

## Test Report



Report No. A2210512991101001

Company Name shown on Report MITSUI HIGH-TEC (SHANGHAI) CO.,LTD

Address NO.2001 XINJIN QIAO ROAD EXPORT PROCESSING ZONE PUDONG SHANGHAI CHINA

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

Sample Name A194+Ag plating  
Sample Received Date Dec. 6, 2021  
Testing Period Dec. 6, 2021 to Dec. 11, 2021

**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), Arsenic(As), Beryllium(Be), Antimony(Sb), Hexabromocyclododecane (HBCDD), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Polychlorinated Naphthalenes (PCNs), Polychlorinated terphenyls (PCTs), Polychlorinated Biphenyls(PCBs), Phthalates, Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA), Short Chain Chlorinated Paraffins (SCCPs), Organotin compounds, Polyvinyl Chloride (PVC), Red phosphorus in the submitted sample(s).  
2.As specified by client, to screen the Beryllium oxide(BeO), Antimony trioxide (Sb<sub>2</sub>O<sub>3</sub>) in the submitted sample(s).

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

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

\*\*\*\*\*  
**Conclusion**

Tested Sample	According to standard/directive	Result
Submitted Sample	RoHS Directive 2011/65/EU with amendment (EU) 2015/863	PASS

\*\*\*\*\*  
PASS means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.

Tested by Li zhang su  
Approved by Chen Kaimin  
Chen Kaimin  
Lab Manager

Reviewed by Wendy Gong  
Date Dec. 11, 2021

No. R201806503  
No.1351, Wanfang Road, Minhang District, Shanghai, China

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## Test Method

Test 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
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS
Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS
Arsenic(As)	Refer to US EPA 3050B:1996 & US EPA 6010D:2018*	ICP-OES
Beryllium(Be)	Refer to US EPA 3050B:1996 & US EPA 6010D:2018*	ICP-OES
Antimony(Sb)	Refer to US EPA 3050B:1996 & US EPA 6010D:2018*	ICP-OES
Hexabromocyclododecane (HBCDD)	Refer to US EPA 3550C:2007 & US EPA 8270E:2018*	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
Polychlorinated Naphthalenes (PCNs)	Refer to US EPA 3550C:2007 & US EPA 8270E:2018*	GC-MS
Polychlorinated terphenyls (PCTs)	Refer to US EPA 3550C:2007 & US EPA 8270E:2018*	GC-MS
Polychlorinated Biphenyls(PCBs)	Refer to US EPA 3550C:2007 & US EPA 8270E:2018*	GC-MS
Polyvinyl Chloride (PVC)	Refer to JY/T 001-1996*	FT-IR
Perfluorooctane Sulfonates(PFOS)	Refer to CEN/TS 15968:2010*	LC-MS-MS/LC-MS
Perfluorooctanoic Acid(PFOA)	Refer to CEN/TS 15968:2010*	LC-MS-MS/LC-MS
Short Chain Chlorinated Paraffins (SCCPs)	Refer to US EPA 3540C:1996 & US EPA 8270E:2018*	GC-MS(NCI)
Organotin compounds	Refer to ISO 17353:2004(E)*	GC-MS
Antimony trioxide ( Sb <sub>2</sub> O <sub>3</sub> )	Refer to US EP A 3052:1996 & US EPA 6010D:2018*	ICP-OES
Red phosphorus*	Refer to GB/T 6040-2002, GB/T 9722-2006, GB/T 17359-2012, EPA 6010D:2014	FTIR, SEM/EDS, ICP-OES
Beryllium oxide	Refer to US EPA 3052:1996 & US EPA 6010D:2014*	ICP-OES
Phthalates(DMEP,DHP,DPP,DIDP,DINP, DNOP,DIHP,DHNUP)	Refer to EN 14372:2004(E)*	GC-MS

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**Test Result(s)**

Tested Item(s)	Result	MDL	Limit
Lead(Pb)	N.D.	2 mg/kg	1000 mg/kg
Cadmium(Cd)	N.D.	2 mg/kg	100 mg/kg
Mercury(Hg)	N.D.	2 mg/kg	1000 mg/kg
Hexavalent Chromium(Cr(VI))	N.D. ▼	0.10 µg/cm <sup>2</sup> (LOQ)	1000 mg/kg
Tested Item(s)	Result	MDL	Limit
<b>Polybrominated Biphenyls (PBBs)</b>			
Monobromobiphenyl	N.D.	5 mg/kg	1000 mg/kg
Dibromobiphenyl	N.D.	5 mg/kg	
Tribromobiphenyl	N.D.	5 mg/kg	
Tetrabromobiphenyl	N.D.	5 mg/kg	
Pentabromobiphenyl	N.D.	5 mg/kg	
Hexabromobiphenyl	N.D.	5 mg/kg	
Heptabromobiphenyl	N.D.	5 mg/kg	
Octabromobiphenyl	N.D.	5 mg/kg	
Nonabromobiphenyl	N.D.	5 mg/kg	
Decabromobiphenyl	N.D.	5 mg/kg	
Tested Item(s)	Result	MDL	Limit
<b>Polybrominated Diphenyl Ethers (PBDEs)</b>			
Monobromodiphenyl ether	N.D.	5 mg/kg	1000 mg/kg
Dibromodiphenyl ether	N.D.	5 mg/kg	
Tribromodiphenyl ether	N.D.	5 mg/kg	
Tetrabromodiphenyl ether	N.D.	5 mg/kg	
Pentabromodiphenyl ether	N.D.	5 mg/kg	
Hexabromodiphenyl ether	N.D.	5 mg/kg	
Heptabromodiphenyl ether	N.D.	5 mg/kg	
Octabromodiphenyl ether	N.D.	5 mg/kg	
Nonabromodiphenyl ether	N.D.	5 mg/kg	
Decabromodiphenyl ether	N.D.	5 mg/kg	

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**Test Result(s)**

Tested Item(s)	Result	MDL	Limit
<b>Phthalates (DBP, BBP, DEHP, DIBP)</b>			
Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg	1000 mg/kg
Butyl benzyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg	1000 mg/kg
Di-(2-ethylhexyl) phthalate(DEHP) CAS#:117-81-7	N.D.	50 mg/kg	1000 mg/kg
Diisobutyl phthalate(DIBP) CAS#:84-69-5	N.D.	50 mg/kg	1000 mg/kg
<b>Tested Item(s)</b>	<b>Result</b>	<b>MDL</b>	
Arsenic(As)	N.D.	10 mg/kg	
Beryllium(Be)	N.D.	10 mg/kg	
Antimony(Sb)	N.D.	10 mg/kg	
<b>Tested Item(s)</b>	<b>Result</b>	<b>MDL</b>	
Hexabromocyclododecane(HBCDD)	N.D.	5 mg/kg	
<b>Tested Item(s)</b>	<b>Result</b>	<b>MDL</b>	
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	
<b>Tested Item(s)</b>	<b>Result</b>	<b>MDL</b>	
Polychlorinated Naphthalenes(PCNs)	N.D.	5 mg/kg	
<b>Tested Item(s)</b>	<b>Result</b>	<b>MDL</b>	
Polychlorinated Triphenyls(PCTs)	N.D.	5 mg/kg	

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## Test Result(s)

Tested Item(s)	Result	MDL
<b>Phthalates</b>		
Di-n-octyl phthalate(DNOP) CAS#:117-84-0	N.D.	50 mg/kg
Di-isononyl phthalate(DINP) CAS#:28553-12-0,68515-48-0	N.D.	50 mg/kg
Di-iso-decyl phthalate(DIDP) CAS#:26761-40-0,68515-49-1	N.D.	50 mg/kg
Dipentyl phthalate(DPP) CAS#:131-18-0	N.D.	50 mg/kg
Diheptyl phthalate(DHP) CAS#:3648-21-3	N.D.	50 mg/kg
Bis(2-methoxyethyl) phthalate(DMEP) CAS#:117-82-8	N.D.	50 mg/kg
* <sup>1</sup> 1,2-Benzenedicarboxylic acid, di-(C7-11)-branched and linear alkyl esters(DHNUP) CAS#:68515-42-4	N.D.	100 mg/kg
* <sup>1</sup> 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich(DIHP) CAS#:71888-89-6	N.D.	100 mg/kg
<b>Tested Item(s)</b>		
<b>Result</b>		
<b>MDL</b>		
<b>Polychlorinated Biphenyls(PCBs)</b>		
Monochlorobiphenyl	N.D.	5 mg/kg
Dichlorobiphenyl	N.D.	5 mg/kg
Trichlorobiphenyl	N.D.	5 mg/kg
Tetrachlorobiphenyl	N.D.	5 mg/kg
Pentachlorobiphenyl	N.D.	5 mg/kg
Hexachlorobiphenyl	N.D.	5 mg/kg
Heptachlorobiphenyl	N.D.	5 mg/kg
Octachlorobiphenyl	N.D.	5 mg/kg
Nonachlorobiphenyl	N.D.	5 mg/kg
Decachlorobiphenyl	N.D.	5 mg/kg
<b>Tested Item(s)</b>		
<b>Result</b>		
<b>MDL</b>		
Perfluorooctane Sulfonates(PFOS)	N.D.	0.01 mg/kg
<b>Tested Item(s)</b>		
<b>Result</b>		
<b>MDL</b>		
Perfluorooctanoic Acid(PFOA)	N.D.	0.01 mg/kg

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## Test Result(s)

Tested Item(s)	Result	MDL
Short Chain Chlorinated Paraffins(SCCPs)	N.D.	100 mg/kg
Tested Item(s)	Result	MDL
<b>Organotin compounds</b>		
Dibutyltin(DBT)	N.D.	5 mg/kg
Tributyltin(TBT)	N.D.	5 mg/kg
Tributyltin oxide(TBTO)* <sup>3</sup>	N.D.	5 mg/kg
Diocetyl tin(DOT)	N.D.	5 mg/kg
Triphenyltin(TPHT)	N.D.	5 mg/kg
Tested Item(s)	Result	MDL
Polyvinyl Chloride(PVC)	Negative	/
Tested Item(s)	Result	MDL
Antimony trioxide(Sb <sub>2</sub> O <sub>3</sub> )* <sup>2</sup>	N.D.	10 mg/kg
Tested Item(s)	Result	MDL
Red phosphorus*	N.D.	500 mg/kg
Tested Item(s)	Result	MDL
Beryllium oxide(BeO)* <sup>2</sup>	N.D.	10 mg/kg

**Sample/Part Description** Cupreous metal with silvery plating

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

-\*<sup>1</sup>=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.

-\*<sup>2</sup>=The test result of the item is converted from the test result of certain element.

-\*<sup>3</sup>=Concentration value of Tributyltin oxide by the conversion from the test results of Tributyl Tins.

-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<sup>2</sup>

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

-Negative = Not contained Polyvinyl Chloride(PVC)

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

“\*”indicates the item(s)/method(s) is (are) not in CNAS accreditation scope.

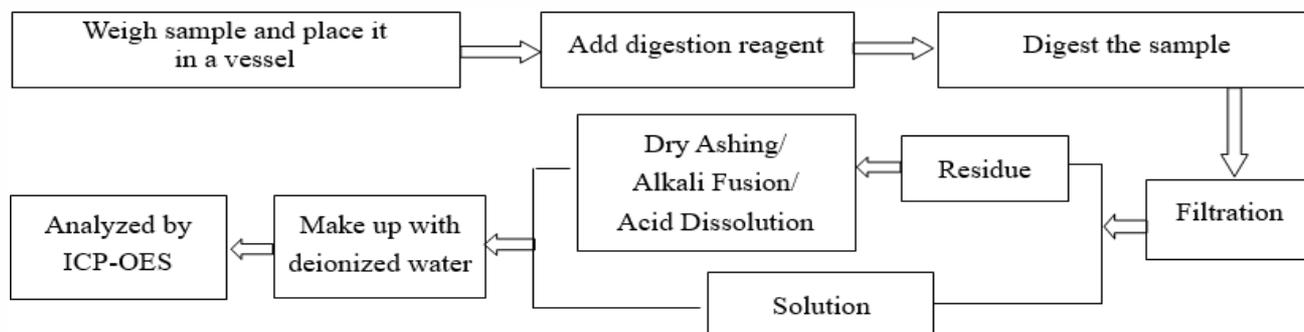
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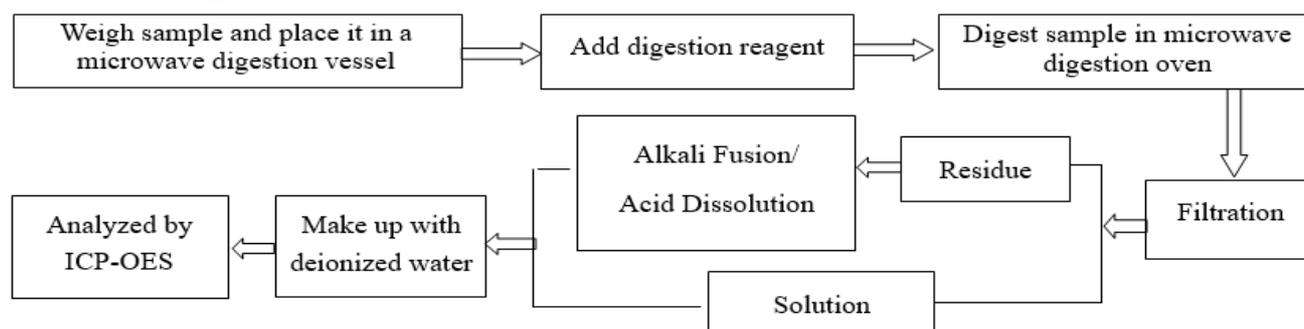
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## Test Process

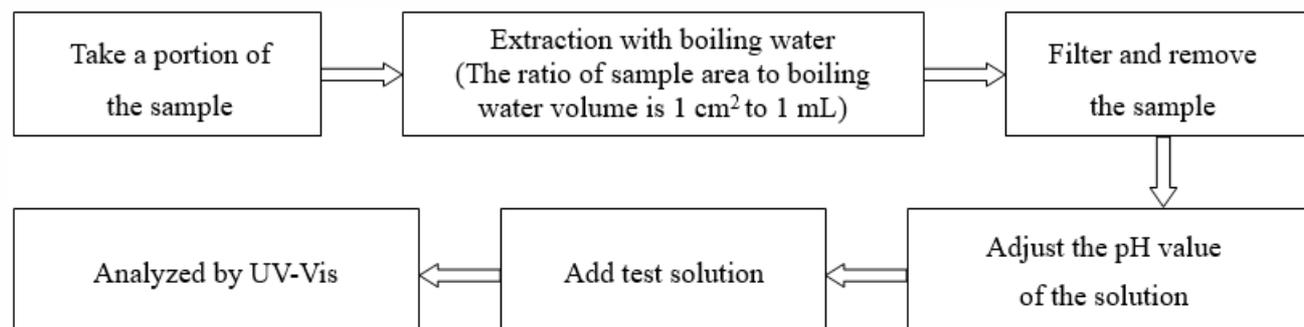
### 1. Lead (Pb), Cadmium (Cd)



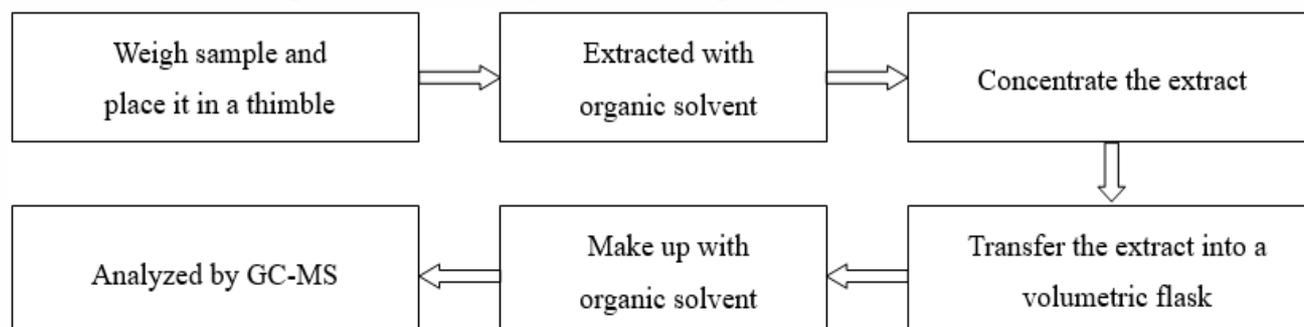
### 2. Mercury (Hg)



### 3. Hexavalent Chromium (Cr(VI))



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

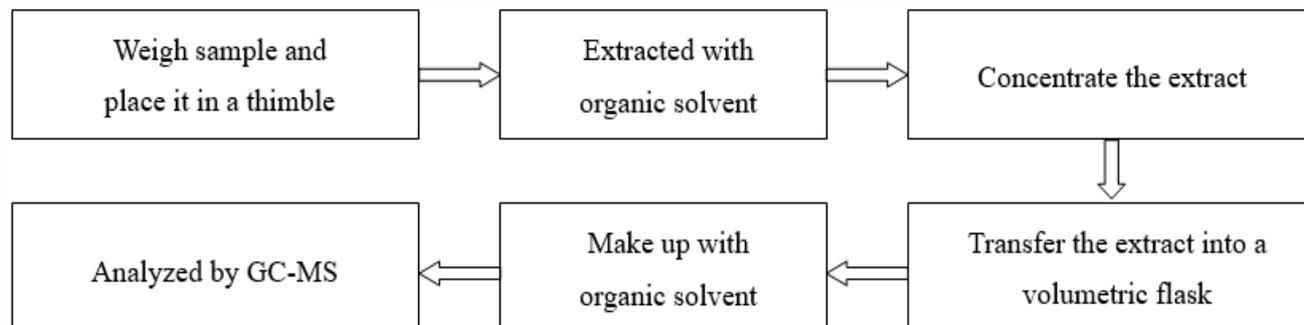


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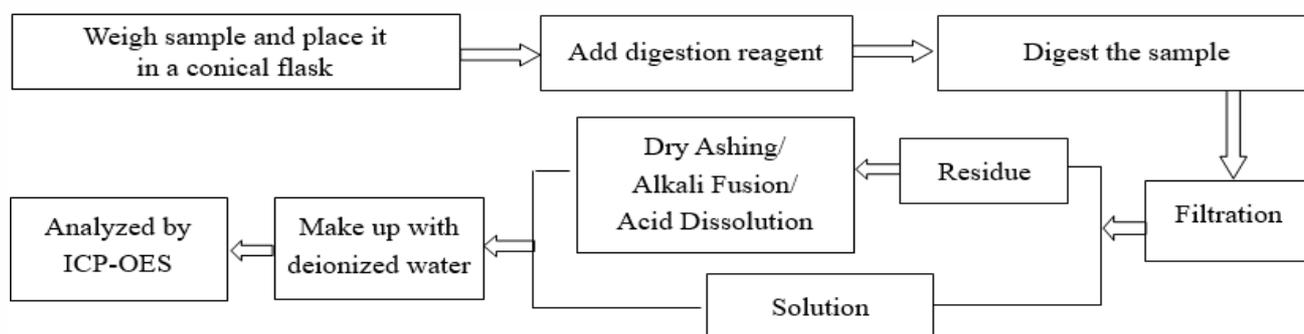
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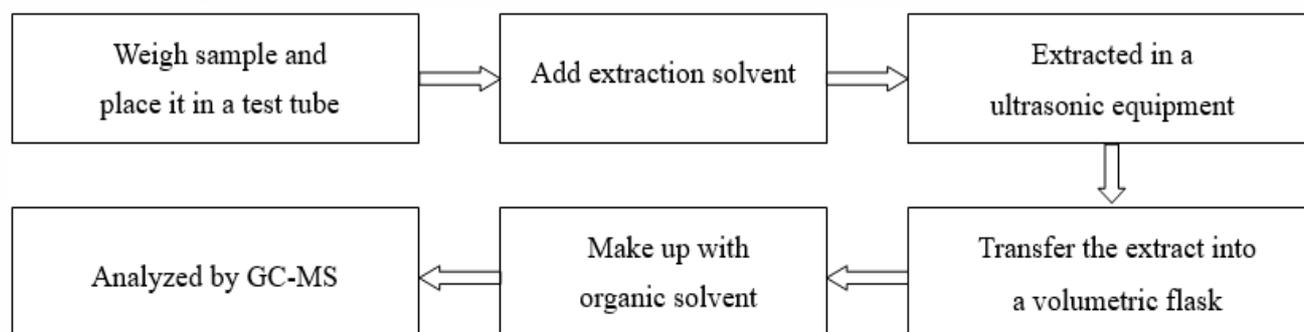
## 5. Phthalates



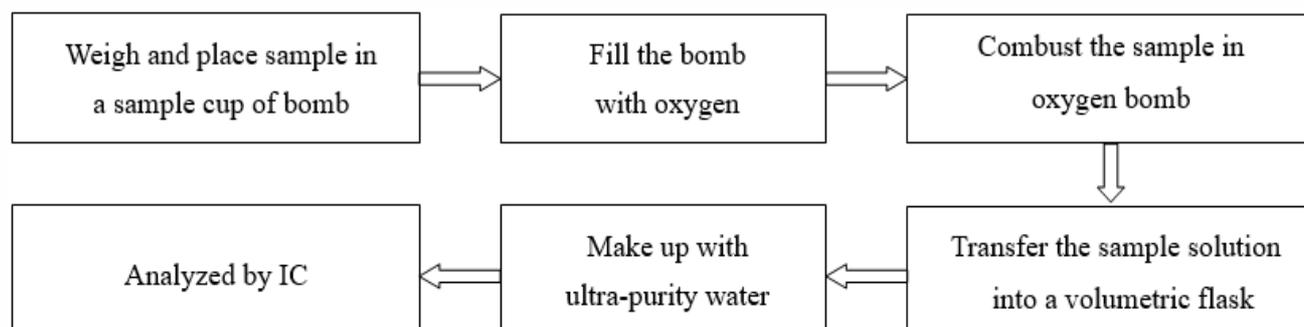
## 6. Arsenic(As), Beryllium(Be), Antimony(Sb)



## 7. Hexabromocyclododecane (HBCDD), Polychlorinated Naphthalenes (PCNs), Polychlorinated terphenyls (PCTs), Polychlorinated Biphenyls(PCBs)



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

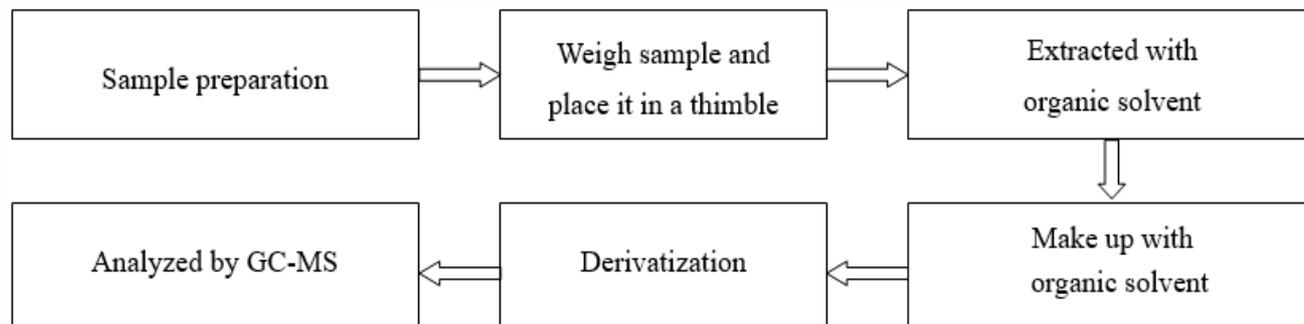


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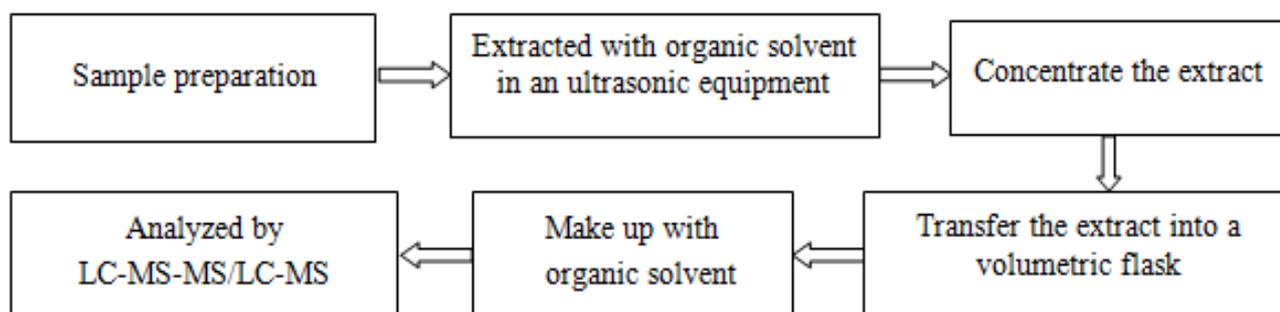
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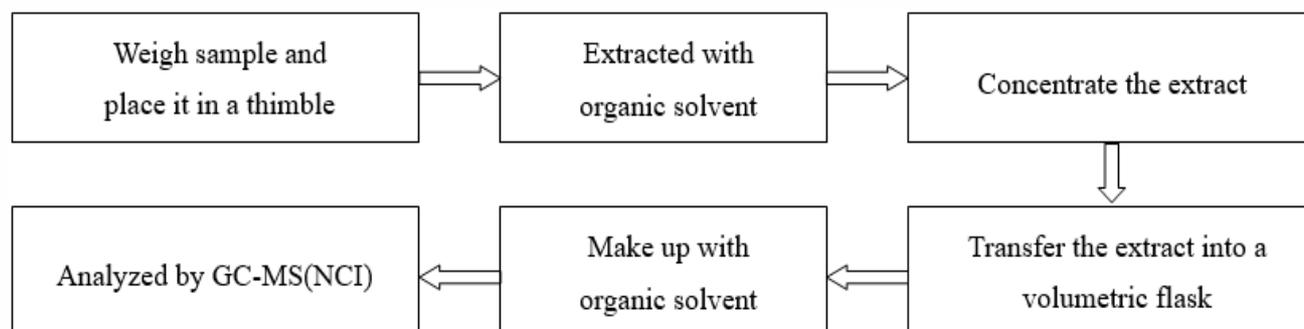
## 9. Organotin compounds



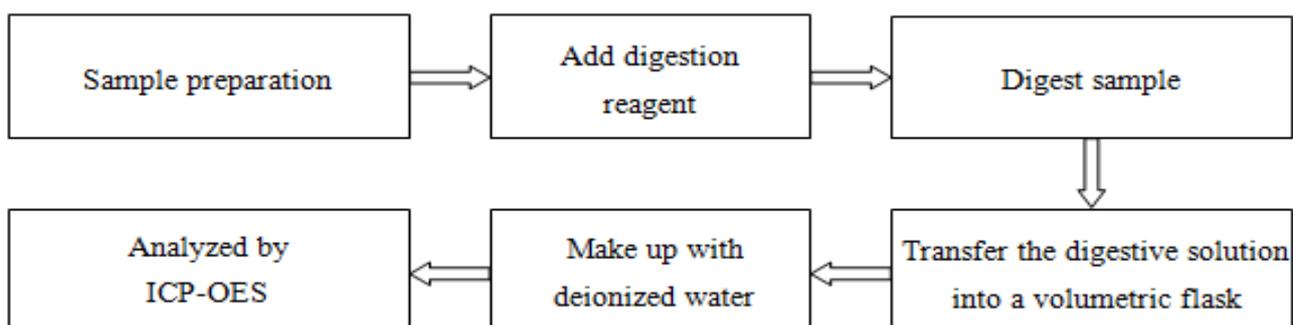
## 10. Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA)



## 11. Short Chain Chlorinated Paraffins (SCCPs)



## 12. Beryllium oxide

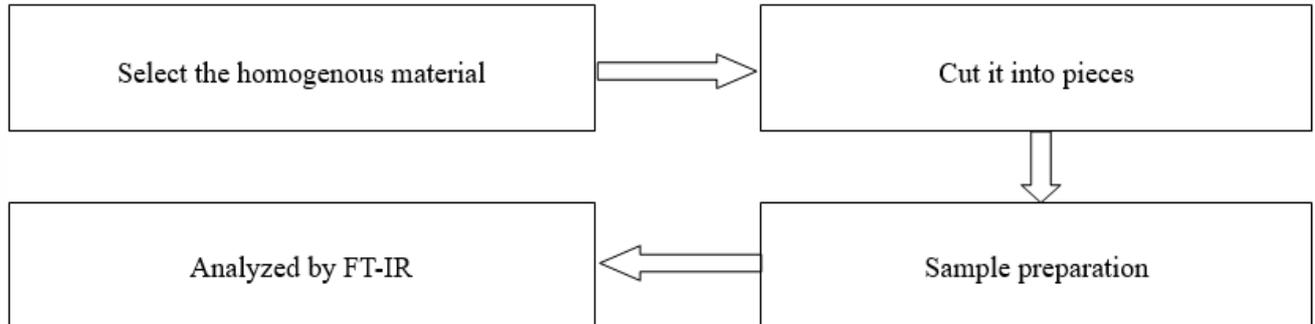


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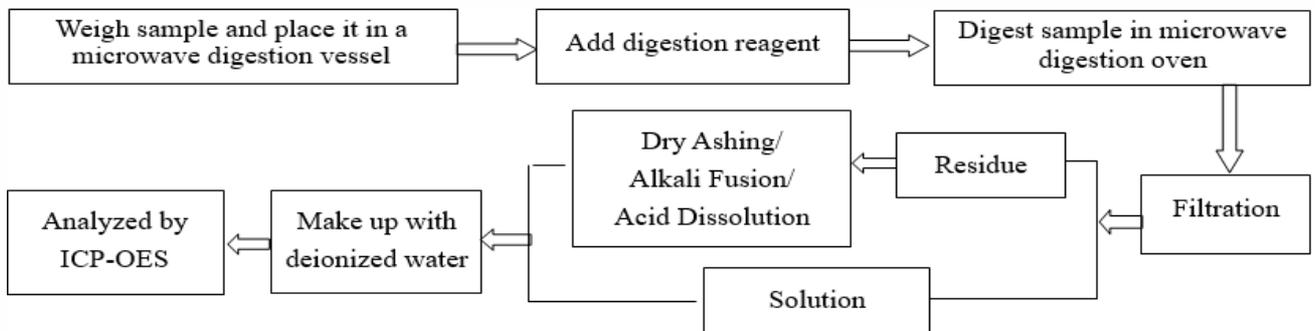
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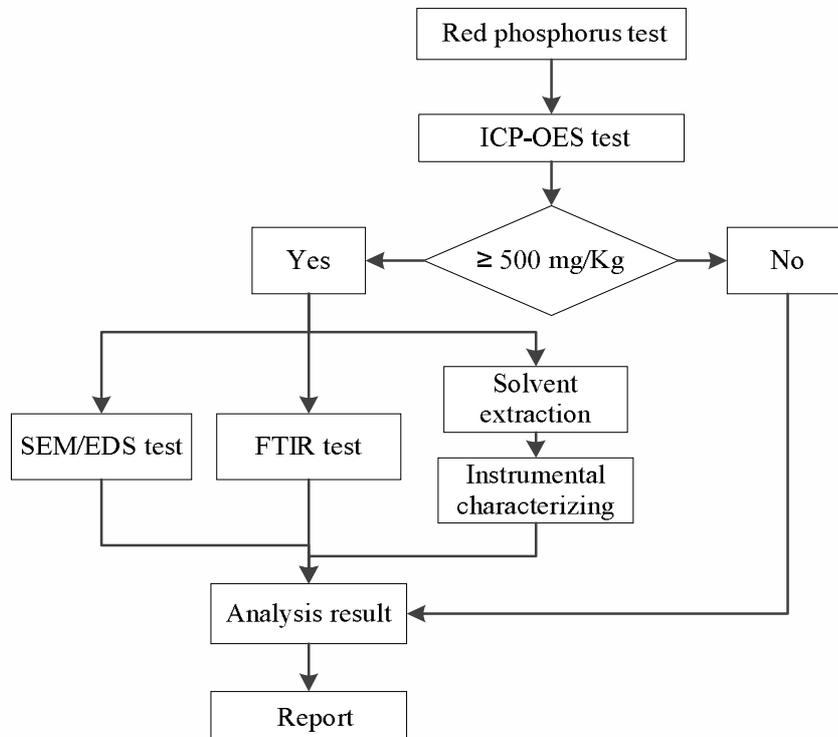
## 13. Polyvinyl Chloride (PVC)



## 14. Antimony trioxide ( Sb<sub>2</sub>O<sub>3</sub> )



## 15. Red phosphorus

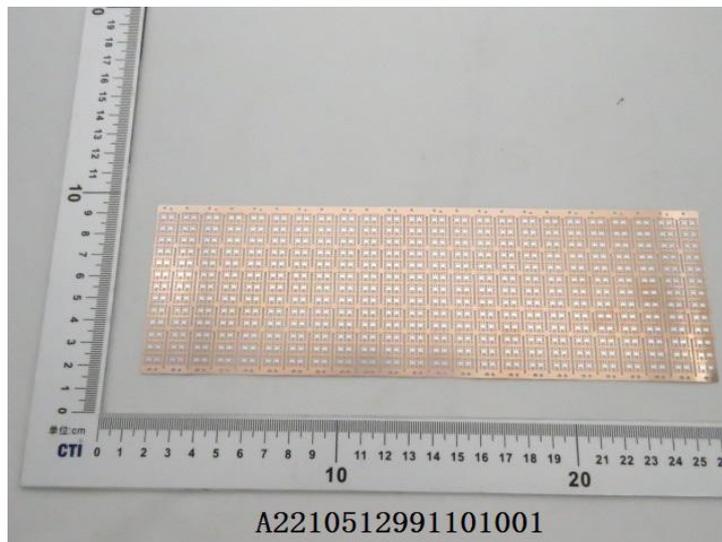


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## Photo(s) of the sample(s)



### Statement:

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant 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.

\*\*\* End of report \*\*\*