

Test Report

Report No. SCL01J01570707

Page 1 of 14

Applicant DONG GUAN BRIGHT LED ELECTRONICS LTD
Address NO.8,GAO LONG EAST RD ,GAOBU TOWN,DONG GUAN CTY,GUANG DONG PROVINCE,CHINA 523283

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

No.	Sample Name(s)
(1)	Display series PIN
(2)	Display series 树脂
(3)	Display series PEF
(4)	Display series PCB

Sample Received Date Mar. 23, 2017
Testing Period Mar. 23, 2017 to Apr. 7, 2017

Test Requested

- As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Hexabromocyclododecane (HBCDD), Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I), Dimethyl fumarate(DMF), Tetrabromobisphenol-A(TBBP-A), Perfluorooctane Sulfonates(PFOS), Phthalates, Polycyclic Aromatic Hydrocarbons(PAHs), Red phosphorus in the submitted sample(s).
- As specified by client, to screen the Diantimony trioxide(Sb₂O₃) in the submitted sample(s).

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

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

Tested by Jerry Guo **Reviewed by** [Signature]

Approved by [Signature] **Date** Apr. 7, 2017

Danny Liu
Technical Manager

No. R169561330

Centre Testing International Group Co.,Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

Test Report

Report No. SCL01J01570707

Page 2 of 14

Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead(Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Cadmium(Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Mercury(Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
Hexavalent Chromium(Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis
	IEC 62321-7-1:2015	
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS
Fluorine (F)	Refer to BS EN 14582:2007	IC
Chlorine (Cl)	Refer to BS EN 14582:2007	IC
Bromine (Br)	Refer to BS EN 14582:2007	IC
Iodine (I)	Refer to BS EN 14582:2007	IC
Hexabromocyclododecane (HBCDD)	Refer to US EPA 3540C:1996 & US EPA 8270D:2007	GC-MS
Polycyclic Aromatic Hydrocarbons (PAHs)	AfPS GS 2014-01 PAK	GC-MS
Dimethyl Fumarate(DMF)	Refer to US EPA 3550C:2007 & US EPA 8270D:2007	GC-MS
Tetrabromobisphenol-A (TBBP-A)	Refer to US EPA 3540C:1996 & US EPA 8270D:2007	GC-MS
Perfluorooctane Sulfonates(PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Phthalates	Refer to EN 14372:2004(E)	GC-MS
Red phosphorus	GB/T 6040-2002, GB/T 17359-2012, GB/T 9722-2006, EPA 6010C-2007	FTIR, SEM/EDS, PY-GC-MS, ICP-OES
Diantimony trioxide (Sb ₂ O ₃)*	Refer to US EPA 3052:1996 & US EPA 6010C:2007	ICP-OES

Test Report

Report No. SCL01J01570707

Page 3 of 14

Test Result(s)

Tested Item(s)	Result				MDL
	(1)	(2)	(3)	(4)	
Lead(Pb)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Cadmium(Cd)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Mercury(Hg)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Hexavalent Chromium(Cr(VI))	---	N.D.	N.D.	N.D.	2 mg/kg
	N.D.▼	---	---	---	0.10 µg/cm ² (LOQ)

Tested Item(s)	Result			MDL
	(2)	(3)	(4)	
Polybrominated Biphenyls(PBBs)				
Monobromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Dibromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Tribromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Tetrabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Pentabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Hexabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Heptabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Octabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Nonabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Decabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
Polybrominated Diphenyl Ethers(PBDEs)				
Monobromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Dibromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Tribromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Tetrabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Pentabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Hexabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Heptabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Octabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Nonabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
Decabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg

Test Report

Report No. SCL01J01570707

Page 4 of 14

Test Result(s)

Tested Item(s)	Result		MDL
	(2)	(3)	
Halogen(s)			
Fluorine (F)		N.D.	10 mg/kg
Chlorine (Cl)		N.D.	10 mg/kg
Bromine (Br)		N.D.	10 mg/kg
Iodine (I)		N.D.	10 mg/kg

Tested Item(s)	Result			MDL
	(2)	(3)	(4)	
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	N.D.	5 mg/kg
Dimethyl Fumarate(DMF)	N.D.	N.D.	N.D.	0.1 mg/kg
Tetrabromobisphenol-A (TBBP-A)	N.D.	N.D.	N.D.	5 mg/kg
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	N.D.	5 mg/kg

DRAFT

Test Report

Report No. SCL01J01570707

Page 5 of 14

Limits for PAHs content (mg/kg) for material of (grip) surfaces, which are to be categorized on account of the results of the risk analysis.

Parameters	Category 1	Category 2		Category 3	
	Materials intended to be put in the mouth or materials of toys with foreseeable long-term skin contact (longer than 30 seconds)	Materials not covered by category 1, with foreseeable skin contact for longer than 30 seconds (long-term skin contact) or repeated short-term skin contact [#]		Materials not covered by category 1 or 2 with foreseeable skin contact up to 30 seconds (short term skin contact)	
		Toys covered by Directive 2009/48/EC	Other products	Toys covered by Directive 2009/48/EC	Other products
Benzo[a]pyrene	<0.2	<0.2	<0.5	<0.5	<1
Benzo[e]pyrene	<0.2	<0.2	<0.5	<0.5	<1
Benzo[a]anthracene	<0.2	<0.2	<0.5	<0.5	<1
Benzo[b]fluoranthene	<0.2	<0.2	<0.5	<0.5	<1
Benzo[j]fluoranthene	<0.2	<0.2	<0.5	<0.5	<1
Benzo[k]fluoranthene	<0.2	<0.2	<0.5	<0.5	<1
Chrysene	<0.2	<0.2	<0.5	<0.5	<1
Dibenz[a,h]anthracene	<0.2	<0.2	<0.5	<0.5	<1
Benzo[g,h,i]perylene	<0.2	<0.2	<0.5	<0.5	<1
Indenol[1,2,3-cd]pyrene	<0.2	<0.2	<0.5	<0.5	<1
Acenaphthylene, Acenaphthene, Fluorene Phenanthrene, Anthracene, Fluoranthene, Pyrene	<1 Sum	<5 Sum	<10 Sum	<20 Sum	<50 Sum
Naphthalene	<1	<2		<10	
Sum 18 PAHs	<1	<5	<10	<20	<50

[#] Formulation "of repeated short-term skin contact" REACH Annex XVII No. 50 supplement (REGULATION (EU) No 1272/2013)

Test Report

Report No. SCL01J01570707

Page 6 of 14

Test Result(s)

Tested Item(s)	Result			MDL
	(2)	(3)	(4)	
Polycyclic Aromatic Hydrocarbons(PAHs)				
Naphthalene	N.D.	0.7 mg/kg	N.D.	0.2 mg/kg
Acenaphthylene	N.D.	N.D.	N.D.	0.2 mg/kg
Acenaphthene	N.D.	N.D.	N.D.	0.2 mg/kg
Fluorene	N.D.	N.D.	N.D.	0.2 mg/kg
Phenanthrene	N.D.	N.D.	N.D.	0.2 mg/kg
Anthracene	N.D.	N.D.	N.D.	0.2 mg/kg
Fluoranthene	N.D.	N.D.	N.D.	0.2 mg/kg
Pyrene	N.D.	N.D.	N.D.	0.2 mg/kg
Benzo[a]anthracene	N.D.	N.D.	N.D.	0.2 mg/kg
Chrysene	N.D.	N.D.	N.D.	0.2 mg/kg
Benzo[b]fluoranthene	N.D.	N.D.	N.D.	0.2 mg/kg
Benzo[k]fluoranthene	N.D.	N.D.	N.D.	0.2 mg/kg
Benzo[a]pyrene	N.D.	N.D.	N.D.	0.2 mg/kg
Indeno[1,2,3-cd]pyrene	N.D.	N.D.	N.D.	0.2 mg/kg
Dibenzo[a,h]anthracene	N.D.	N.D.	N.D.	0.2 mg/kg
Benzo[g,h,i]perylene	N.D.	N.D.	N.D.	0.2 mg/kg
Benzo[j]fluoranthene	N.D.	N.D.	N.D.	0.2 mg/kg
Benzo[e]pyrene	N.D.	N.D.	N.D.	0.2 mg/kg
Sum (Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene)	N.D.	N.D.	N.D.	/
Sum 18 PAHs	N.D.	0.7 mg/kg	N.D.	/

Test Report

Report No. SCL01J01570707

Page 7 of 14

Test Result(s)

Tested Item(s)	Result			MDL
	(2)	(3)	(4)	
Phthalates				
Diisopentyl phthalate (DIPP) CAS#:605-50-5	N.D.	N.D.	N.D.	50 mg/kg
Dimethyl phthalate(DMP) CAS#:131-11-3	N.D.	N.D.	N.D.	50 mg/kg
Diethyl phthalate(DEP) CAS#:84-66-2	N.D.	N.D.	N.D.	50 mg/kg
Dipropyl phthalate(DPRP) CAS#:131-16-8	N.D.	N.D.	N.D.	50 mg/kg
Diisobutyl phthalate(DIBP) CAS#:84-69-5	N.D.	N.D.	N.D.	50 mg/kg
Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	N.D.	N.D.	50 mg/kg
Dipentyl phthalate(DPP) CAS#:131-18-0	N.D.	N.D.	N.D.	50 mg/kg
Diheptyl phthalate(DHP) CAS#:3648-213	N.D.	N.D.	N.D.	50 mg/kg
Butylbenzyl phthalate(BBP) CAS#:85-68-7	N.D.	N.D.	N.D.	50 mg/kg
Dicyclohexyl phthalate(DCHP) CAS#:84-61-7	N.D.	N.D.	N.D.	50 mg/kg
Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7	N.D.	N.D.	N.D.	50 mg/kg
Diisooctyl phthalate(DIOP) CAS#:27554-26-3	N.D.	N.D.	N.D.	50 mg/kg
Di-n-octyl phthalate(DNOP) CAS#:117-84-0	N.D.	N.D.	N.D.	50 mg/kg
Diisononyl phthalate(DINP) CAS#:28553-12-0, 68515-48-0	N.D.	N.D.	N.D.	50 mg/kg
Diisodecyl phthalate(DIDP) CAS#:26761-40-0, 68515-49-1	N.D.	N.D.	N.D.	50 mg/kg
Dinonyl phthalate(DNP) CAS#:84-76-4	N.D.	N.D.	N.D.	50 mg/kg
Diisononyl adipate(DINA) CAS#:33703-08-1	N.D.	N.D.	N.D.	50 mg/kg
Di-n-hexyl phthalate (DNHP) CAS#:84-75-5	N.D.	N.D.	N.D.	50 mg/kg
Dimethoxyethyl phthalate (DMEP) CAS#:117-82-8	N.D.	N.D.	N.D.	50 mg/kg
① 1,2-Benzenedicarboxylic acid, di-(C7-11)-branched and linear alkyl esters (DHNIP) CAS#:68515-42-4	N.D.	N.D.	N.D.	100 mg/kg
① 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DHP) CAS#:71888-89-6	N.D.	N.D.	N.D.	100 mg/kg

Test Report

Report No. SCL01J01570707

Page 8 of 14

Test Result(s)

Test Item(s)	Result			MDL
	(2)	(3)	(4)	
Red phosphorus	N.D.	N.D.	N.D.	500 mg/kg
Diantimony trioxide (Sb ₂ O ₃)*	N.D.	N.D.	N.D.	5 mg/kg

Tested Sample/Part Description

- (1) Metal with silvery plating
- (2) Transparent resin
- (3) White plastic with gray coating^{#1}
- (4) PCB(Tested as a whole)^{#2}

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

-MDL = Method Detection Limit

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

-mg/kg = ppm = parts per million

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 µg/cm²

-▼ The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10 µg/cm². The coating is considered a non-Cr(VI) based coating.

-^①: In view of the substances are established as UVCB substances (substances of unknown or variable composition, complex reaction products or biological materials) consisting of different and variable constituents, the test results are calculated based on the main constituents of the representative compounds for substances.

-* Calculated result of Diantimony trioxide is based on the result of Antimony (Sb).

The MDL is evaluated for element Antimony(Sb).

-^{#1} As specified by client, the test was conducted by mixing all materials together. The result(s) shown on this report may be different from the content of any homogeneous material.

-^{#2} The sample(s) was tested as a whole, because it's impossible to disassemble or separate it by current equipment and technology. The result(s) shown on this report may be different from the content of any homogeneous material.

Note: -The testing data and result(s) in this report is(are) just for scientific research, education, internal quality control and product development etc.

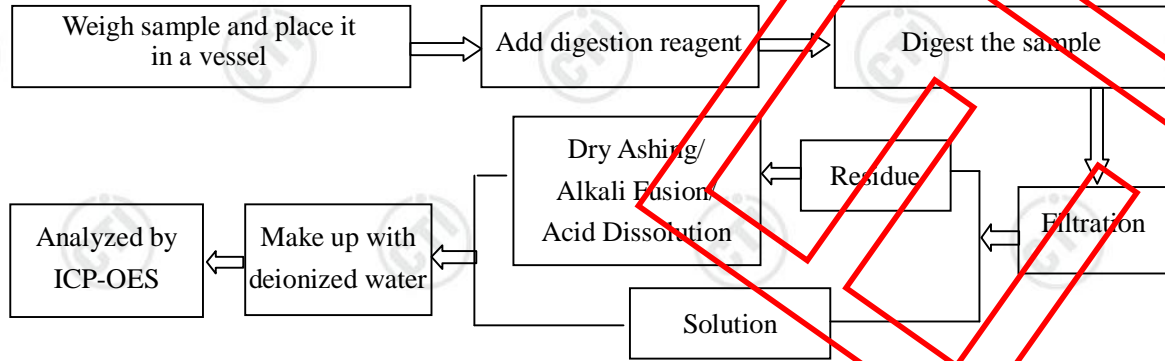
Test Report

Report No. SCL01J01570707

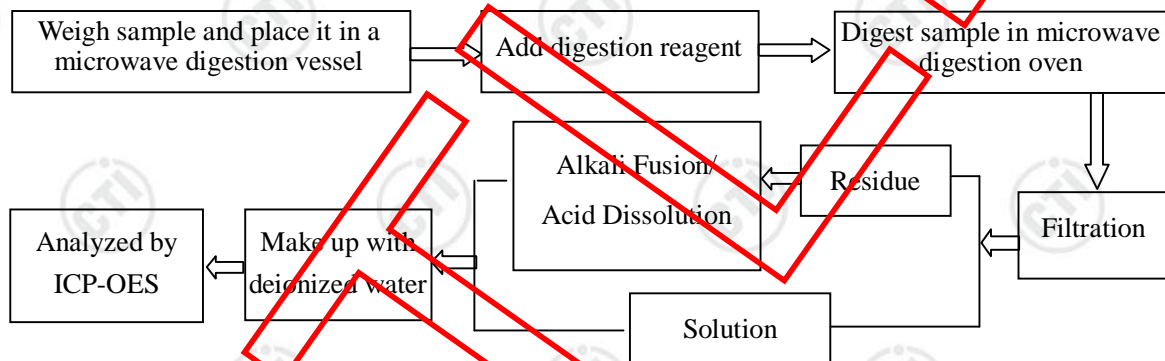
Page 9 of 14

Test Process

1. Lead(Pb), Cadmium(Cd)

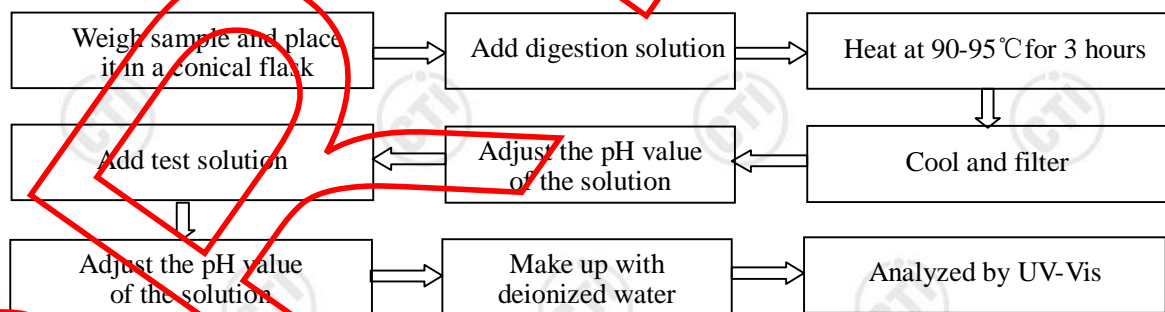


2. Mercury(Hg)

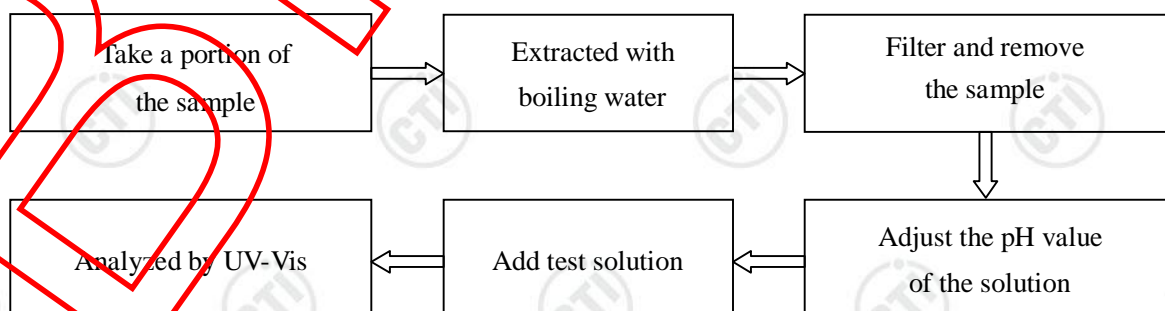


3. Hexavalent Chromium (Cr(VI))

(1) IEC 62321:2008 Ed 1 Annex C



(2) IEC 62321-7-1:2015

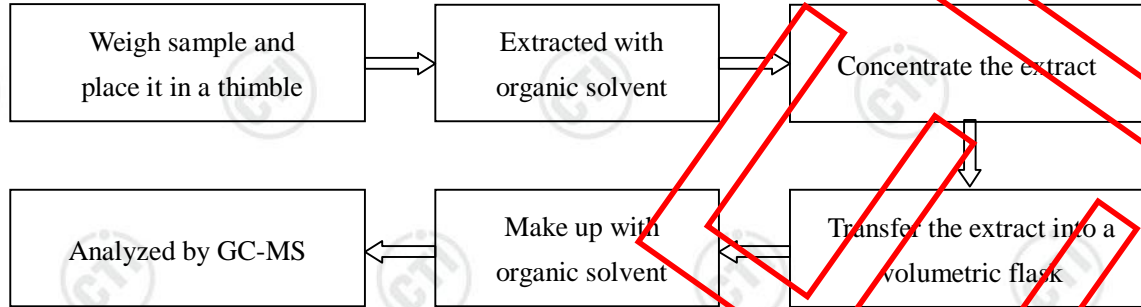


Test Report

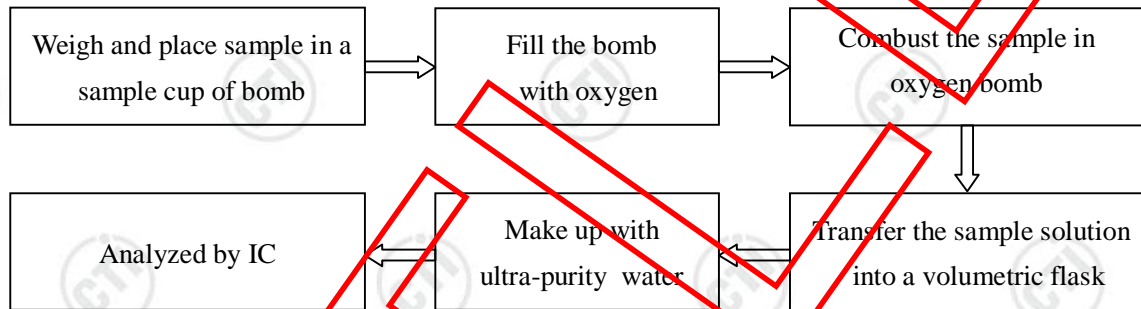
Report No. SCL01J01570707

Page 10 of 14

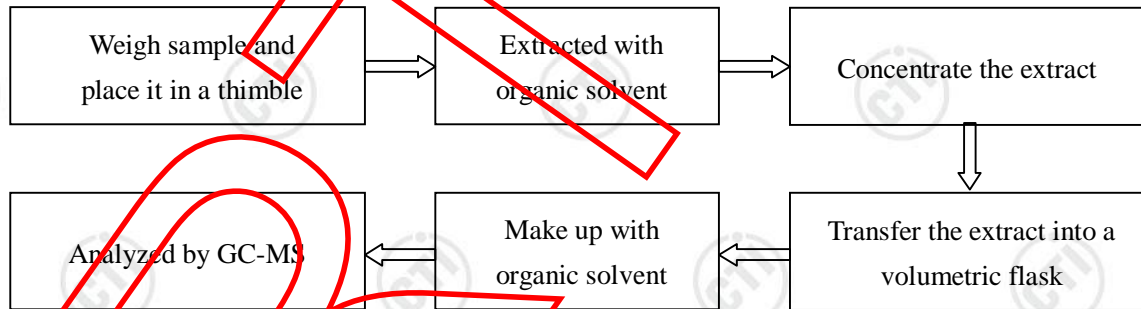
4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



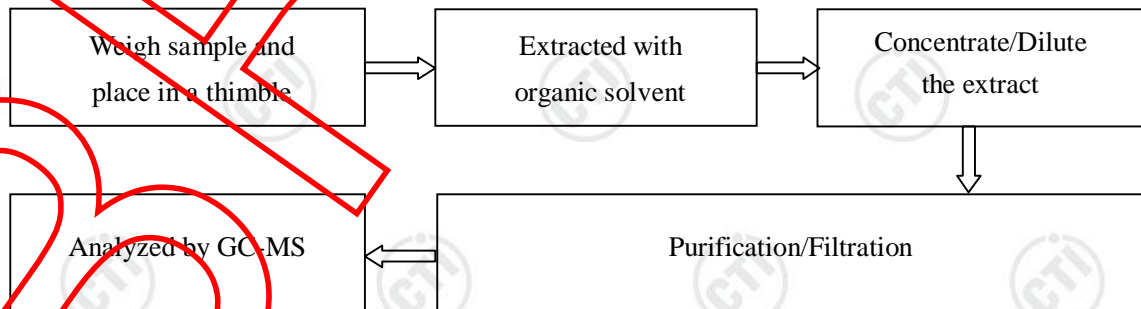
5. Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I)



6. Hexabromocyclododecane (HBCDD)



7. Polycyclic Aromatic Hydrocarbons(PAHs)

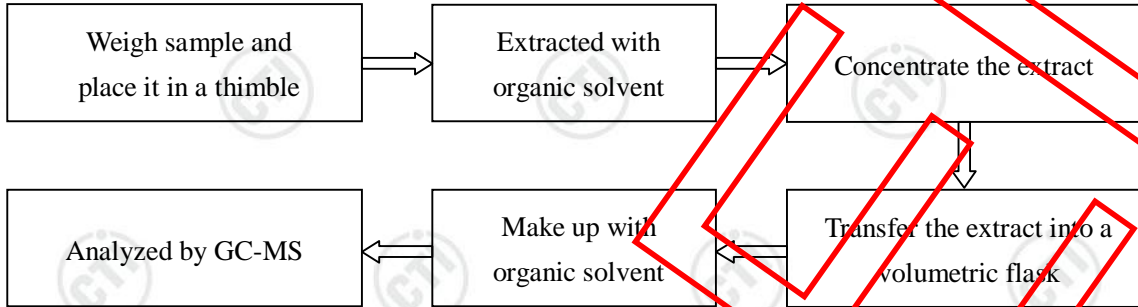


Test Report

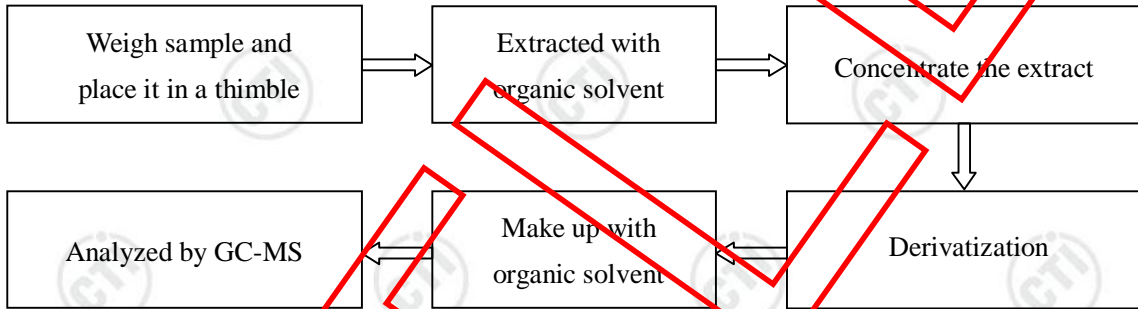
Report No. SCL01J01570707

Page 11 of 14

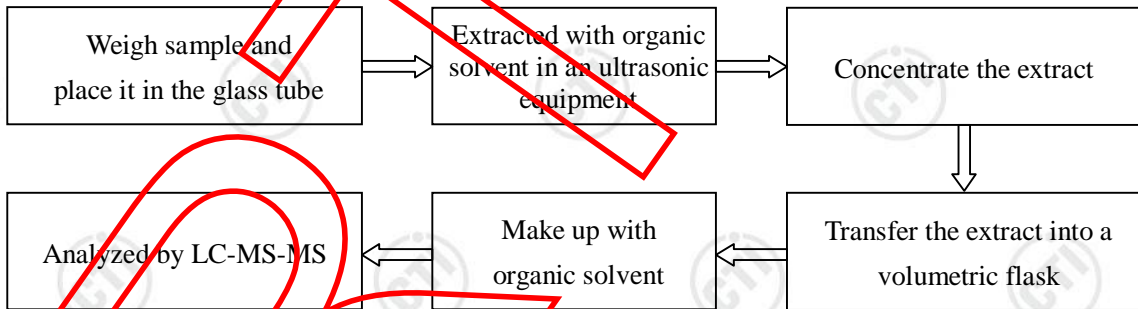
8. Dimethyl Fumarate(DMF)



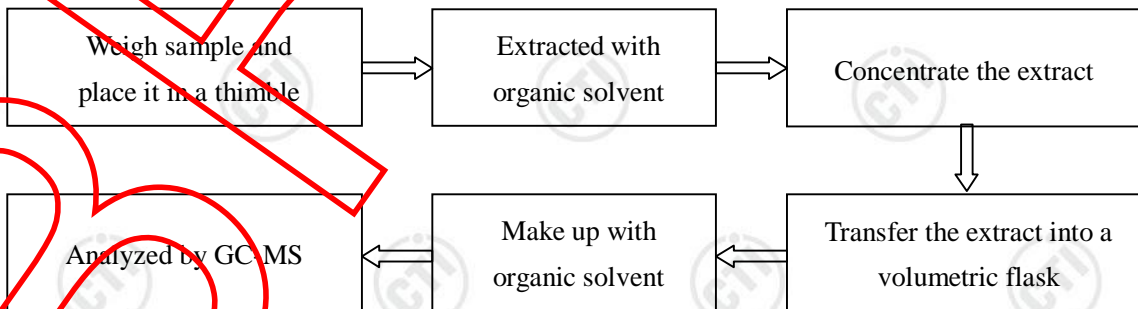
9. Tetrabromobisphenol-A (TBBP-A)



10. Perfluorooctane Sulfonates(PFOS)



11. Phthalates

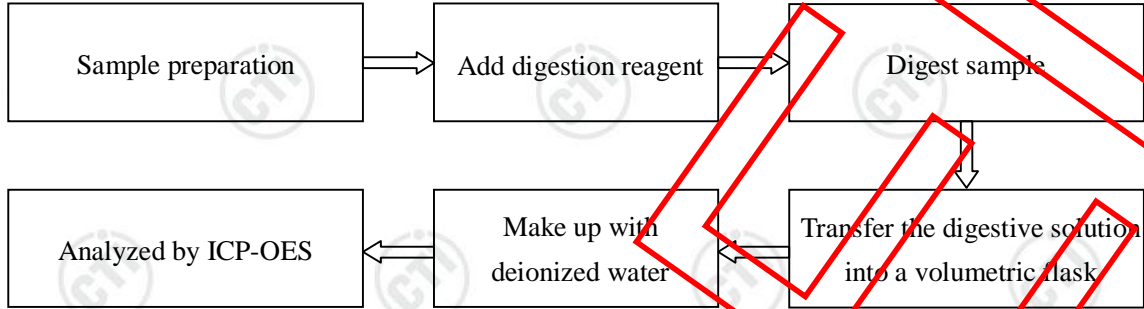


Test Report

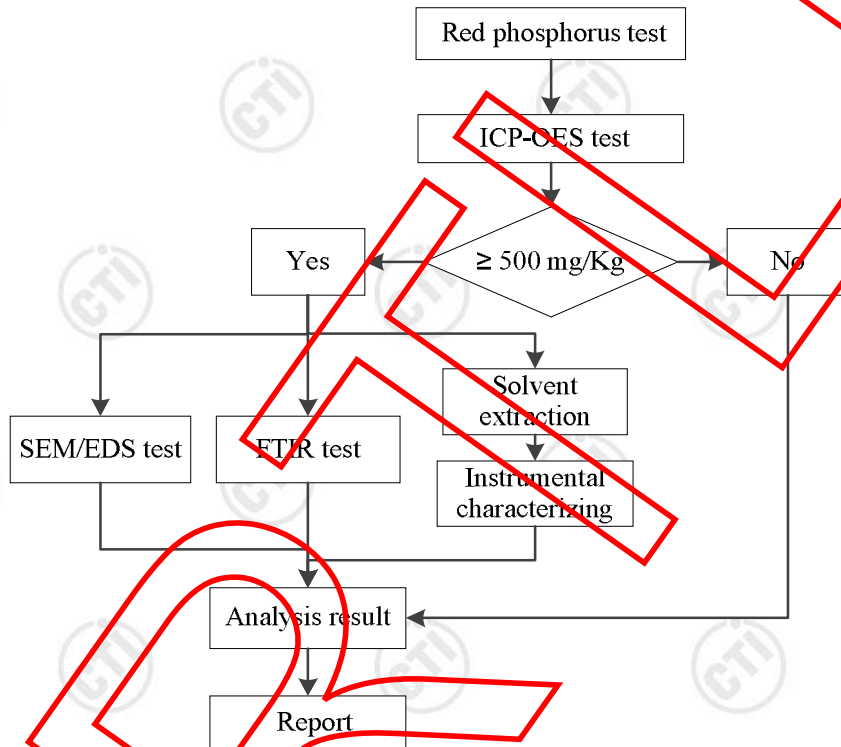
Report No. SCL01J01570707

Page 12 of 14

12. Diantimony trioxide (Sb_2O_3),



13. Red phosphorus



Test Report

Report No. SCL01J01570707

Page 13 of 14

Photo(s) of the Finished Product(s)



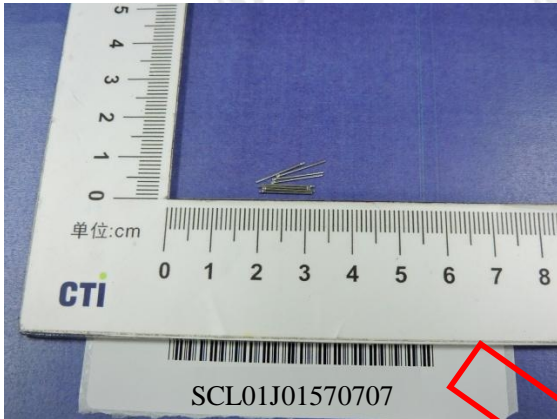
Test Report

Report No. SCL01J01570707

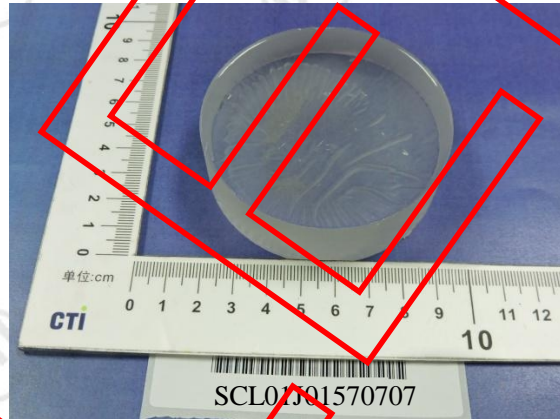
Page 14 of 14

Photo(s) of the sample(s)

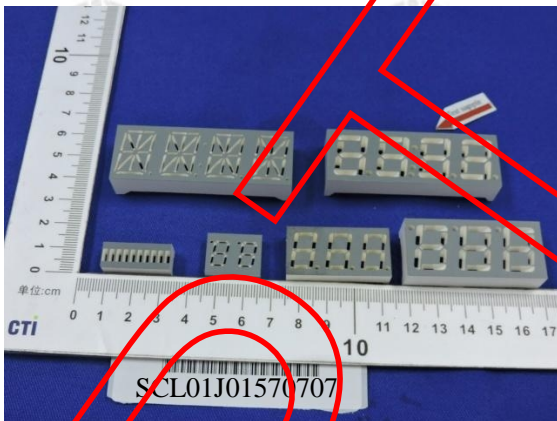
(1)



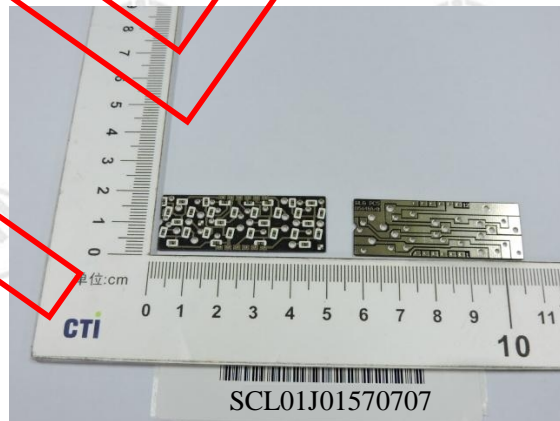
(2)



(3)



(4)



*** 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 CTI, this report can't be reproduced except in full.