	N.D.	50	≤ 900
Br(mg/kg)	N.D.	50	≤ 900
I(mg/kg)	N.D.	50	---
Cl + Br(mg/kg)	N.D.	---	≤ 1500

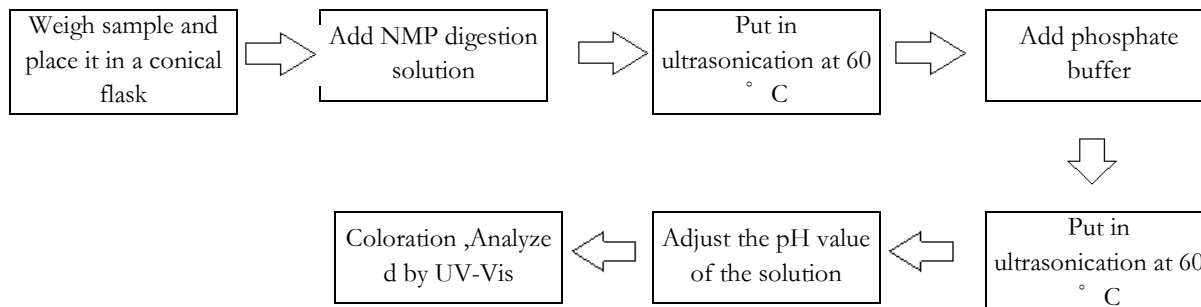
Note: - "MDL" denotes Method Detection Limit

- "N.D." : denotes Not Detected (<MDL)

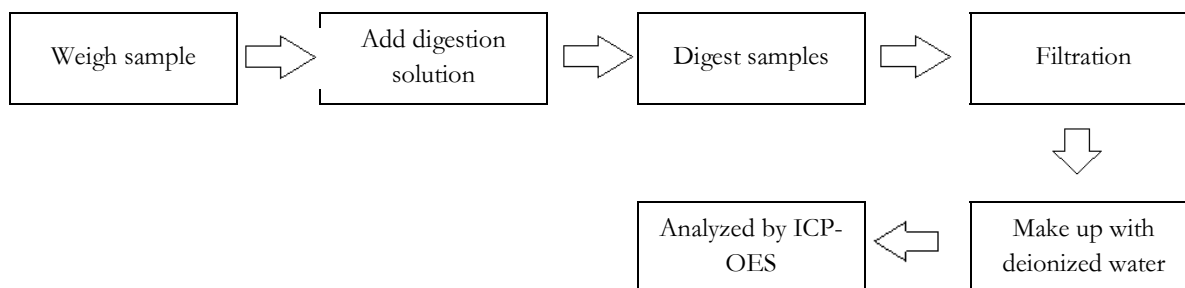
- "mg/kg" : denotes milligram per kilogram

Test Flow Chart

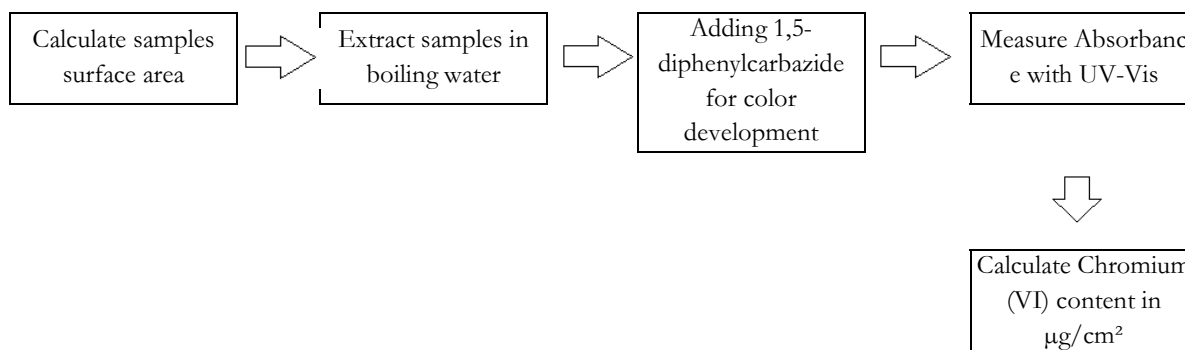
Chromium(VI) Content



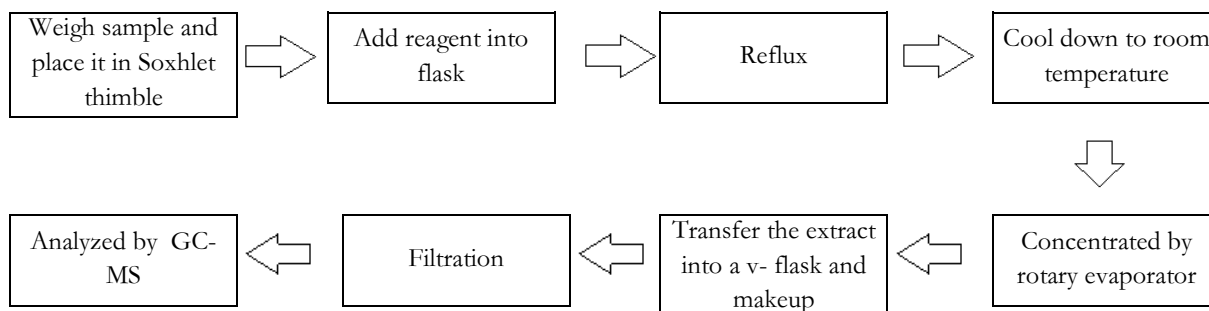
Pb/Cd/Hg Content



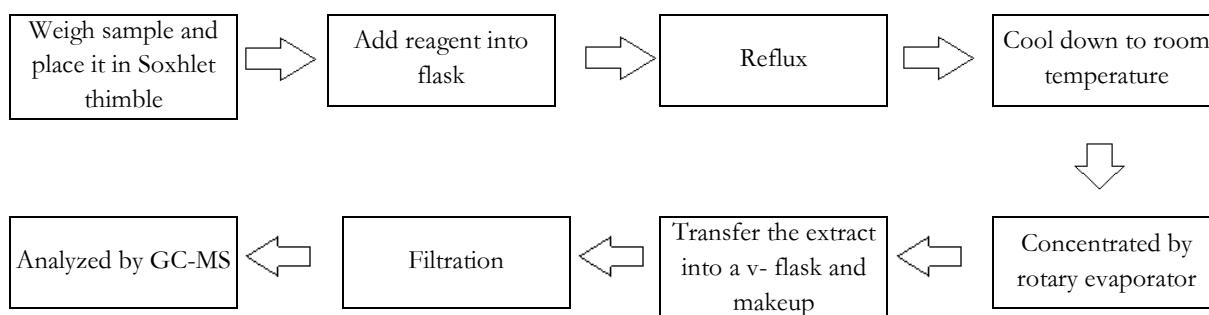
Chromium(VI) Content



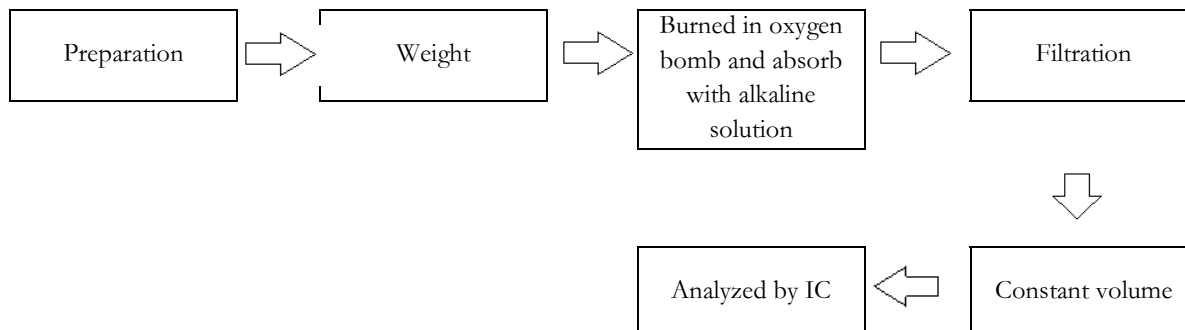
PBBs/PBDEs Content



Phthalates Content



Halogen (F, Cl, Br, I) Content



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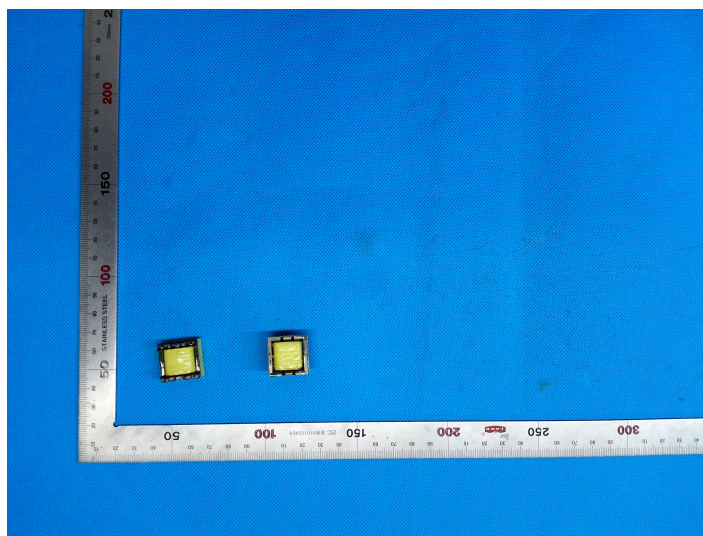
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Tested Sample/Part Description

Sample No.	Tested Material Description
001	Transformer series (non-metal)
002	Transformer series (metal)

Photo(s) of the sample(s)



*** End of Report ***

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