

Test Report

Report No. A218003688210105

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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)
001	PLCC series 支架
002	PLCC series 塑膠
003	PLCC series 樹脂

Sample Received Date

Mar. 28, 2018

Testing Period

Mar. 28, 2018 to Apr. 9, 2018

Test Requested

1.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), Phthalates, Polycyclic Aromatic Hydrocarbons (PAHs), Perfluorooctane Sulfonates (PFOS), Tetrabromobisphenol A, Dimethyl fumarate (DMF), Red phosphorus quantification in the submitted sample(s).
2.As specified by client, to screen the Antimony trioxide(Sb_2O_3) in the submitted sample(s).

Test Method/Test Result(s)

Please refer to the following page(s).

Tested by

Kid Zhang

Reviewed by

Tori Xia

Approved by

Hill Zheng

Date

Apr. 9, 2018

Hill Zheng

Technical Manager

No. R158922095

Centre Testing International Group Co.,Ltd.

CTI Building, No.4, Liuxian 3rd road, Xin'an Street, Bao'an District, Shenzhen, P.R.China

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

Report Seal

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Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead(Pb)	IEC 62321-5:2013	ICP-OES
Cadmium(Cd)	IEC 62321-5:2013	ICP-OES
Mercury(Hg)	IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES
Hexavalent Chromium(Cr(VI))	IEC 62321-7-1:2015	UV-Vis
	IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013	UV-Vis/ICP-OES
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS
Fluorine (F)	Refer to EN 14582:2016	IC
Chlorine (Cl)	Refer to EN 14582:2016	IC
Bromine (Br)	Refer to EN 14582:2016	IC
Iodine (I)	Refer to EN 14582:2016	IC
Hexabromocyclododecane (HBCDD)	Refer to US EPA 3540C:1996 & US EPA 8270E:2017	GC-MS
Dimethyl fumarate (DMF)	Refer to US EPA 3550C:2007 & US EPA 8270E:2017	GC-MS
Tetrabromobisphenol A(TBBP-A)	Refer to US EPA 3550C:2007 & US EPA 8270E:2017	GC-MS
Perfluorooctane Sulfonates (PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Polycyclic Aromatic Hydrocarbons (PAHs)	AfPS GS 2014:01 PAK	GC-MS
Phthalates	Refer to EN 14372:2004(E)	GC-MS
Antimony trioxide (Sb ₂ O ₃)*	Refer to US EPA 3052:1996 & US EPA 6010D:2014	ICP-OES
Red phosphorus quantification	GB/T 6040-2002, GB/T 17359-2012, GB/T 9722-2006, EPA 6010C-2007	FTIR,SEM/EDS, PY-GC-MS,ICP-OES

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Test Result(s)

Tested Item(s)	Result			MDL
	001	002	003	
Lead (Pb)	N.D.	N.D.	N.D.	2 mg/kg
Cadmium (Cd)	N.D.	N.D.	N.D.	2 mg/kg
Mercury (Hg)	N.D.	N.D.	N.D.	2 mg/kg
Hexavalent Chromium (Cr(VI))	-- N.D.▼	N.D.	N.D.	8 mg/kg 0.10 µg/cm ² (LOQ)

Tested Item(s)	Result		MDL
	002	003	
Polybrominated Biphenyls(PBBs)			
Monobromobiphenyl	N.D.	N.D.	5 mg/kg
Dibromobiphenyl	N.D.	N.D.	5 mg/kg
Tribromobiphenyl	N.D.	N.D.	5 mg/kg
Tetrabromobiphenyl	N.D.	N.D.	5 mg/kg
Pentabromobiphenyl	N.D.	N.D.	5 mg/kg
Hexabromobiphenyl	N.D.	N.D.	5 mg/kg
Heptabromobiphenyl	N.D.	N.D.	5 mg/kg
Octabromobiphenyl	N.D.	N.D.	5 mg/kg
Nonabromobiphenyl	N.D.	N.D.	5 mg/kg
Decabromobiphenyl	N.D.	N.D.	5 mg/kg

Tested Item(s)	Result		MDL
	002	003	
Polybrominated Diphenyl Ethers (PBDEs)			
Monobromodiphenyl ether	N.D.	N.D.	5 mg/kg
Dibromodiphenyl ether	N.D.	N.D.	5 mg/kg
Tribromodiphenyl ether	N.D.	N.D.	5 mg/kg
Tetrabromodiphenyl ether	N.D.	N.D.	5 mg/kg
Pentabromodiphenyl ether	N.D.	N.D.	5 mg/kg
Hexabromodiphenyl ether	N.D.	N.D.	5 mg/kg
Heptabromodiphenyl ether	N.D.	N.D.	5 mg/kg
Octabromodiphenyl ether	N.D.	N.D.	5 mg/kg
Nonabromodiphenyl ether	N.D.	N.D.	5 mg/kg
Decabromodiphenyl ether	N.D.	N.D.	5 mg/kg

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Tested Item(s)	Result		MDL
	002	003	
Fluorine (F)	191 mg/kg	N.D.	10 mg/kg
Chlorine (Cl)	N.D.	N.D.	10 mg/kg
Bromine (Br)	N.D.	N.D.	10 mg/kg
Iodine (I)	N.D.	N.D.	10 mg/kg

Tested Item(s)	Result		MDL
	002	003	
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	5 mg/kg

Tested Item(s)	Result		MDL
	002	003	
Dimethyl fumarate (DMF)	N.D.	N.D.	0.1 mg/kg

Tested Item(s)	Result		MDL
	002	003	
Antimony trioxide (Sb ₂ O ₃)*	N.D.	N.D.	5 mg/kg

Tested Item(s)	Result		MDL
	002	003	
Tetrabromobisphenol A (TBBP-A)	N.D.	N.D.	5 mg/kg

Tested Item(s)	Result		MDL
	002	003	
Perfluorooctane Sulfonates (PFOS)	N.D.	N.D.	0.01 mg/kg

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Tested Item(s)	Result		MDL
	002	003	
Phthalates			
Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	N.D.	30 mg/kg
Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	N.D.	30 mg/kg
Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	N.D.	30 mg/kg
Di-n-octyl phthalate (DNOP) CAS#:117-84-0	N.D.	N.D.	30 mg/kg
Di-isononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0	N.D.	N.D.	50 mg/kg
Di-iso-decyl phthalate (DIDP) CAS#:26761-40-0,68515-49-1	N.D.	N.D.	50 mg/kg
Dimethyl phthalate (DMP) CAS#:131-11-3	N.D.	N.D.	30 mg/kg
Diethyl phthalate (DEP) CAS#:84-66-2	N.D.	N.D.	30 mg/kg
Dipropyl phthalate (DPrP) CAS#:131-16-8	N.D.	N.D.	30 mg/kg
Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	N.D.	30 mg/kg
Dipentyl phthalate (DPP) CAS#:131-18-0	N.D.	N.D.	30 mg/kg
Diheptyl phthalate (DHP) CAS#:3648-21-3	N.D.	N.D.	30 mg/kg
Dicyclohexyl phthalate (DCHP) CAS#:84-61-7	N.D.	N.D.	30 mg/kg
Diisooctyl phthalate (DIOP) CAS#:27554-26-3	N.D.	N.D.	50 mg/kg
Dinonyl phthalate (DNP) CAS#:84-76-4	N.D.	N.D.	30 mg/kg
Diisononyl adipate (DINA) CAS#:33703-08-1	N.D.	N.D.	50 mg/kg
Di-n-hexyl phthalate (DNHP) CAS#:84-75-3	N.D.	N.D.	30 mg/kg

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Bis(2-methoxyethyl) phthalate (DMEP) CAS#:117-82-8	N.D.	N.D.	30 mg/kg
Diisopentylphthalate (DIPP) CAS#:605-50-5	N.D.	N.D.	30 mg/kg
^① 1,2-Benzenedicarboxylic acid, di-(C7-11)-branched and linear alkyl esters (DHNUP) CAS#:68515-42-4	N.D.	N.D.	50 mg/kg
^① 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) CAS#:71888-89-6	N.D.	N.D.	50 mg/kg

Tested Item(s)	Result		MDL
	002	003	
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	N.D.	29.4 mg/kg	0.2 mg/kg
Acenaphthylene	N.D.	N.D.	0.2 mg/kg
Acenaphthene	N.D.	N.D.	0.2 mg/kg
Fluorene	N.D.	N.D.	0.2 mg/kg
Phenanthrene	N.D.	N.D.	0.2 mg/kg
Anthracene	N.D.	N.D.	0.2 mg/kg
Fluoranthene	N.D.	N.D.	0.2 mg/kg
Pyrene	N.D.	N.D.	0.2 mg/kg
Benzo(a)anthracene	N.D.	N.D.	0.2 mg/kg
Chrysene	N.D.	N.D.	0.2 mg/kg
Benzo(b)fluoranthene	N.D.	N.D.	0.2 mg/kg
Benzo(k)fluoranthene	N.D.	N.D.	0.2 mg/kg
Benzo(a)pyrene	N.D.	N.D.	0.2 mg/kg
Indenol(1,2,3-cd)pyrene	N.D.	N.D.	0.2 mg/kg
Dibenz(a,h)anthracene	N.D.	N.D.	0.2 mg/kg
Benzo(g,h,i)perylene	N.D.	N.D.	0.2 mg/kg
Benzo(j)fluoranthene	N.D.	N.D.	0.2 mg/kg
Benzo(e)pyrene	N.D.	N.D.	0.2 mg/kg
Sum (Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene)	N.D.	N.D.	/
Sum 18 PAHs	N.D.	29.4 mg/kg	/

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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 30seconds (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)

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Tested Item(s)	Result		MDL
	002	003	
Red phosphorus	N.D.	N.D.	500 mg/kg

Tested Sample/Part Description

- 001 Mixed test, metal with silvery plating, metal with silver-white plating and metal with coloured plating^{#1}
- 002 White plastic
- 003 Transparent resin

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.

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

The MDL is evaluated for element Antimony(Sb).

-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.

-^{#1}As specified by client, the test was conducted by mixing several samples together. 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.

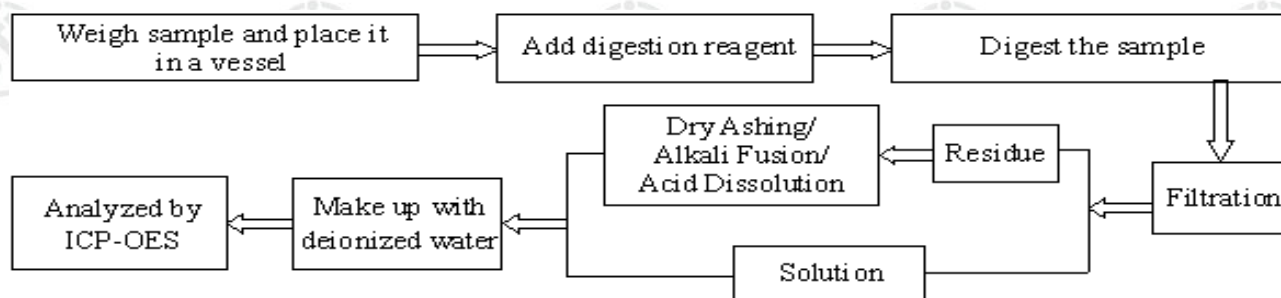
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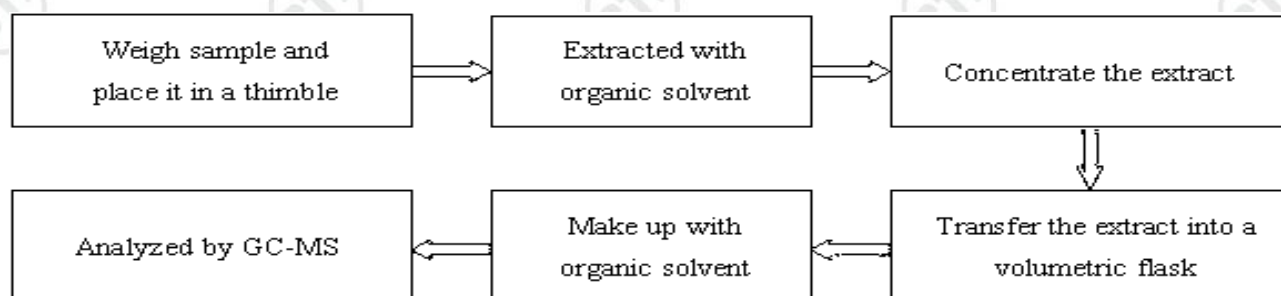
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Test Process

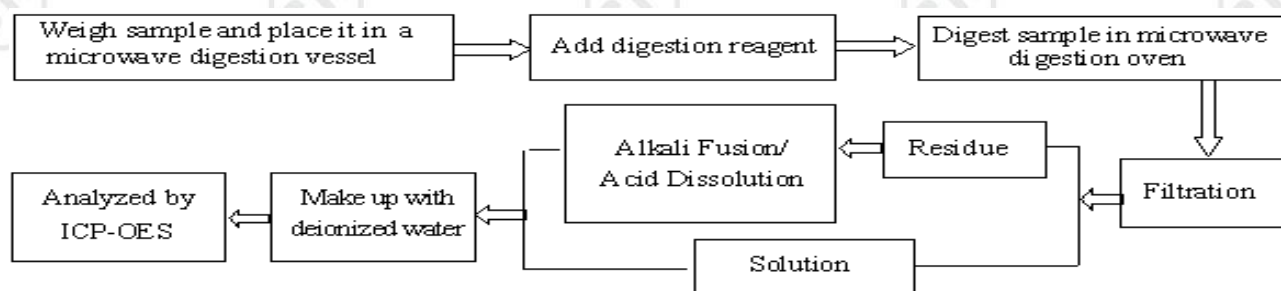
1. Lead(Pb), Cadmium(Cd), Chromium(Cr)



2. Hexabromocyclododecane (HBCDD), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers (PBDEs)

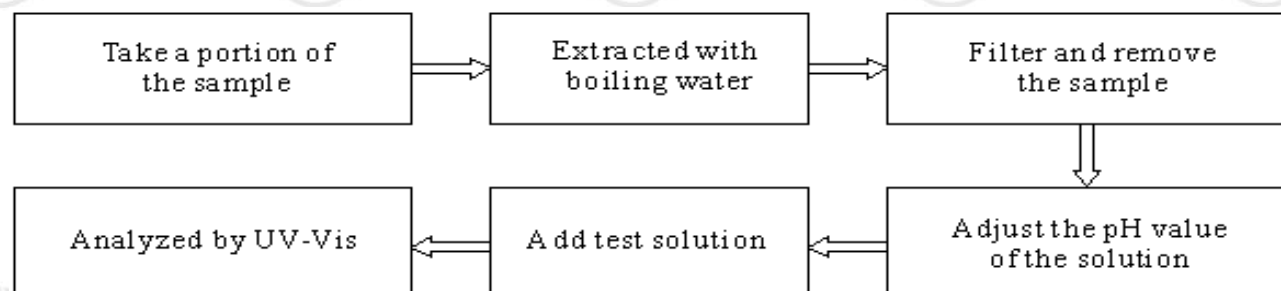


3. Mercury(Hg)



4. Hexavalent Chromium(Cr(VI))

(1) IEC 62321-7-1:2015

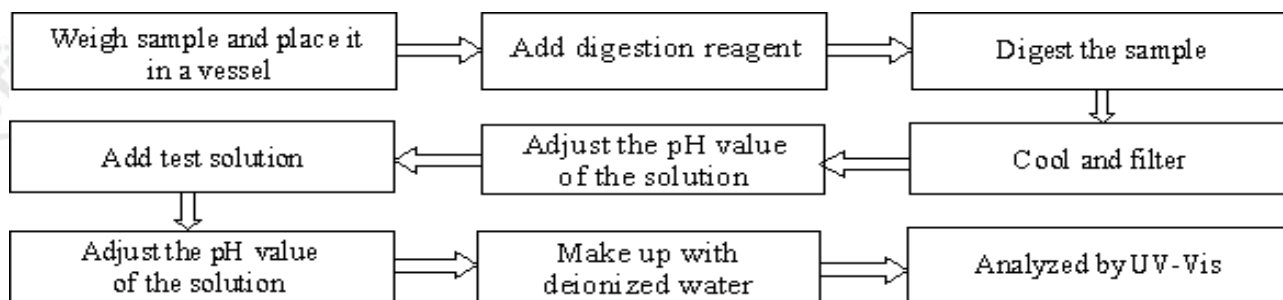


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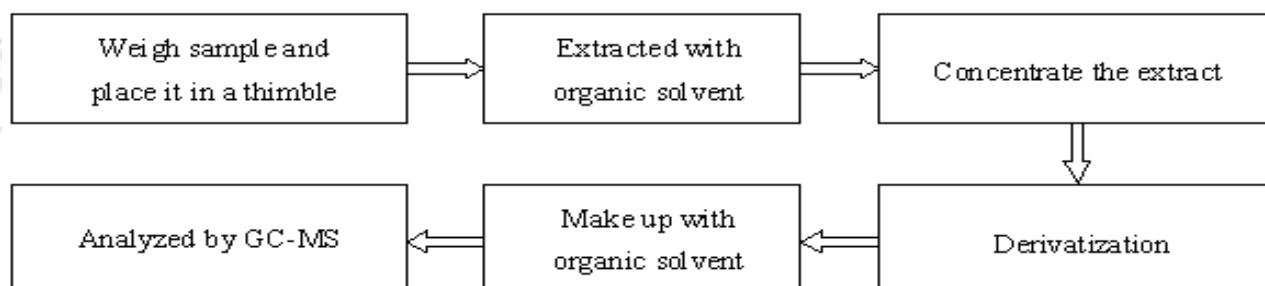
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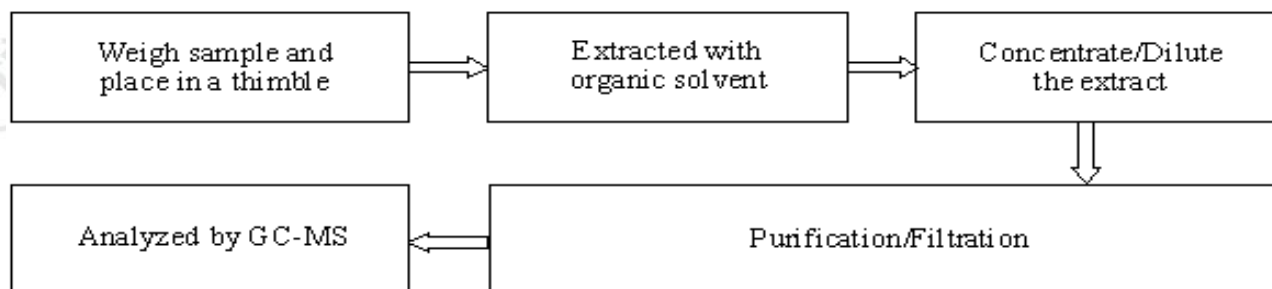
(2) IEC 62321-7-2:2017



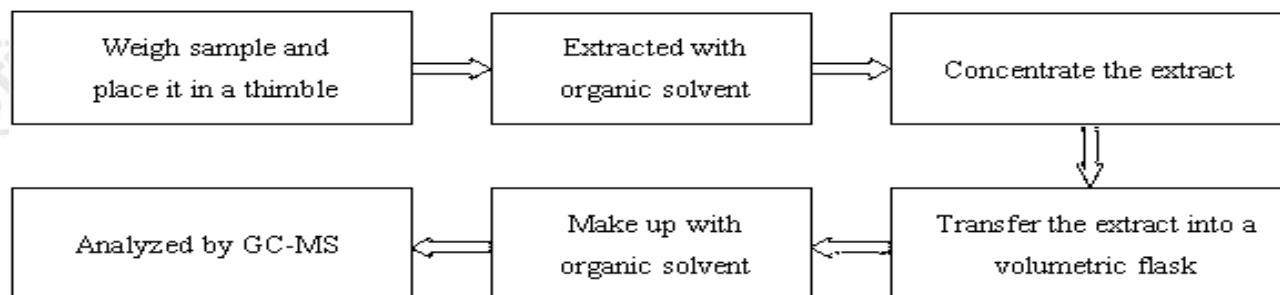
5. Tetrabromobisphenol A (TBBP-A)



6. Polycyclic Aromatic Hydrocarbons (PAHs)



7. Phthalates, Dimethyl fumarate (DMF)

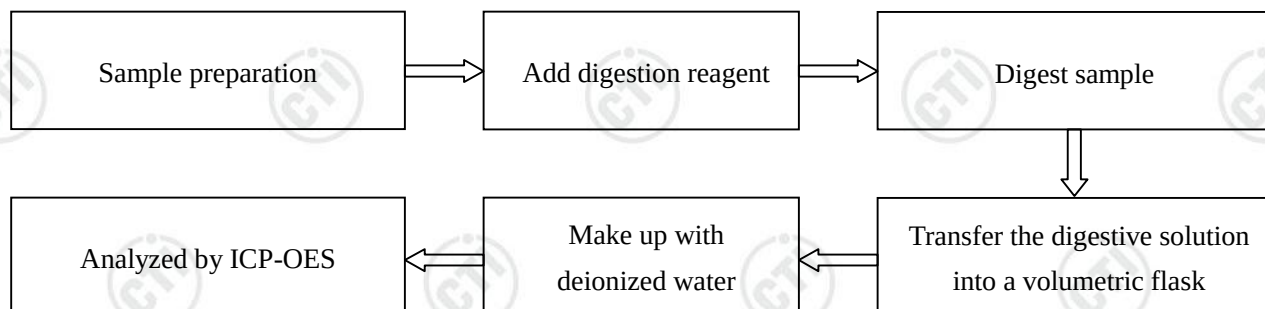


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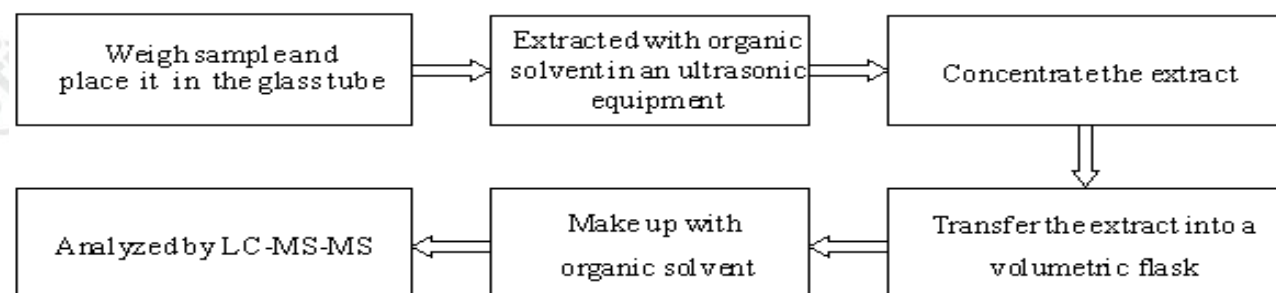
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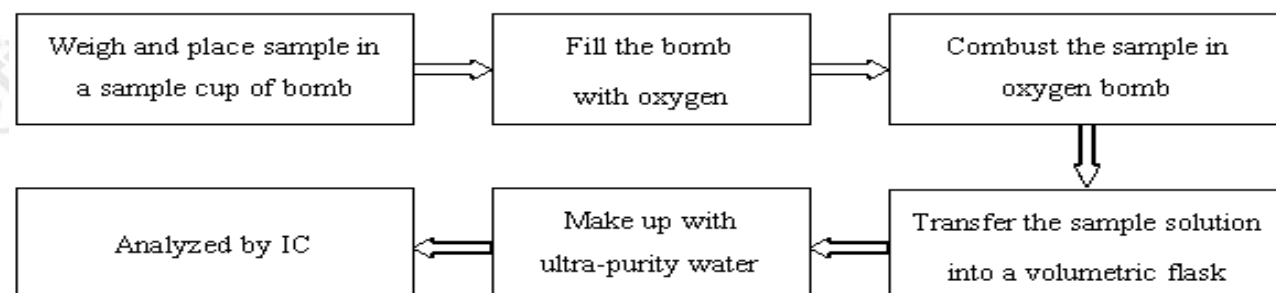
8. Antimony trioxide (Sb_2O_3)



9. Perfluorooctane Sulfonates (PFOS)



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

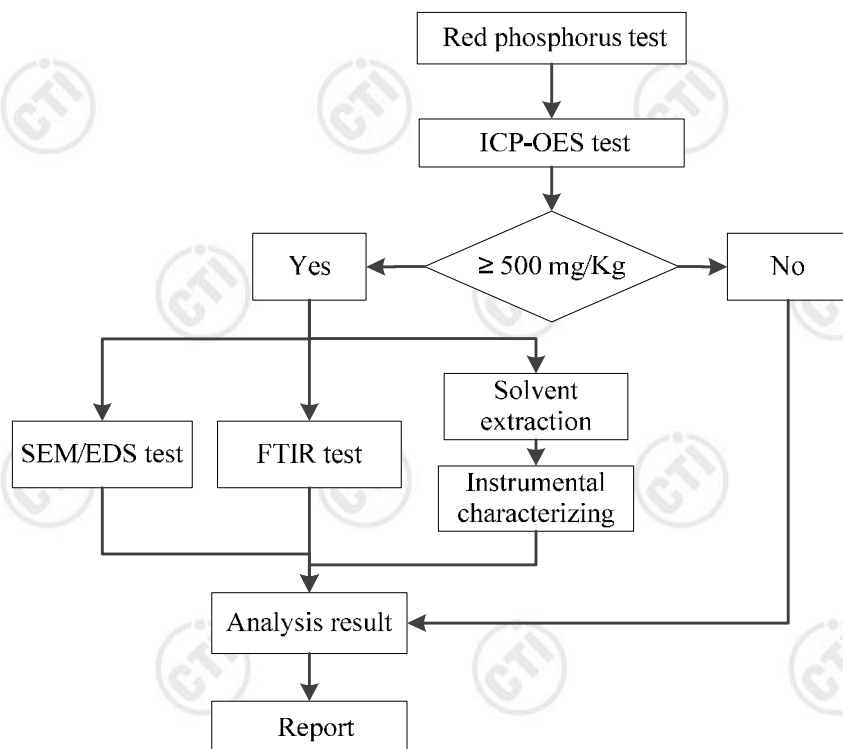


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11. Red phosphorus



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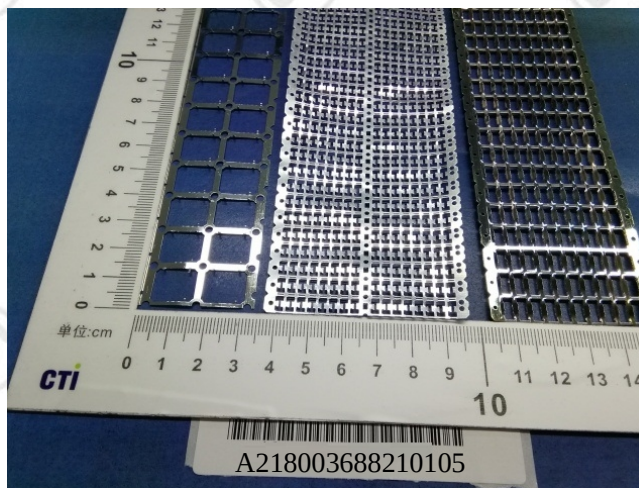
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Photo(s) of the sample(s)

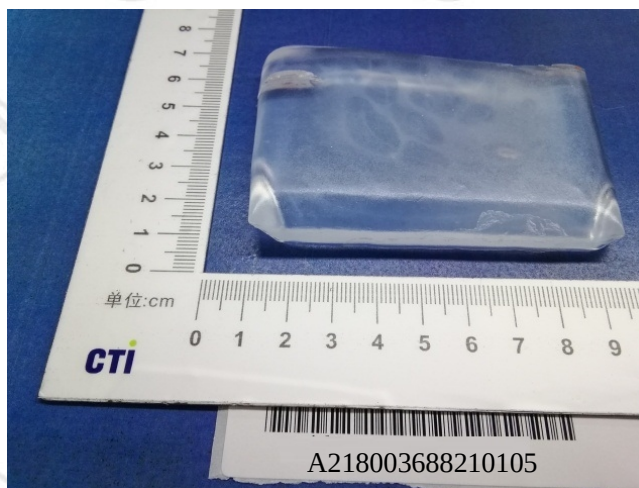
Final Product

001



002

003



*** End of Report ***

Statement:

1. This report is considered invalidated without approval signature, special seal and the seal on the perforation;
2. The sample(s) and sample information was/were provided by the client who should be responsible for the authenticity which CTI hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. Without written approval of CTI, this report can't be reproduced except in full;
5. In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.