Test Report

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.	Final Product Name	Sample Name(s)
001	光耦	Coupler 支架
002		Coupler 黑膠
003		Coupler 白膠

Sample Received Date Mar. 21, 2019
Testing Period Mar. 21, 2019 to Apr. 2, 2019

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), Dimethyl fumarate (DMF), Perfluorooctane Sulfonates (PFOS), Tetrabromobisphenol A (TBBP-A), Phthalates,Polycyclic Aromatic Hydrocarbons (PAHs), Red phosphorus quantification in the submitted sample(s).

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

Tested by Yu Liu Reviewed by Danna Yan

Approved by Hill Zheng Date Apr. 2, 2019

Hill Zheng
Technical Manager

No. R262627980

Centre Testing International Group Co.,Ltd.
CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China
Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

Test Report

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Conclusion

Tested Sample	According to standard/directive	Result
Submitted Sample	RoHS Directive 2011/65/EU	Pass
	AfPS GS 2014:01 PAK, Category 3	Pass
	Client's Limit-（Hexabromocyclododecane (HBCDD), Dimethyl fumarate (DMF), Perfluorooctane Sulfonates (PFOS), Tetrabromobisphenol A (TBBP-A), Phthalates）	Pass

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Test Report

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
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
Perfluorooctane Sulfonates (PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Tetrabromobisphenol A (TBBP-A)	Refer to US EPA 3550C:2007 & US EPA 8270E:2017	GC-MS
Phthalates	Refer to EN 14372:2004(E)	GC-MS
Polycyclic Aromatic Hydrocarbons (PAHs)	AfPS GS 2014:01 PAK	GC-MS
Red phosphorus quantification	GB/T 6040-2002, GB/T 9722-2006, GB/T 17359-2012, EPA 6010D-2014	FTIR/ PY-GC-MS/ SEM/EDS/ ICP-OES

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Test Result(s)

Tested Item(s)	Result			MDL	Limit
	001	002	003		
Lead (Pb)	N.D.	N.D.	N.D.	2 mg/kg	1000 mg/kg
Cadmium (Cd)	N.D.	N.D.	N.D.	2 mg/kg	100 mg/kg
Mercury (Hg)	N.D.	N.D.	N.D.	2 mg/kg	1000 mg/kg
Hexavalent Chromium (Cr(VI))	--	N.D.	N.D.	8 mg/kg	1000 mg/kg
	N.D.▼	--	--	0.10 μg/cm ² (LOQ)	1000 mg/kg

Tested Item(s)	Result		MDL	Limit
	002	003		
Polybrominated Biphenyls(PBBs)				
Monobromobiphenyl	N.D.	N.D.	5 mg/kg	1000 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	Limit
	002	003		
Polybrominated Diphenyl Ethers (PBDEs)				
Monobromodiphenyl ether	N.D.	N.D.	5 mg/kg	1000 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	Client's Limit
	002	003		
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	5 mg/kg	N.D.

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

Tested Item(s)	Result		MDL	Client's Limit
	002	003		
Perfluorooctane Sulfonates (PFOS)	N.D.	N.D.	0.01 mg/kg	1000 mg/kg

Tested Item(s)	Result		MDL	Client's Limit
	002	003		
Tetrabromobisphenol A (TBBP-A)	N.D.	N.D.	5 mg/kg	1000 mg/kg

Tested Item(s)	Result		MDL	Client's Limit
	002	003		
Phthalates				
Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	N.D.	30 mg/kg	1000 mg/kg
Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	N.D.	30 mg/kg	1000 mg/kg
Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	N.D.	30 mg/kg	1000 mg/kg
Di-n-octyl phthalate (DNOP) CAS#:117-84-0	N.D.	N.D.	30 mg/kg	1000 mg/kg
Di-isononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0	N.D.	N.D.	50 mg/kg	1000 mg/kg
Di-iso-decyl phthalate (DIDP) CAS#:26761-40-0,68515-49-1	N.D.	N.D.	50 mg/kg	1000 mg/kg
Dimethyl phthalate (DMP) CAS#:131-11-3	N.D.	N.D.	30 mg/kg	1000 mg/kg
Diethyl phthalate (DEP) CAS#:84-66-2	N.D.	N.D.	30 mg/kg	1000 mg/kg

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Tested Item(s)	Result		MDL	Client's Limit
	002	003		
Dipropyl phthalate (DPrP) CAS#:131-16-8	N.D.	N.D.	30 mg/kg	1000 mg/kg
Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	N.D.	30 mg/kg	1000 mg/kg
Dipentyl phthalate (DPP) CAS#:131-18-0	N.D.	N.D.	30 mg/kg	1000 mg/kg
Diheptyl phthalate (DHP) CAS#:3648-21-3	N.D.	N.D.	30 mg/kg	1000 mg/kg
Dicyclohexyl phthalate (DCHP) CAS#:84-61-7	N.D.	N.D.	30 mg/kg	1000 mg/kg
Diisooctyl phthalate (DIOP) CAS#:27554-26-3	N.D.	N.D.	50 mg/kg	1000 mg/kg
Dinonyl phthalate (DNP) CAS#:84-76-4	N.D.	N.D.	30 mg/kg	1000 mg/kg
Diisononyl adipate (DINA) CAS#:33703-08-1	N.D.	N.D.	50 mg/kg	1000 mg/kg
Di-n-hexyl phthalate (DNHP) CAS#:84-75-3	N.D.	N.D.	30 mg/kg	1000 mg/kg
Bis(2-methoxyethyl) phthalate (DMEP) CAS#:117-82-8	N.D.	N.D.	30 mg/kg	1000 mg/kg
Diisopentylphthalate (DIPP) CAS#:605-50-5	N.D.	N.D.	30 mg/kg	1000 mg/kg
①1,2-Benzenedicarboxylic acid, di-(C7-11)-branched and linear alkyl esters (DHNUP) CAS#:68515-42-4	N.D.	N.D.	50 mg/kg	1000 mg/kg
①1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) CAS#:71888-89-6	N.D.	N.D.	50 mg/kg	1000 mg/kg

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Tested Item(s)	Result		MDL
	002	003	
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	N.D.	N.D.	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
Dibenzo(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.	N.D.	/

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

Test Report

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
Dibenzo[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)

Tested Sample/Part Description

001 Metal with silver-white plating

002 Black plastic

003 White plastic

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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

-1000 mg/kg = 0.1%

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 μg/cm^2

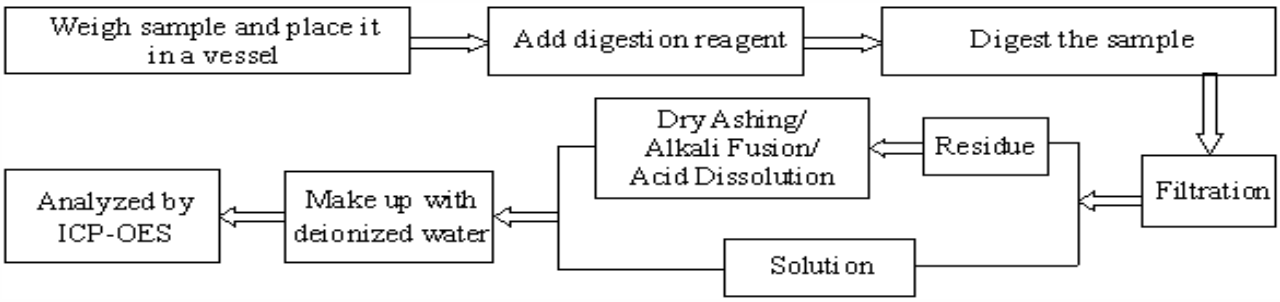
-▼The sample is negative for Cr(VI) − The Cr(VI) concentration is below 0.10 μg/cm^2. The coating is considered a non-Cr(VI) based coating.

-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.

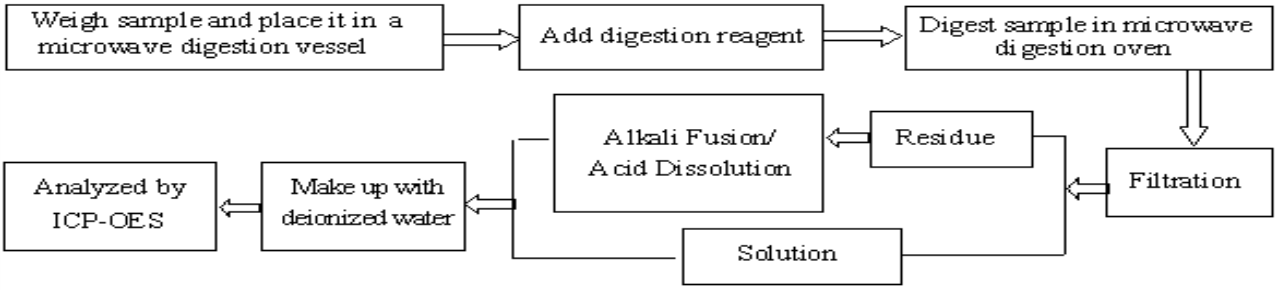
Note: **The testing data and result(s) in this report is(are) just for scientific research, education, internal quality control and product development etc.**

Test Process

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

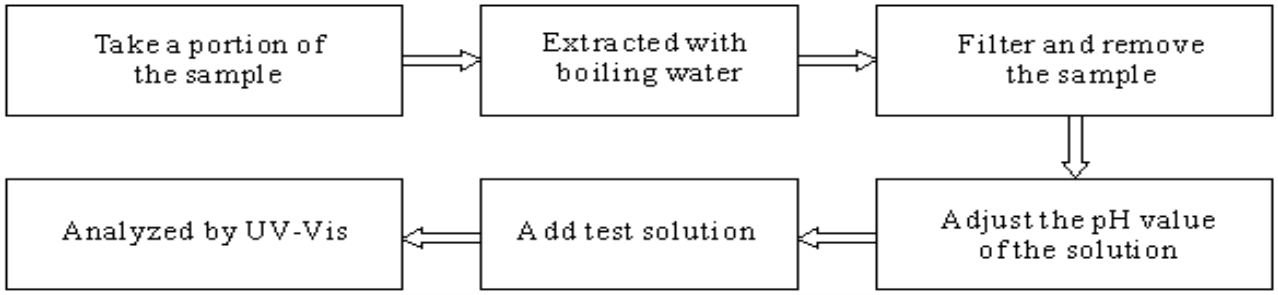


2. Mercury(Hg)

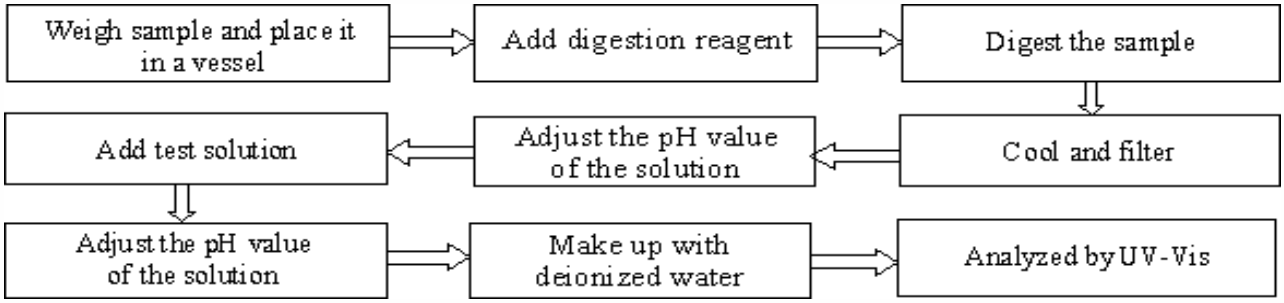


3. Hexavalent Chromium(Cr(VI))

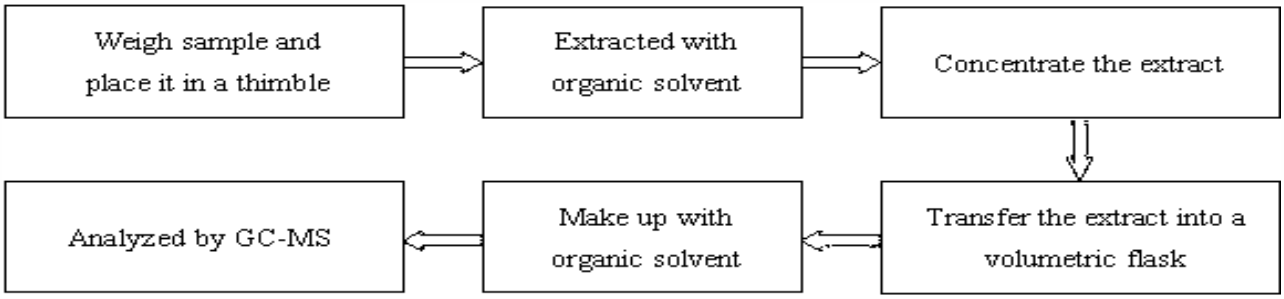
(1) IEC 62321-7-1:2015



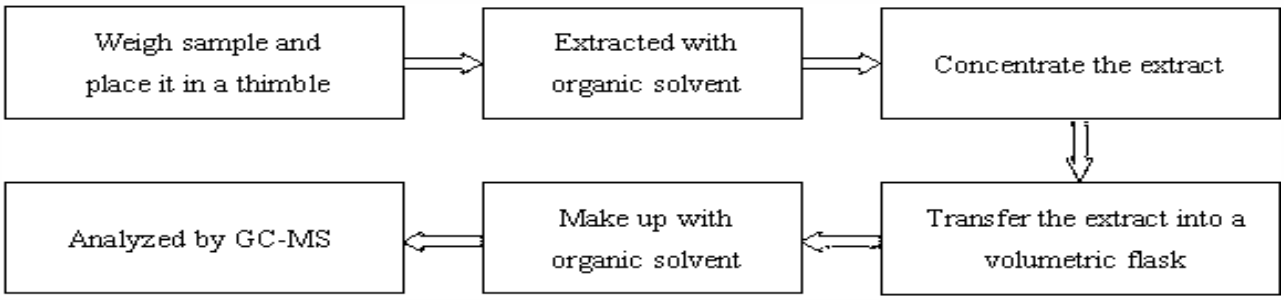
(2) IEC 62321-7-2:2017



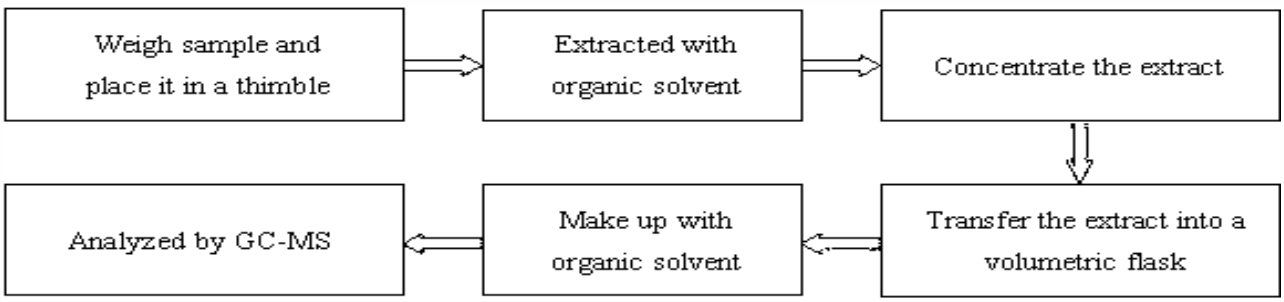
4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers (PBDEs)



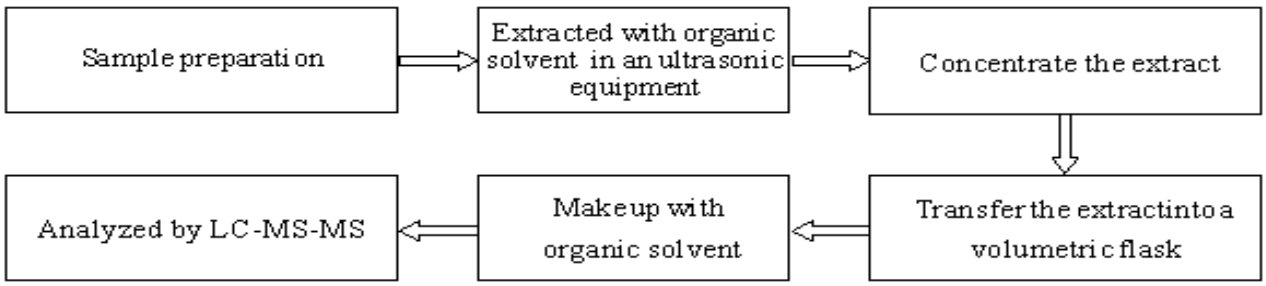
5. Hexabromocyclododecane (HBCDD)



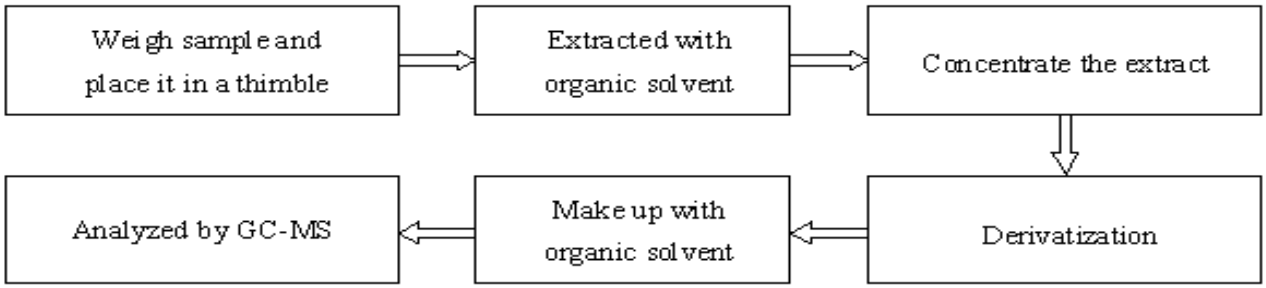
6. Dimethyl fumarate (DMF)



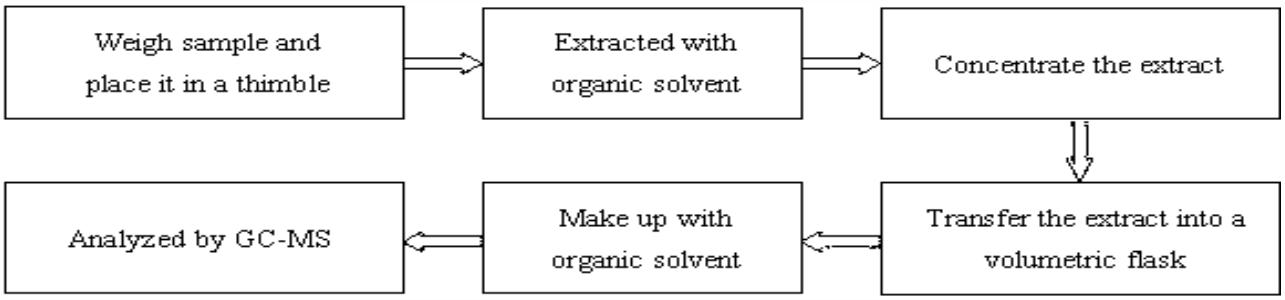
7. Perfluorooctane Sulfonates (PFOS)



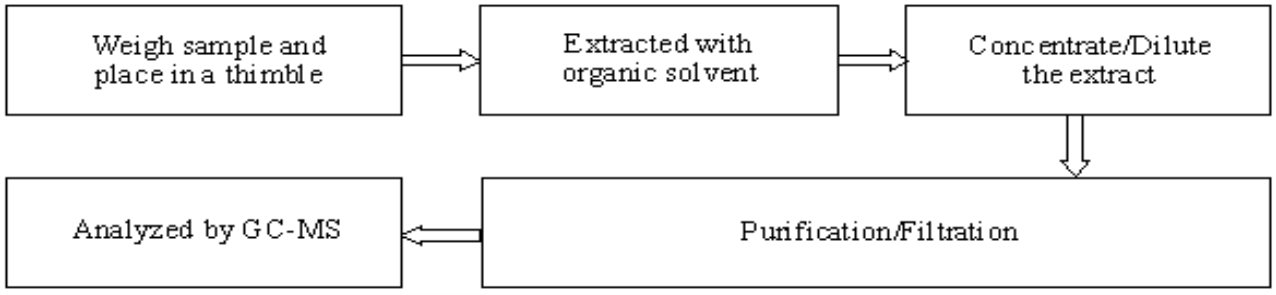
8. Tetrabromobisphenol A (TBBP-A)



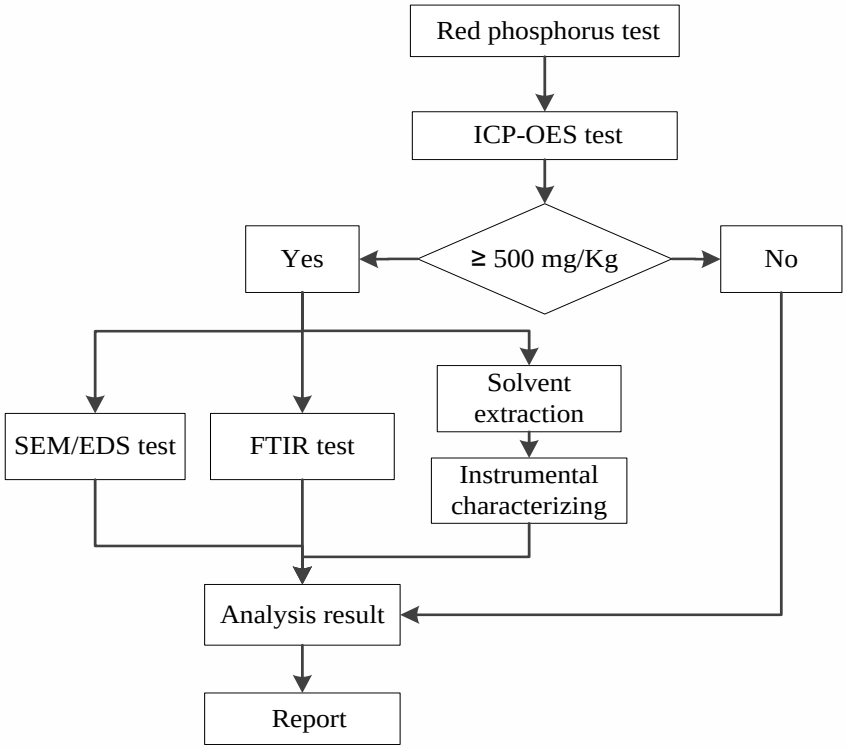
9. Phthalates



10. Polycyclic Aromatic Hydrocarbons (PAHs)



11. Red phosphorus



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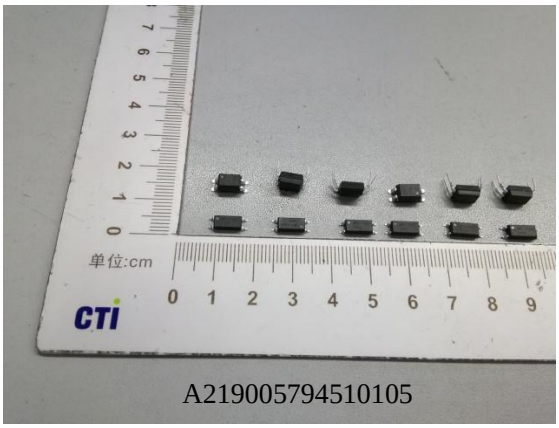
Photo(s) of the sample(s)

Final Product



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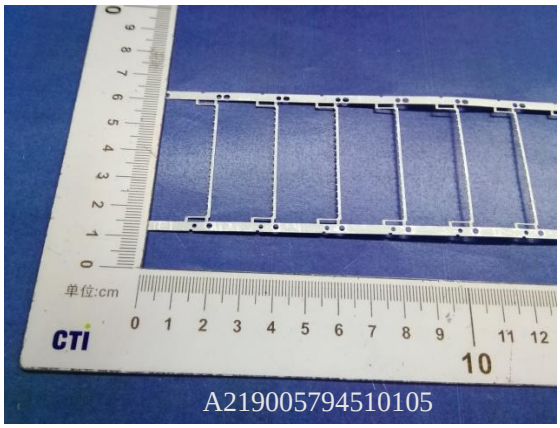

002

003

*** End of Report ***

Statement:

1. This report is considered invalid without approved 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.