

Test Report



Report No. A2230163012101003

Company Name shown on Report MITSUI HIGH-TEC INC.

Address 10-1, KOMINE2-CHOME, YAHATANISHIKU KITAKYUSHU, 807-8588, JAPAN

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

Sample Name Pd plating
Sample Received Date Apr. 13, 2023
Testing Period Apr. 13, 2023 to Apr. 19, 2023

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), Phthalates (DBP, BBP, DEHP, DIBP), Fluorine (F), Chlorine (Cl), Bromine (Br) Iodine (I), Phthalates, Organotin compounds, Antimony(Sb), Hexabromocyclododecane (HBCDD), Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA), Polychlorinated Biphenyls(PCBs), Polychlorinated Naphthalenes (PCNs), Polychlorinated terphenyls (PCTs), 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).



George Fong

Date

Apr. 19, 2023

Laboratory Manager

No. R392331204

Testing Center, Centre Testing International (Taiwan) Co., Ltd.

5F-6, No.9, Sec.2, Nankan Rd, Luzhu Dist., Taoyuan, Taiwan

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Test Method

| Test 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 | 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 |
| Phthalates | IEC 62321-8:2017 | GC-MS |
| Organotin compounds | Refer to US EPA 3550C:2007 & ISO 17353:2004 | GC-MS |
| Short Chain Chlorinated Paraffins (SCCPs) | Refer to US EPA 3550C:2007 & US EPA 8270E:2018 | GC-MS(NCI) |
| Polychlorinated Naphthalenes (PCNs) | 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 |
| Polychlorinated terphenyls (PCTs) | Refer to US EPA 3550C:2007 & US EPA 8270E:2018 | GC-MS |
| Polyvinyl Chloride (PVC) | Refer to JY/T 001-1996 | FT-IR |
| Hexabromocyclododecane (HBCDD) | IEC 62321-9:2021 | GC-MS |
| Perfluorooctanoic Acid(PFOA) | Refer to DIN CEN/TS 15968:2010 | LC-MS-MS |
| Perfluorooctane Sulfonates(PFOS) | Refer to DIN CEN/TS 15968:2010 | LC-MS-MS |
| Antimony(Sb) | Refer to US EPA 3050B:1996 & US EPA 6010D:2018 | ICP-OES |

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Test Result(s)

| Tested Item(s) | Result | MDL |
|------------------------------|--------|-------------------------------|
| | 003 | |
| 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 |
|--|--------|---------|
| | 003 | |
| 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 |
|---|--------|---------|
| | 003 | |
| 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 |
|--|--------|----------|
| | 003 | |
| Phthalates (DBP, BBP, DEHP, DIBP) | | |
| 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 |
| Dibutyl phthalate (DBP) CAS#:84-74-2 | N.D. | 50 mg/kg |
| Diisobutyl phthalate (DIBP) CAS#:84-69-5 | N.D. | 50 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Fluorine (F) | N.D. | 50 mg/kg |
| Chlorine (Cl) | N.D. | 50 mg/kg |
| Bromine (Br) | N.D. | 50 mg/kg |
| Iodine (I) | N.D. | 50 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Phthalates | | |
| Bis(2-methoxyethyl) phthalate (DMEP) CAS#:117-82-8 | N.D. | 50 mg/kg |
| Di-n-hexyl phthalate (DNHP/DHEXP) CAS#:84-75-3 | N.D. | 50 mg/kg |
| Di-iso-decyl phthalate (DIDP) CAS#:26761-40-0,68515-49-1 | N.D. | 50 mg/kg |
| Di-isononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0 | N.D. | 50 mg/kg |
| Di-n-octyl phthalate (DNOP) CAS#:117-84-0 | N.D. | 50 mg/kg |
| 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) CAS#:71888-89-6 | N.D. | 50 mg/kg |
| 1,2-Benzenedicarboxylic acid, di-(C7-11)-branched and linear alkyl esters (DHNUP) CAS#:68515-42-4 | N.D. | 50 mg/kg |

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Test Result(s)

| Tested Item(s) | Result | MDL |
|---|----------|------------|
| | 003 | |
| Organotin compounds | | |
| Dibutyltin (DBT) | N.D. | 5 mg/kg |
| Dioctyltin (DOT) | N.D. | 5 mg/kg |
| Tributyltin (TBT) | N.D. | 5 mg/kg |
| Triphenyltin (TPHT) | N.D. | 5 mg/kg |
| Tributyltin oxide (TBTO)* | N.D. | 5 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Antimony (Sb) | N.D. | 10 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| 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 |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Short Chain Chlorinated Paraffins (SCCPs) | N.D. | 50 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Polyvinyl Chloride (PVC) | Negative | / |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Perfluorooctanoic Acid (PFOA) | N.D. | 0.01 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Perfluorooctane Sulfonates (PFOS) | N.D. | 0.01 mg/kg |

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Test Result(s)

| Tested Item(s) | Result | MDL |
|-------------------------------------|--------|----------|
| | 003 | |
| Polychlorinated Triphenyls (PCTs) | N.D. | 5 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Hexabromocyclododecane (HBCDD) | N.D. | 20 mg/kg |
| Tested Item(s) | Result | MDL |
| | 003 | |
| Polychlorinated Naphthalenes (PCNs) | N.D. | 5 mg/kg |

Sample/Part Description

| No. | CTI Sample ID | Description |
|-----|---------------|-------------------|
| 1 | 003 | Iron gray plating |

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

-Negative = Not contained Polyvinyl Chloride(PVC)

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

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

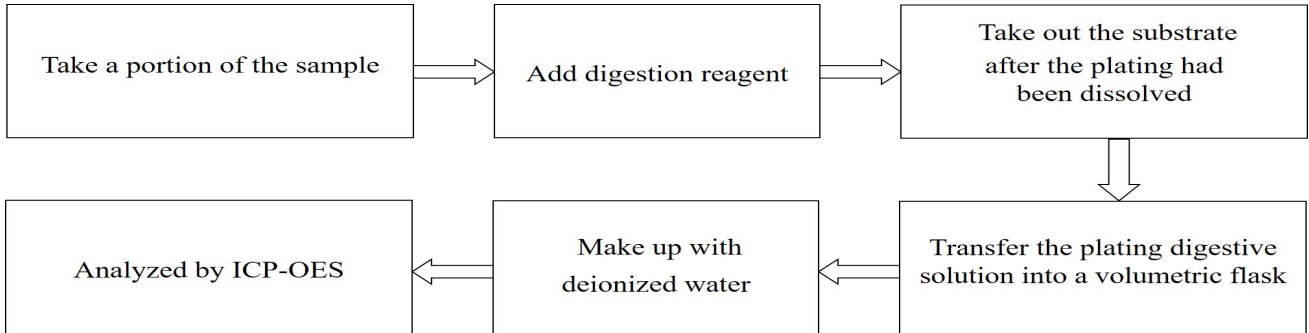
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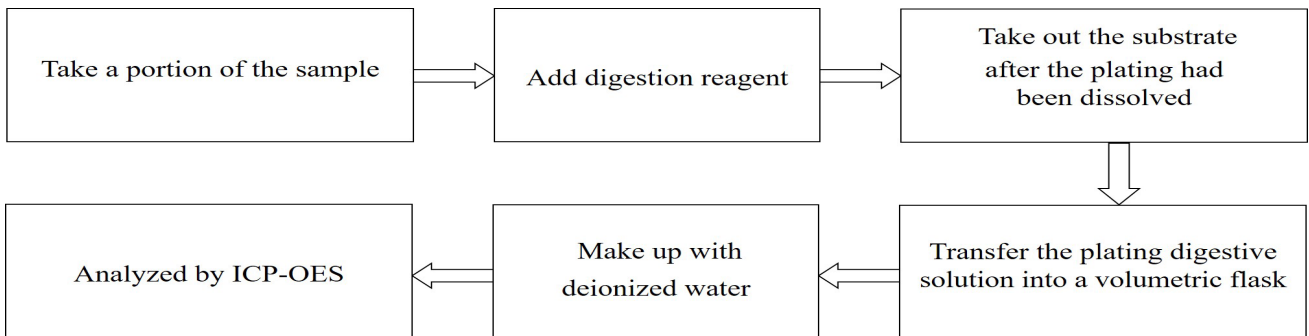
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Test Process

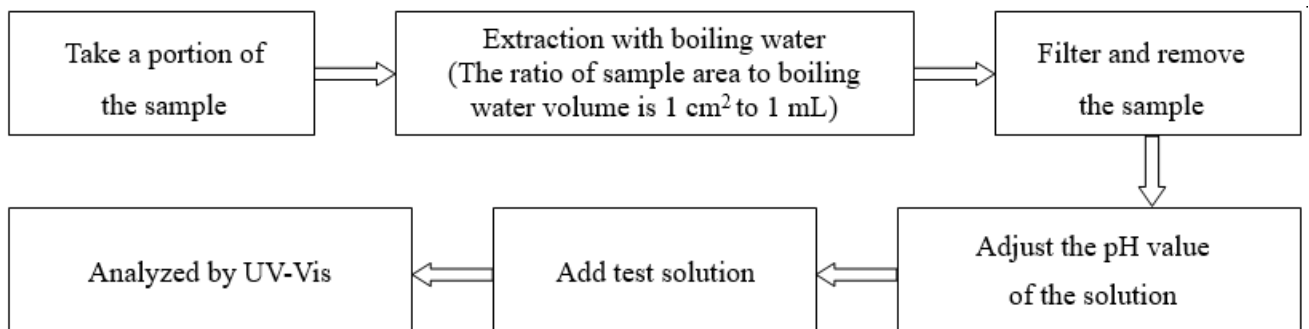
1. Lead (Pb), Cadmium (Cd)



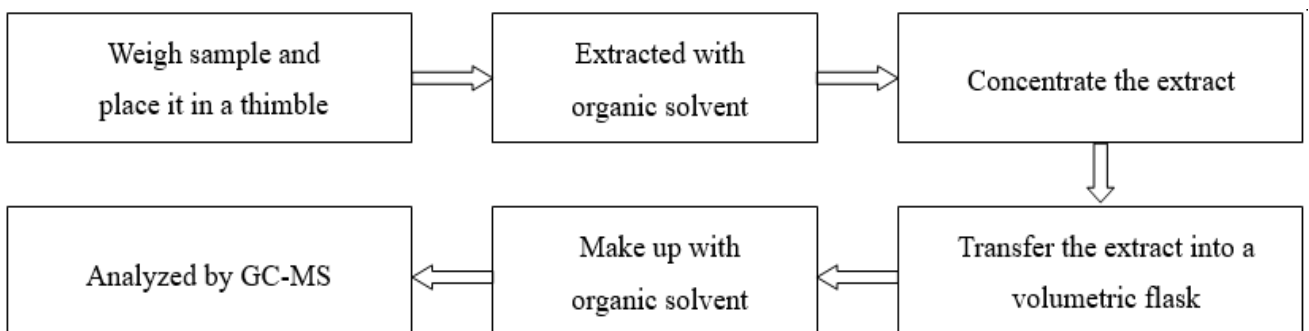
2. Mercury (Hg)



3. Hexavalent Chromium (Cr(VI))



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

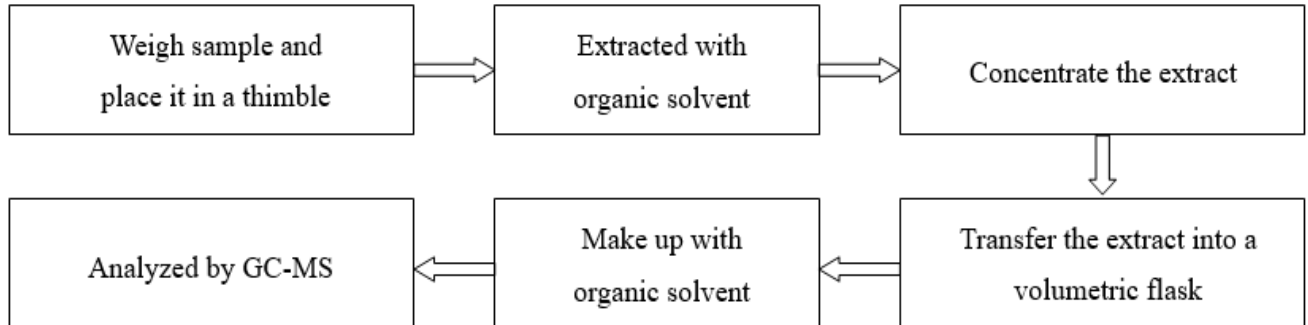


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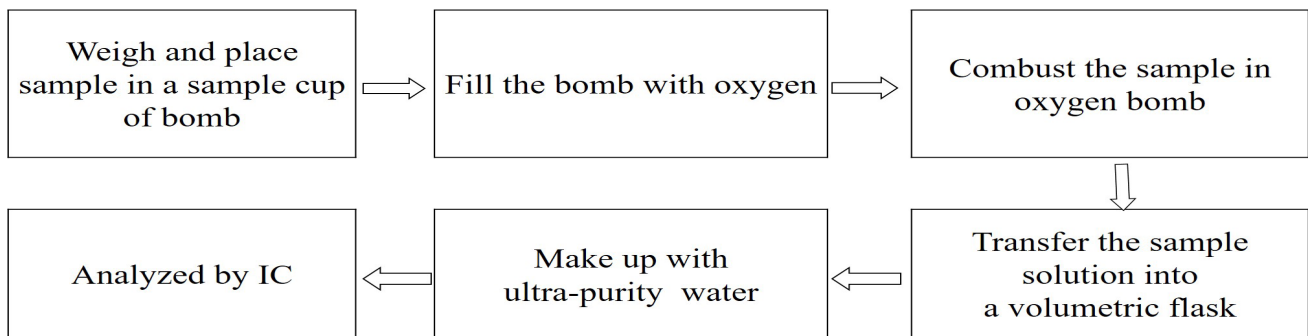
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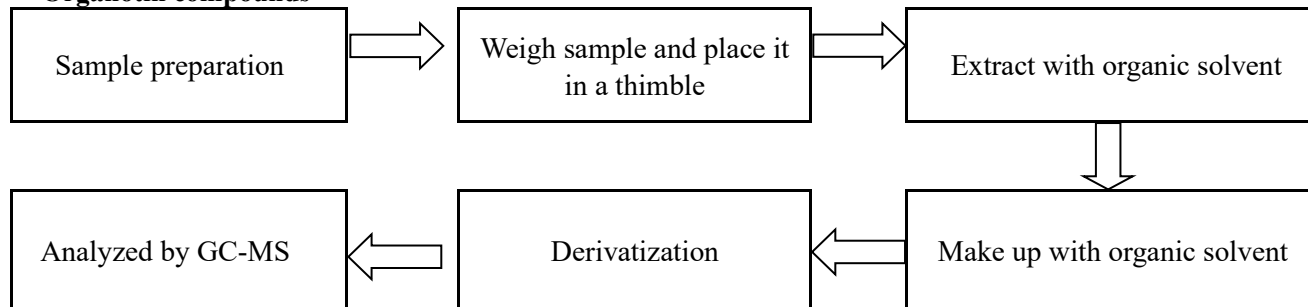
5. Phthalates (DBP, BBP, DEHP, DIBP), Phthalates



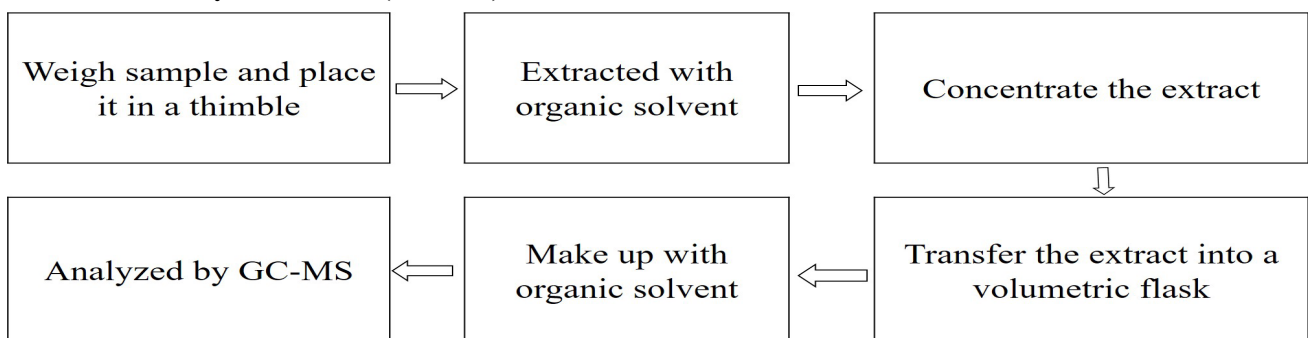
6. Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I)



7. Organotin compounds



8. Hexabromocyclododecane (HBCDD)

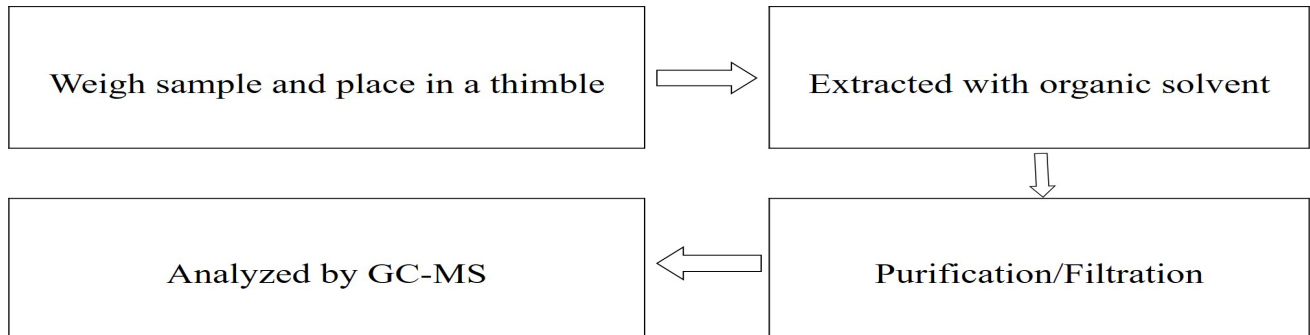


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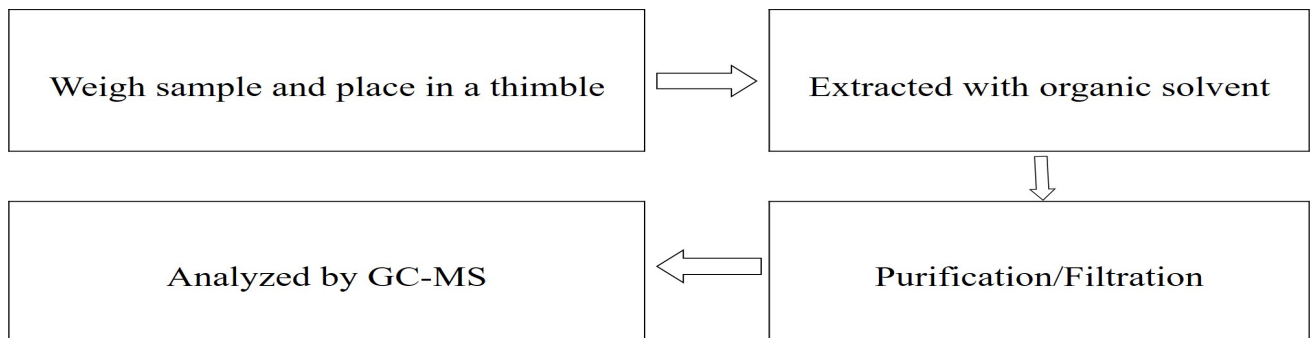
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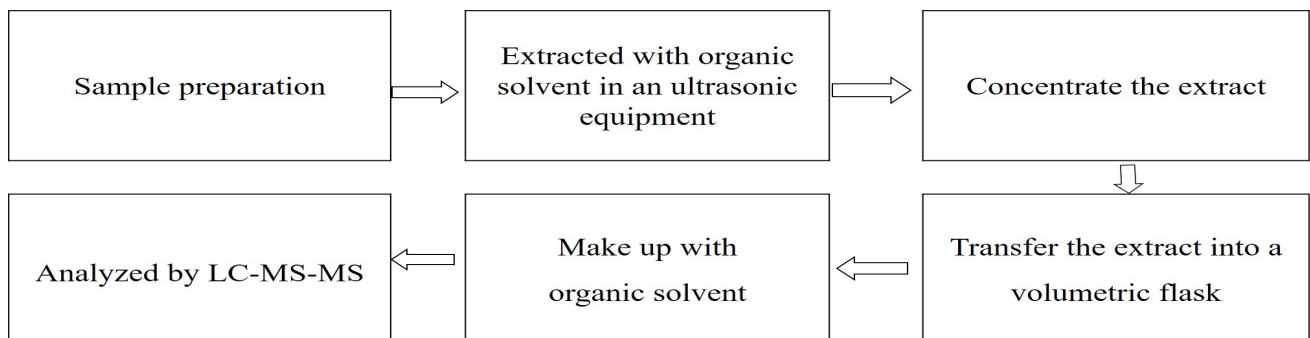
9. Polychlorinated Biphenyls(PCBs), Polychlorinated Naphthalenes (PCNs), Polychlorinated terphenyls (PCTs)



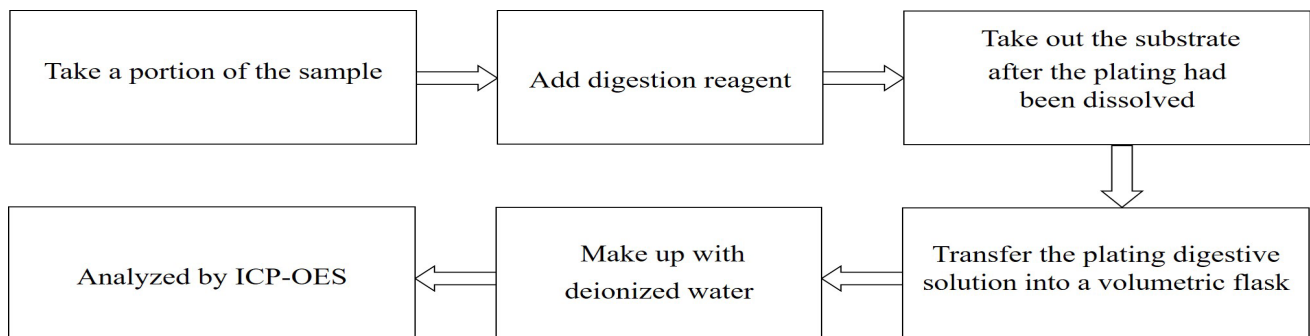
10. Short Chain Chlorinated Paraffins (SCCPs)



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



12. Antimony(Sb)

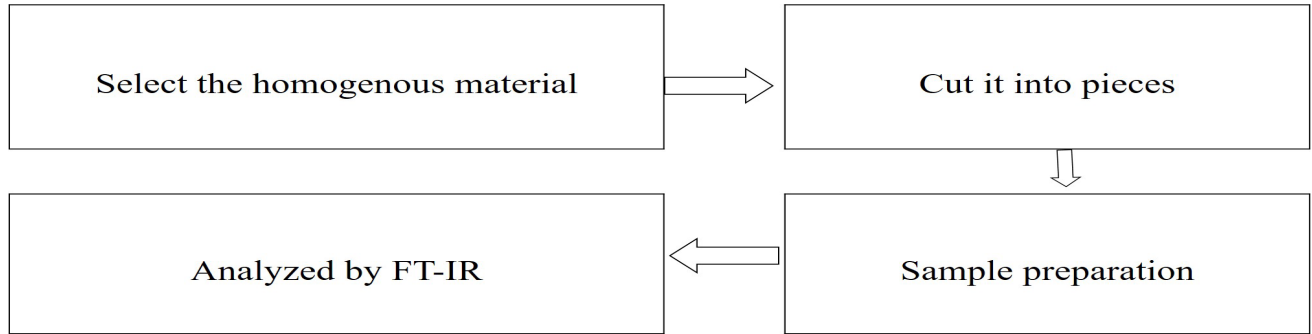


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13. Polyvinyl Chloride (PVC)

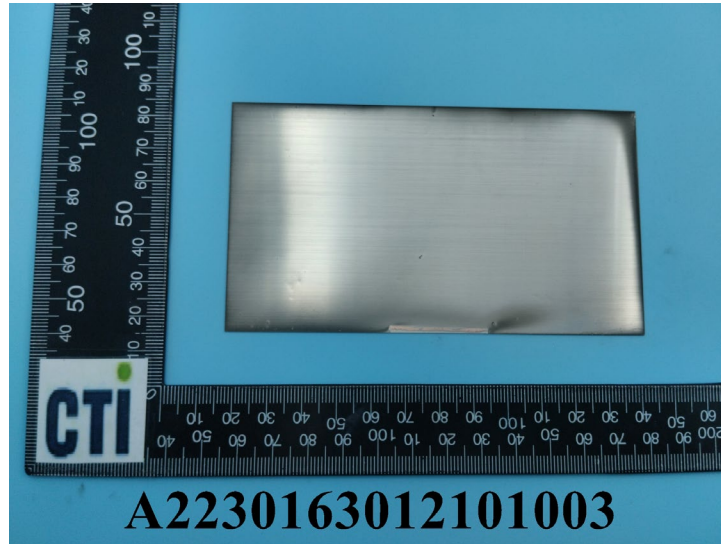


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Photo(s) of the sample(s)



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 ***