

Test Report

Report No. A218008057910100301

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Applicant MITSUI HIGH-TEC(SHANGHAI)CO.,LTD

Address NO.2001 XINJINQIAO 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 client

Sample Name Pd plating
Sample Received Date May 26, 2018
Testing Period May 26, 2018 to May 31, 2018

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), Beryllium(Be), Antimony(Sb), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Phthalates, Perfluorooctane Sulfonates (PFOS), Perfluorooctanoic Acid (PFOA), Organotin compounds, Hexabromocyclododecane (HBCDD), Poly Chloride Triphenyls (PCTs), Polychlorinated Biphenyls(PCBs), Polychlorinated Naphthalenes (PCNs), Polyvinyl Chloride (PVC), Short Chain Chlorinated Paraffins (SCCPs) 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

Reviewed by

Dong Yong min

Approved by

Date

May 31, 2018

Su Hongwei

Senior Laboratory Manager

Centre Testing International (Shanghai) Co., Ltd.

No. R201801824

No. 1996, Xinqinqiao Road, Pudong New District, Shanghai, China

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Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead(Pb)	Refer to IEC 62321-5:2013	ICP-OES
Cadmium(Cd)	Refer to IEC 62321-5:2013	ICP-OES
Mercury(Hg)	Refer to 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
Fluorine (F)	Refer to EN 14582:2016* ²	IC
Chlorine (Cl)	Refer to EN 14582:2016* ²	IC
Bromine (Br)	Refer to EN 14582:2016* ²	IC
Iodine (I)	Refer to EN 14582:2016* ²	IC
Phthalates(DNOP, DINP, DIDP, DNHP, DMEP, DHNUP, DIHP)	Refer to EN 14372:2004(E)	GC-MS
Antimony(Sb)	Refer to US EPA 3050B:1996 & US EPA 6010D:2014	ICP-OES
Beryllium(Be)	Refer to US EPA 3050B:1996 & US EPA 6010D:2014	ICP-OES
Perfluorooctane Sulfonates (PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Perfluorooctanoic Acid (PFOA)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Organotin compounds	Refer to ISO 17353:2004(E)	GC-MS
Short Chain Chlorinated Paraffins (SCCPs)	Refer to US EPA 3550C:2007 & US EPA 8270D:2014	GC-MS(NCI)
Polychlorinated Naphthalenes (PCNs)	Refer to US EPA 3550C:2007 & US EPA 8270D:2014	GC-MS
Polychlorinated Biphenyls(PCBs)	Refer to US EPA 3550C:2007 & US EPA 8270D:2014	GC-MS
Poly Chloride Triphenyls (PCTs)	Refer to US EPA 3550C:2007 & US EPA 8270D:2014	GC-MS
Polyvinyl Chloride (PVC)	JY/T 001:1996	FT-IR
Hexabromocyclododecane (HBCDD)	Refer to US EPA 3550C:2007 & US EPA 8270D:2014	GC-MS

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Test Result(s)

Tested Item(s)	Result	MDL
Lead(Pb)	N.D.	2 mg/kg
Cadmium(Cd)	N.D.	2 mg/kg
Mercury(Hg)	N.D.	2 mg/kg
Hexavalent Chromium(Cr(VI))	N.D. ▼	0.10 µg/cm ² (LOQ)
Tested Item(s)	Result	MDL
Polybrominated Biphenyls(PBBs)		
Monobromobiphenyl	N.D.	5 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
Polybrominated Diphenyl Ethers (PBDEs)		
Monobromodiphenyl ether	N.D.	5 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
Phthalates (DBP, BBP, DEHP, DIBP)		
Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg
Butyl benzyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg
Di-(2-ethylhexyl) phthalate(DEHP) CAS#:117-81-7	N.D.	50 mg/kg
Diisobutyl phthalate(DIBP) CAS#:84-69-5	N.D.	50 mg/kg
Tested Item(s)	Result	MDL
Beryllium(Be)	N.D.	10 mg/kg
Antimony(Sb)	N.D.	10 mg/kg
Tested Item(s)	Result	MDL
Fluorine(F)	N.D.	1 µg/cm ²
Chlorine(Cl)	N.D.	1 µg/cm ²
Bromine(Br)	N.D.	1 µg/cm ²
Iodine(I)	N.D.	1 µg/cm ²
Tested Item(s)	Result	MDL
Phthalates		
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
Di-n-hexyl phthalate(DNHP) CAS#:84-75-3	N.D.	50 mg/kg
Bis(2-methoxyethyl) phthalate(DMEP) CAS#:117-82-8	N.D.	50 mg/kg
*1,2-Benzenedicarboxylic acid, di-(C7-11)-branched and linear alkyl esters(DHNUP) CAS#:68515-42-4	N.D.	100 mg/kg
*1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich(DIHP) CAS#:71888-89-6	N.D.	100 mg/kg

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Test Result(s)

Tested Item(s)	Result	MDL
Perfluorooctane Sulfonates(PFOS)	N.D.	0.5 µg/m ²
Tested Item(s)	Result	MDL
Perfluorooctanoic Acid(PFOA)	N.D.	0.5 µg/m ²
Tested Item(s)	Result	MDL
Organotin compounds		
Dibutyltin(DBT)	N.D.	5 mg/kg
Tributyltin(TBT)	N.D.	5 mg/kg
Tributyltin oxide(TBTO) * ¹	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
Polychlorinated Naphthalenes(PCNs)	N.D.	5 mg/kg
Tested Item(s)	Result	MDL
Polyvinyl Chloride(PVC)	Negative	/
Tested Item(s)	Result	MDL
Hexabromocyclododecane(HBCDD)	N.D.	5 mg/kg
Tested Item(s)	Result	MDL
Short Chain Chlorinated Paraffins(SCCPs)	N.D.	100 mg/kg
Tested Item(s)	Result	MDL
Polychlorinated Triphenyls(PCTs)	N.D.	5 mg/kg
Tested Item(s)	Result	MDL
Polychlorinated Biphenyls(PCBs)		
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

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Tested Sample/Part Description Silvery plating

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

-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 $\mu\text{g}/\text{cm}^2$

-▼The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10 $\mu\text{g}/\text{cm}^2$. The coating is considered a non-Cr(VI) based coating.

-Negative = Not contained Polyvinyl Chloride(PVC)

-*: 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 = Concentration value of Tributyltin oxide by the conversion from the test results of Tributyl Tins.

-*² = The specified area sample is extracted by an ultrasonic bath in ultra-pure water, and then the extracted liquid is analyzed by IC.

-The test result(s) of this report is/are presented in reference to the result(s) that reported in A2180080579101003.

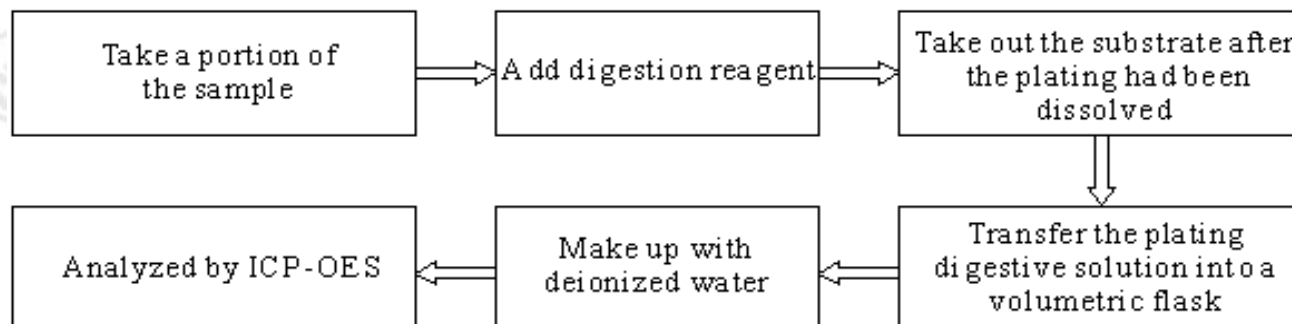
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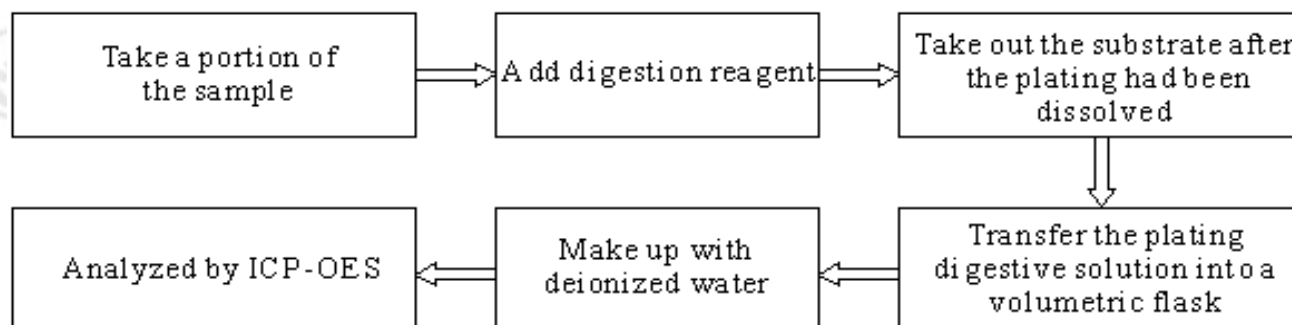
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Test Process

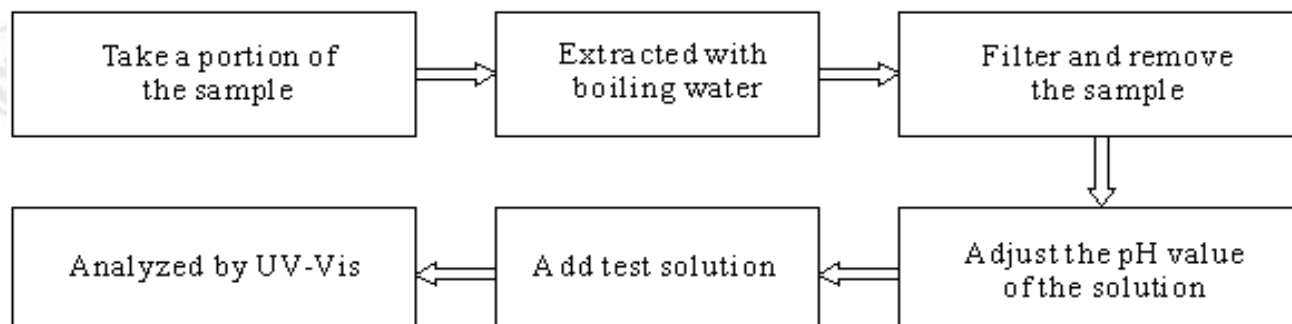
1. Lead(Pb), Cadmium(Cd)



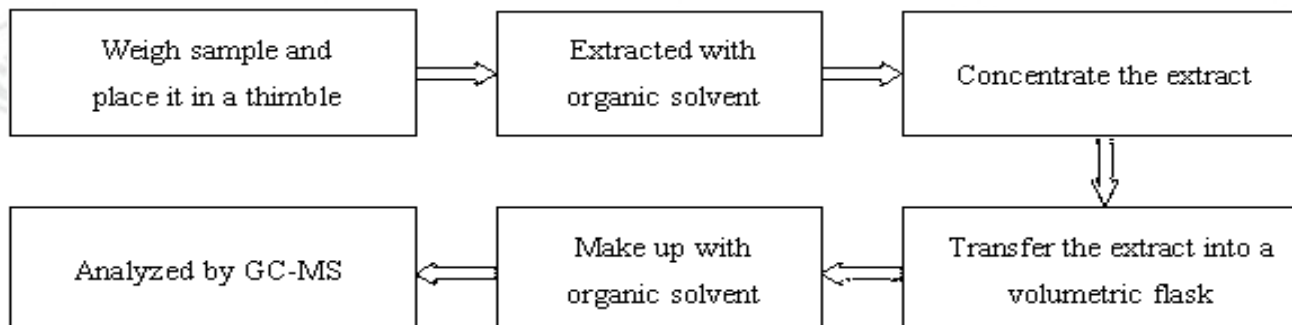
2. Mercury(Hg)



3. Hexavalent Chromium(Cr(VI))



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

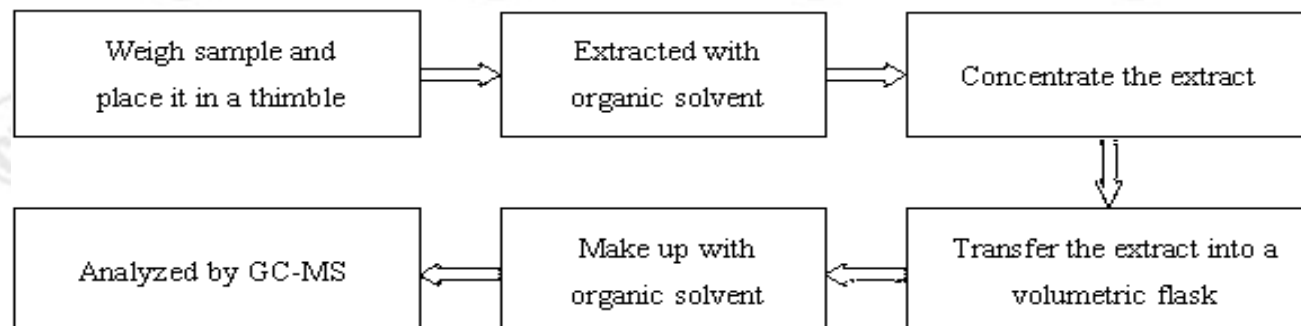


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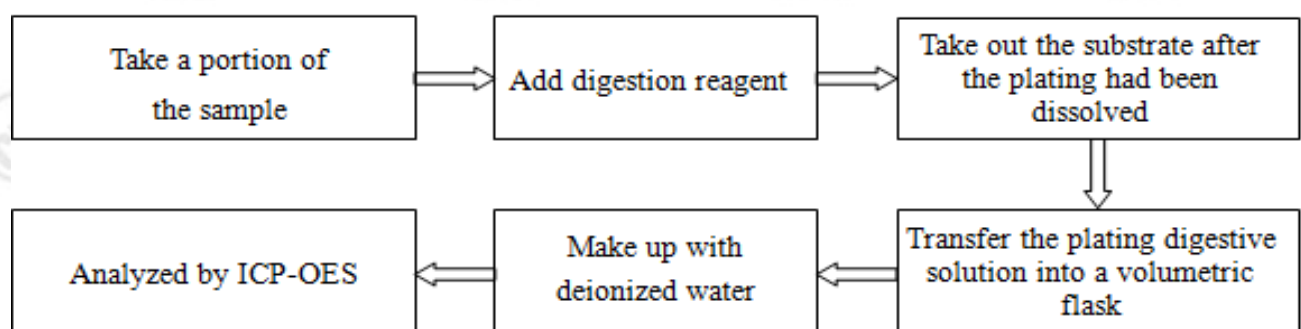
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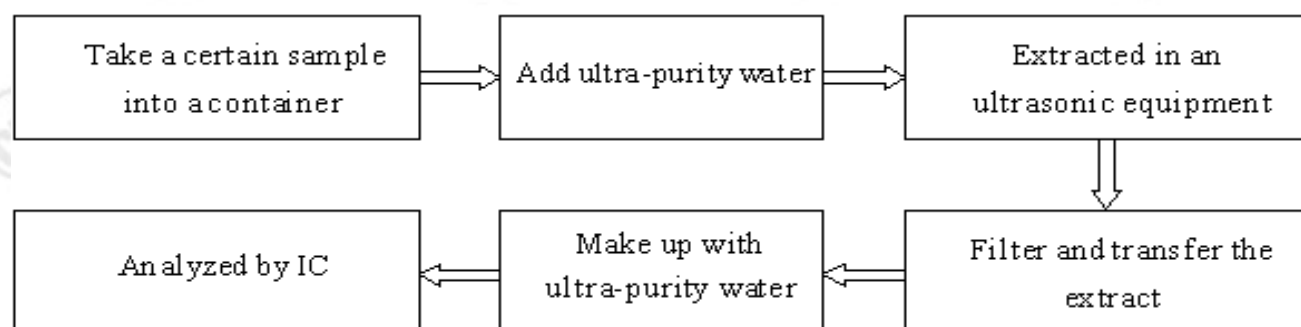
5. Phthalates



6. Beryllium(Be), Antimony(Sb)



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

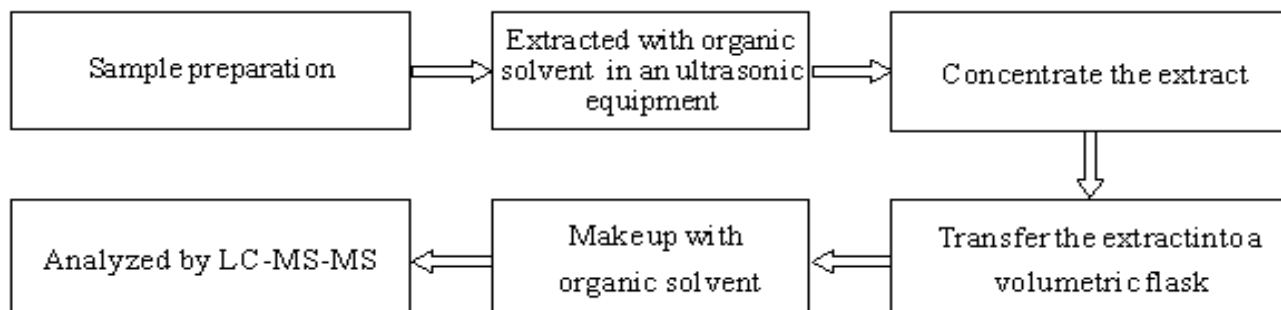


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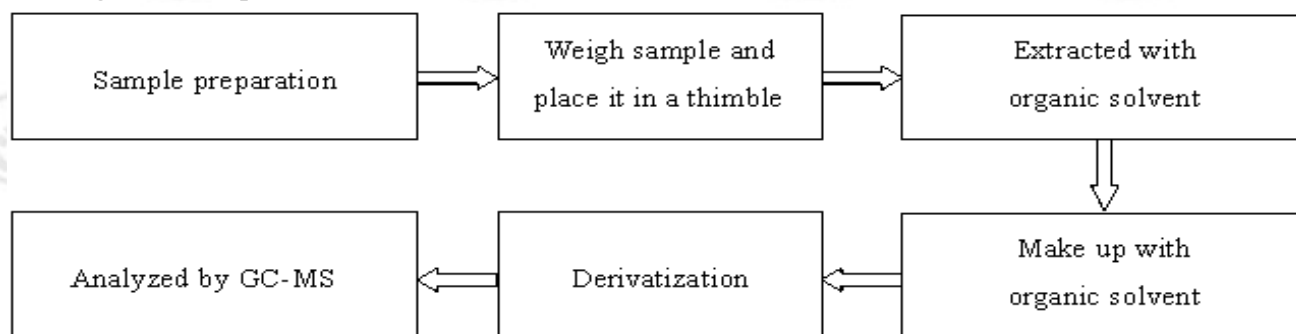
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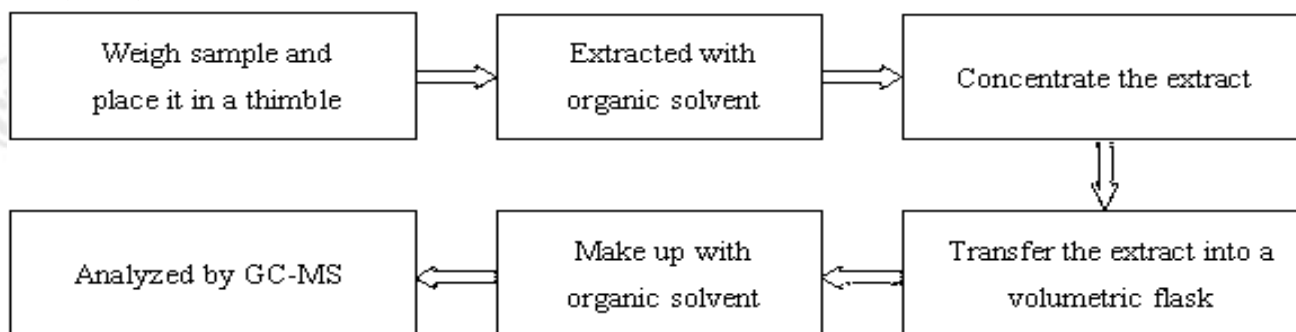
8. Perfluorooctane Sulfonates (PFOS), Perfluorooctanoic Acid (PFOA)



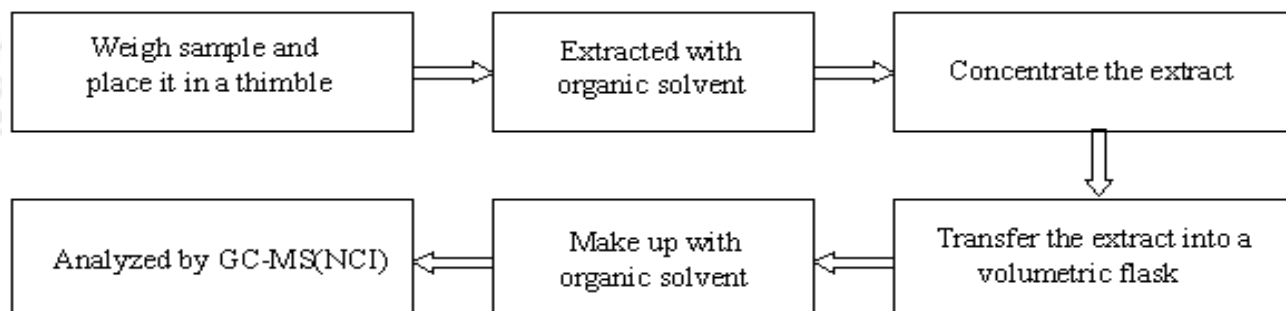
9. Organotin compounds



10. Poly Chloride Triphenyls (PCTs), Polychlorinated Biphenyls (PCBs), Polychlorinated Naphthalenes (PCNs)



11. Short Chain Chlorinated Paraffins (SCCPs)

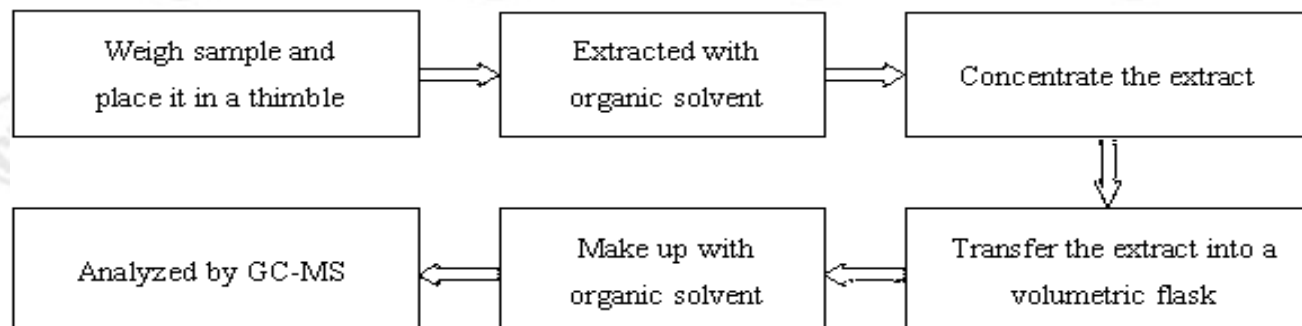


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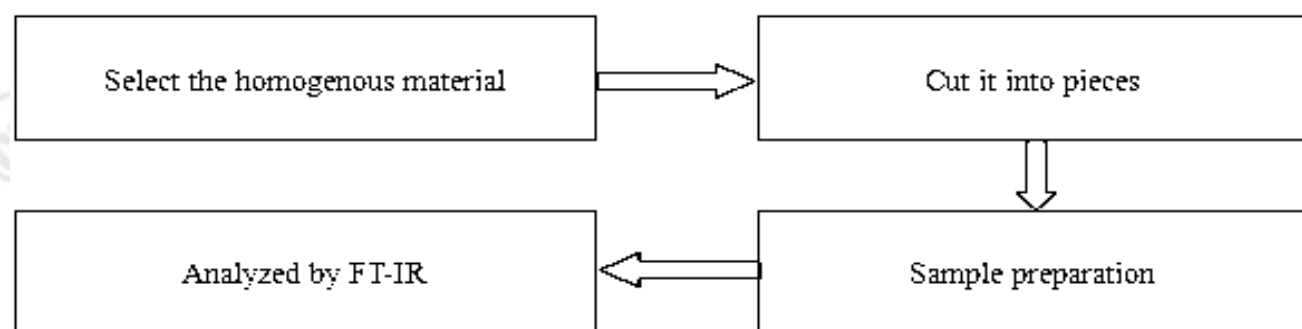
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12. Hexabromocyclododecane (HBCDD)



13. Polyvinyl Chloride (PVC)

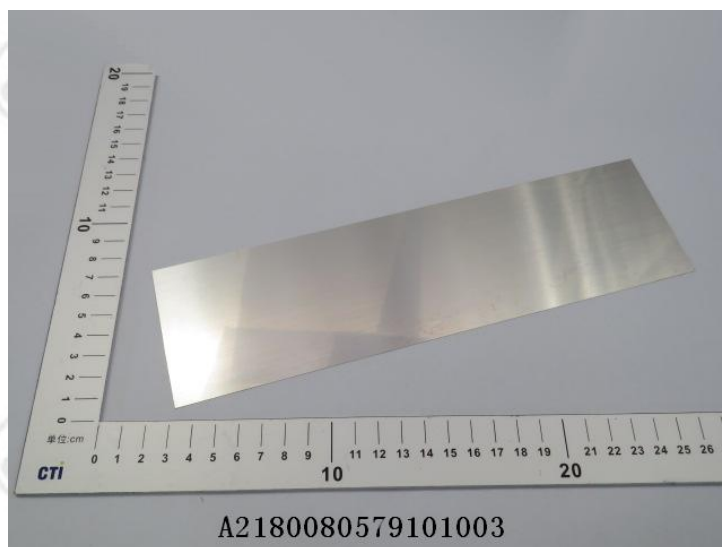


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Photo(s) of the sample(s)



*** 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.