

TEST REPORT (测试报告件)

申请公司(APPLICANT) : SAMSUNG ELECTRO-MECHANICS
公司住所(ADDRESS) : 150, Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, Korea

报告号(REPORT NO.) : RT23R-S6381-008-C

日期(DATE) : 2023 年 10 月 30 日

样品描述(SAMPLE DESCRIPTION) :

样品名称 : Sn Plating Layer
(NAME/TYPE OF PRODUCT)
样品编号 : RT23R-S6381-008
(SAMPLE ID NO.)
生产商/贸易商 : SAMSUNG ELECTRO-MECHANICS
(MANUFACTURER/VENDOR)
样品收到日期 : 2023年 10月10日
(SAMPLE RECEIVED)
测试进行日期 : 2023年 10月10日至 2023年 10月30日
(TESTING DATE)
测试方法 : 参考续页.
(TEST METHOD(S)) : Please see the following page(s).
测试结果 : 参考续页.
(TEST RESULT(S)) : Please see the following page(s).

注1 : 检测结果只是针对来样所做的测试.
(Note 1 : The test results presented in this report relate only to the object tested.)

注2 : 未经测试实验室书面允许, 报告不能被部分复制.
(Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.)

测试 (Approved by) :



Jade Jang / 测试负责人

批准 (Authorized by) :



Bo Park / 实验室经理



Authenticity check

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| 测试项目 (TEST ITEM) | 单位 (UNIT) | 测试方法 (TEST METHOD) | 报告限量值 (MDL) | 结果 (RESULT) |
|---|--------------|---|----------------|----------------|
| 镉 (Cadmium, Cd) | mg/kg | 参照 IEC 62321-5 Edition 1.0 : 2013, 用 ICP-OES 进行的分析 | 0.5 | N.D. |
| 铅 (Lead, Pb) | mg/kg | | 5 | 46 |
| 汞 (Mercury, Hg) | mg/kg | 参照 IEC 62321-4 : 2013/AMD1 : 2017, 用 ICP-OES 进行的分析 | 2 | N.D. |
| 六价铬 (Hexavalent Chromium, Cr ⁶⁺) | mg/kg | 参照 IEC 62321-7-2 Edition 1.0 : 2017, by alkaline/toluene digestion 用 UV-VIS Spectrophotometer 进行的分析 | 8 | N.D. |
| 多溴联苯 (Polybrominated Biphenyl, PBBs) | | | | |
| 一溴联苯 (Monobromobiphenyl) | mg/kg | 参照 IEC 62321-6 Edition 1.0 : 2015, 用 GC/MS 进行的分析 | 5 | N.D. |
| 二溴联苯 (Dibromobiphenyl) | mg/kg | | 5 | N.D. |
| 三溴联苯 (Tribromobiphenyl) | mg/kg | | 5 | N.D. |
| 四溴联苯 (Tetrabromobiphenyl) | mg/kg | | 5 | N.D. |
| 五溴联苯 (Pentabromobiphenyl) | mg/kg | | 5 | N.D. |
| 六溴联苯 (Hexabromobiphenyl) | mg/kg | | 5 | N.D. |
| 七溴联苯 (Heptabromobiphenyl) | mg/kg | | 5 | N.D. |
| 八溴联苯 (Octabromobiphenyl) | mg/kg | | 5 | N.D. |
| 九溴联苯 (Nonabromobiphenyl) | mg/kg | | 5 | N.D. |
| 十溴联苯 (Decabromobiphenyl) | mg/kg | | 5 | N.D. |
| 多溴联苯醚 (Polybrominated Diphenyl Ether, PBDEs) | | | | |
| 一溴联苯醚 (Monobromodiphenyl ether) | mg/kg | 参照 IEC 62321-6 Edition 1.0 : 2015, 用 GC/MS 进行的分析 | 5 | N.D. |
| 二溴联苯醚 (Dibromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 三溴联苯醚 (Tribromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 四溴联苯醚 (Tetrabromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 五溴联苯醚 (Pentabromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 六溴联苯醚 (Hexabromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 七溴联苯醚 (Heptabromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 八溴联苯醚 (Octabromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 九溴联苯醚 (Nonabromodiphenyl ether) | mg/kg | | 5 | N.D. |
| 十溴联苯醚 (Decabromodiphenyl ether) | mg/kg | | 5 | N.D. |

Tested by : Jooyeon Lee, Chano Kim, Hayan Park

注释 (Notes) : mg/kg = ppm = 百万分之一 (parts per million)
 <= 小于 (Less than)
 N.D.= 未检出 (Not detected (<MDL))
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TEST REPORT (测试报告件)

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|--------------------------------|--------------|--|----------------|----------------|
| 溴 (Bromine, Br) | mg/kg | 参考 EN 14582, IC 测试定量 | 30 | N.D. |
| 氯 (Chlorine, Cl) | mg/kg | 参考 EN 14582, IC 测试定量 | 30 | N.D. |
| 氟 (Fluorine, F) | mg/kg | 参考 EN 14582, IC 测试定量 | 30 | N.D. |
| 砷 (Arsenic, As) | mg/kg | 参考 US EPA 3052, 酸消化法处理样品, ICP-OES 测试定量 | 2 | N.D. |
| 铍 (Beryllium, Be) | mg/kg | 参考 US EPA 3052, 酸消化法处理样品, ICP-OES 测试定量 | 2 | N.D. |
| 锑 (Antimony, Sb) | mg/kg | 参考 US EPA 3052, 酸消化法处理样品, ICP-OES 测试定量 | 2 | N.D. |
| 聚氯乙烯 (Polyvinyl chloride, PVC) | - | 参考 KS K 0210-1, FT-IR 测试定量 | N.A. | Negative |

Tested by : Chano Kim, Jooyeon Lee

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<= 小于 (Less than)

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N.A. = 不适用 (Not applicable)

Negative = Undetectable

Positive = Detectable



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|---|--------------|---|----------------|----------------|
| 六溴环十二烷 (Hexabromocyclododecane, HBCDD) | mg/kg | 参考 IEC 62321-9 : 2021, 溶剂萃取法, LC/MS 和 GC/MS 测试定量 | 10 | N.D. |
| SCCP (Short-chain chlorinated paraffin) | mg/kg | 参考 US EPA 3540C, 溶剂萃取法, LC/MS/MS 和/或 GC/ECD 测试定量 | 100 | N.D. |
| PCBs (Polychlorinated biphenyls) | mg/kg | 参考 US EPA 3540C/8082, 溶剂萃取法, GC/MS 测试定量 | 5 | N.D. |
| PCTs (Polychlorinated terphenyls) | mg/kg | 参考 US EPA 3540C, 溶剂萃取法, GC/MS 测试定量 | 5 | N.D. |
| PCNs (Polychlorinated naphthalenes) | mg/kg | 参考 US EPA 3540C, 溶剂萃取法, GC/MS 测试定量 | 5 | N.D. |
| PCP (Pentachlorophenol) | mg/kg | 参考 ISO 17070, GC/MS 测试定量 | 5 | N.D. |
| PFOA (Perfluorooctanoic acid) | mg/kg | 参考 US EPA 3550C/8321B, 超声萃取法, LC/MS 或 LC/MS/MS 测试定量 | 0.025 | N.D. |
| PFOS (Perfluorooctane sulfonate) | mg/kg | 参考 US EPA 3550C/8321B, 超声萃取法, LC/MS 或 LC/MS/MS 测试定量 | 0.1 | N.D. |

Tested by : Hayan Park

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 样品名称(SAMPLE DESCRIPTION) : Sn Plating Layer

| 测试项目 (TEST ITEM) | CAS 数 (CAS NO.) | 单位 (UNIT) | 测试方法 (TEST METHOD) | 报告限量值 (MDL) | 结果 (RESULT) |
|---|--------------------------|--------------|---|----------------|----------------|
| 邻苯二甲酸酯 (Phthalates) | | | | | |
| 邻苯二甲酸二丁酯 (Di-n-butyl Phthalate, DBP) | 84-74-2 | mg/kg | 参考 IEC 62321-8 Edition 1.0 : 2017, 溶剂萃取法, 气相色谱/质谱联用仪 测试定量 | 50 | N.D. |
| 邻苯二甲酸二(2-乙基己基)酯 (Di(2-ethyl hexyl) phthalate, DEHP) | 117-81-7 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二辛酯 (Di-n-octyl phthalate, DNOP) | 117-84-0 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二异壬酯 (Diisononyl phthalate, DINP) | 28553-12-0 68515-48-0 | mg/kg | | 100 | N.D. |
| 邻苯二甲酸二异癸酯 (Diisodecyl phthalate, DIDP) | 26761-40-0 68515-49-1 | mg/kg | | 100 | N.D. |
| 邻苯二甲酸丁酯苯甲酯 (Benzyl butyl phthalate, BBP) | 85-68-7 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二异丁酯 (Diisobutyl phthalate, DIBP) | 84-69-5 | mg/kg | | 50 | N.D. |
| 酞酸二甲酯 (Dimethyl phthalate, DMP) | 131-11-3 | mg/kg | | 50 | N.D. |
| 酞酸二乙酯 (Diethyl phthalate, DEP) | 84-66-2 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二戊酯 (Di-n-pentyl phthalate, DPP) | 131-18-0 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二己酯 (Di-n-hexyl phthalate, DNHP) | 84-75-3 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二 C6-8 支链烷基酯(富 C7) (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich, DIHP) | 71888-89-6 | mg/kg | | 50 | N.D. |

Tested by : Hayan Park

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 样品名称(SAMPLE DESCRIPTION) : Sn Plating Layer

| 测试项目 (TEST ITEM) | CAS 数 (CAS NO.) | 单位 (UNIT) | 测试方法 (TEST METHOD) | 报告限量值 (MDL) | 结果 (RESULT) |
|--|--------------------|--------------|---|----------------|----------------|
| 1,2-邻苯二酸二(C7-11 支鏈與直鏈)烷酯 (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters, DHNUP) | 68515-42-4 | mg/kg | 参考 IEC 62321-8 Edition 1.0 : 2017, 溶剂萃取法, 气相色谱/质谱联用仪 测试定量 | 50 | N.D. |
| 邻苯二甲酸二甲氧乙酯 (Di(2-methoxyethyl) phthalate, DMEP) | 117-82-8 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二异戊酯 (Diisopentylphthalate, DIPP) | 605-50-5 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸正戊基异戊基酯 (N-pentyl-isopentylphthalate, NPIP) | 776297-69-9 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二环己酯 (Dicyclohexyl phthalate, DCHP) | 84-61-7 | mg/kg | | 50 | N.D. |
| 邻苯二甲酸二(2-丙基庚基)酯 (Dipropylheptyl phthalate, DPHP) | 53306-54-0 | mg/kg | | 50 | N.D. |

Tested by : Hayan Park

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样品编号(SAMPLE ID NO.) : RT23R-S6381-008
样品名称(SAMPLE DESCRIPTION) : Sn Plating Layer

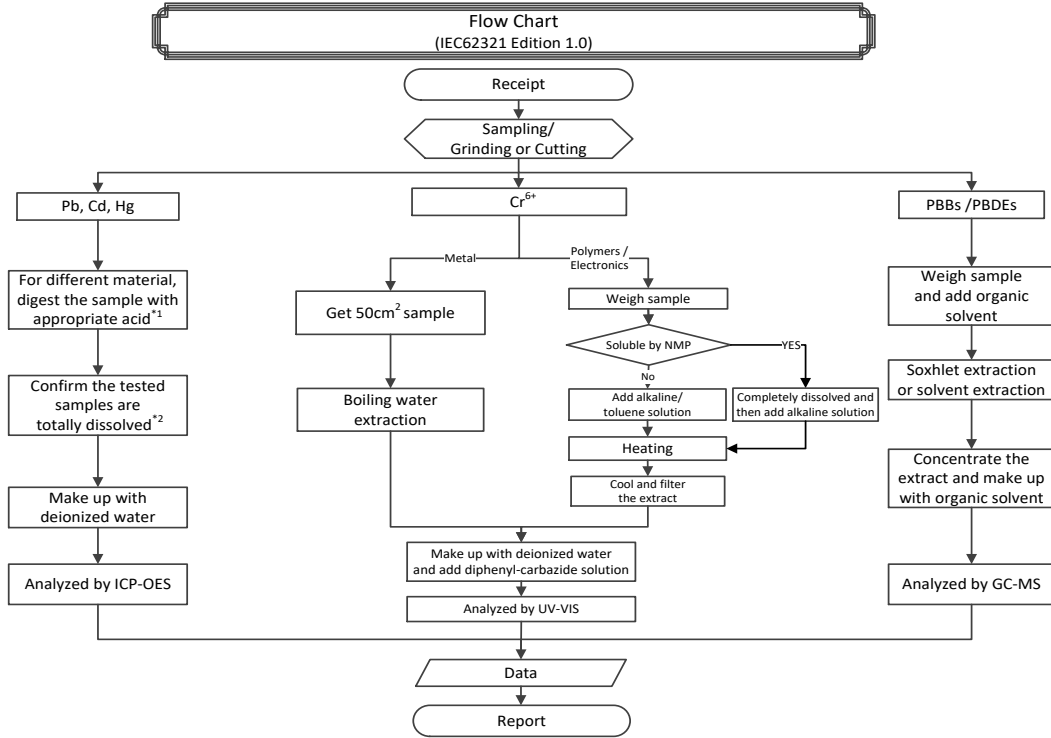
* 样品相片; -

(View of sample as received;-)



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Remarks :

*1 : List of appropriate acid :

| Material | Acid added for digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |

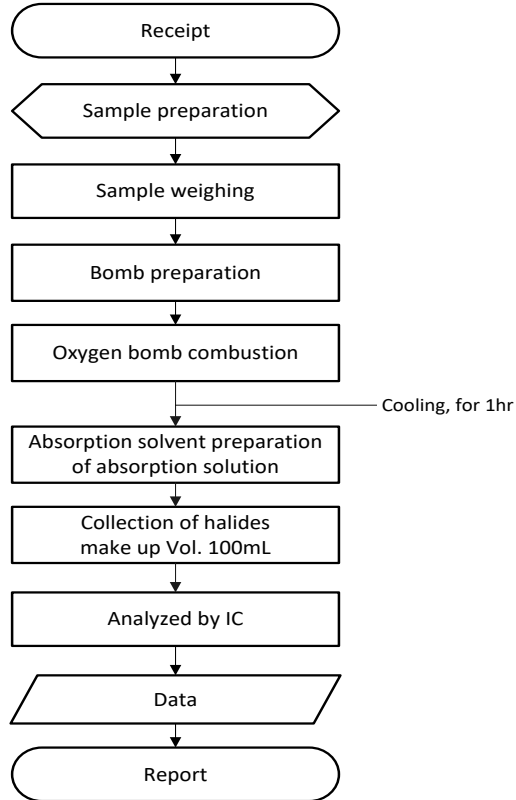
*2 : The samples were dissolved totally by pre-conditioning method according to above flow chart.



TEST REPORT (测试报告件)

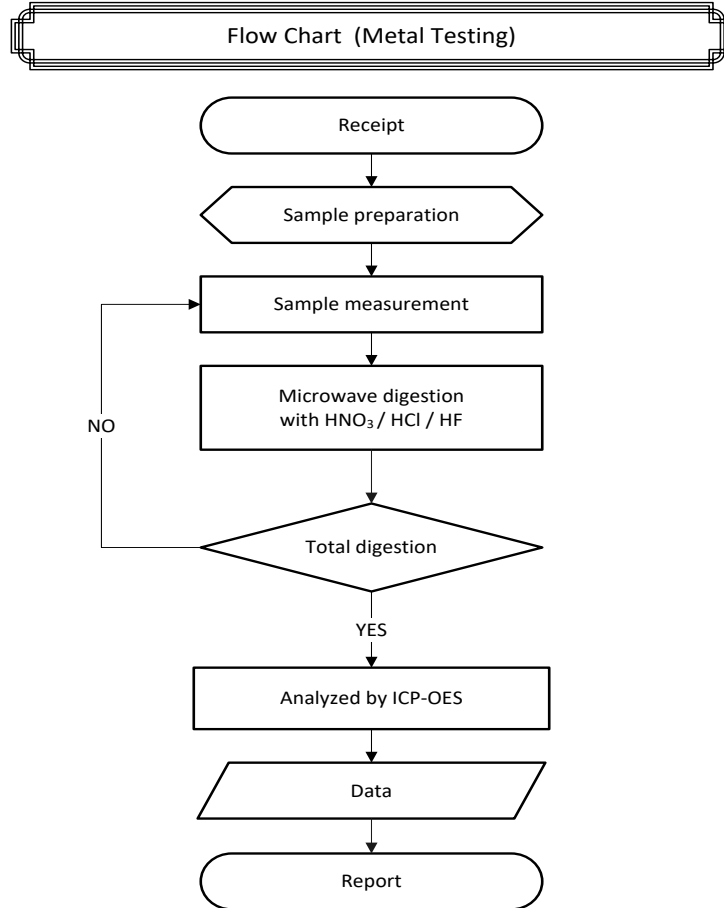
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样品名称(SAMPLE DESCRIPTION) : Sn Plating Layer

Flow Chart (EN14582)



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样品名称(SAMPLE DESCRIPTION) : Sn Plating Layer



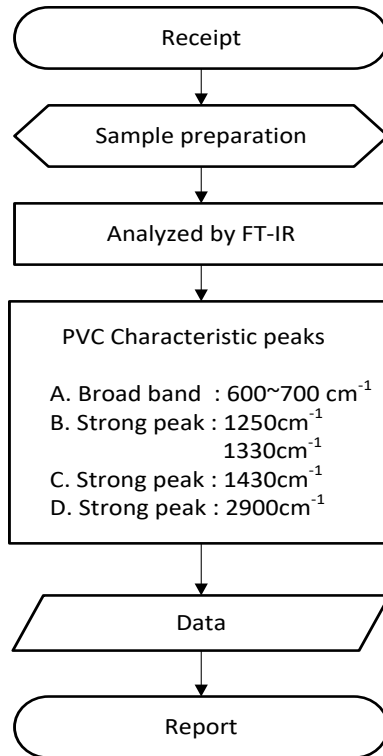
** Remarks : The samples were dissolved totally by pre-conditioning method according to above flow chart.



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Flow Chart (PVC)



TEST REPORT (测试报告件)

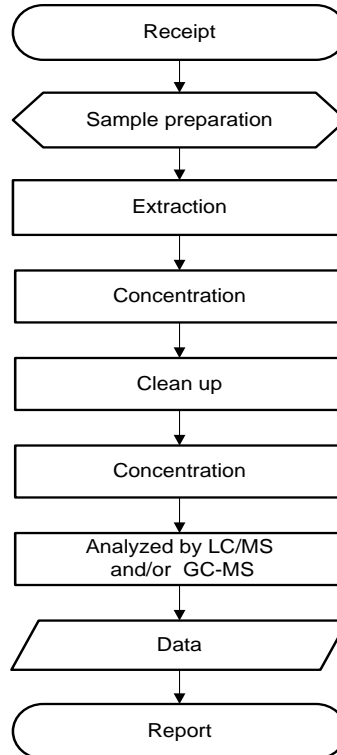
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样品名称(SAMPLE DESCRIPTION) : Sn Plating Layer

Flow Chart (HBCDD)



Intertek Testing Services Korea Ltd.

Seoul Office: Tel : 02-6090-9500 Fax : 02-3409-0025 Web Site : intertek.co.kr

Seoul Lab. Address : 7, Ahasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea

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TEST REPORT (测试报告件)

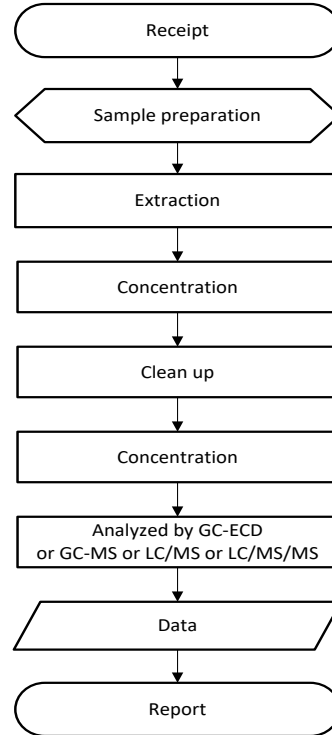
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Flow Chart (EPA 3540C)



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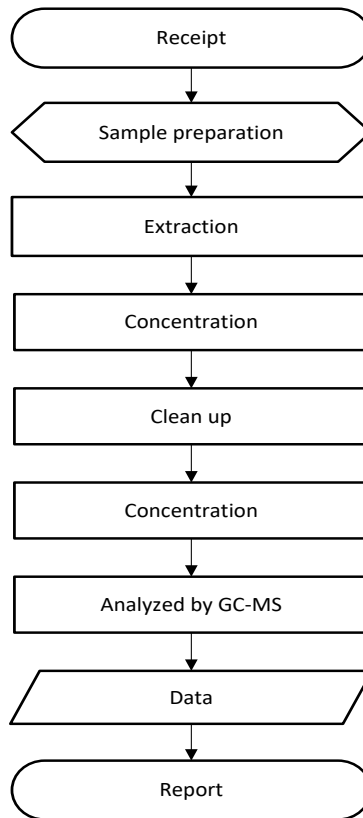


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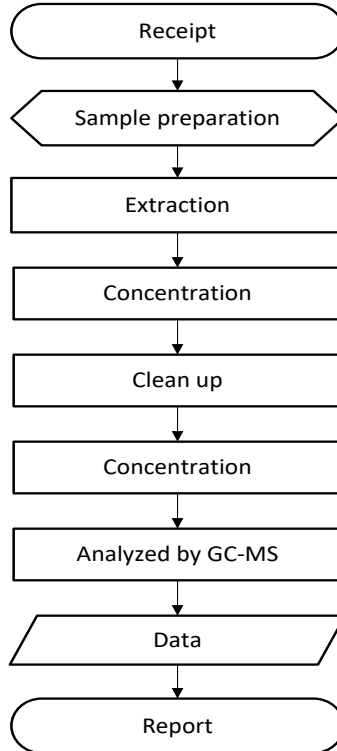
Flow Chart (PCB, PCT, PCN)



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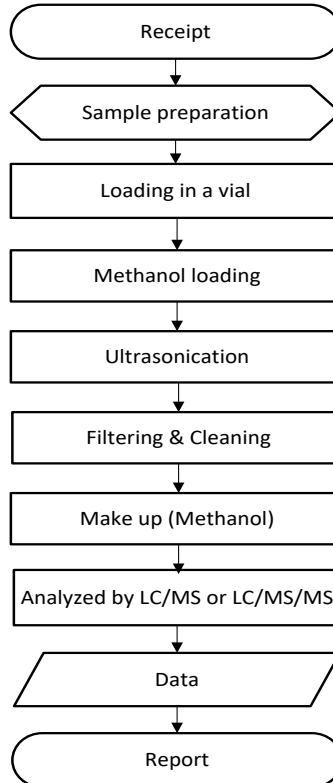
Flow Chart (PCP)



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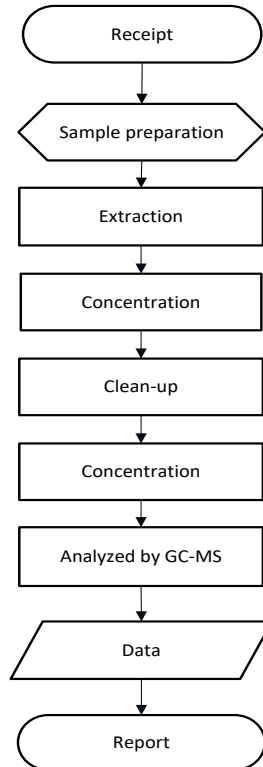
Flow Chart (PFOS, PFOA)



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Flow Chart (Phthalates)



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