CTI 華測檢測

# 檢測報告
# Test Report



| | |
|---|---|
| **報告抬頭公司名稱 Company Name shown on Report** | 鴻星科技(集團)股份有限公司<br>HOSONIC TECHNOLOGY (GROUP) CO., LTD. |
| **地　址 Address** | 浙江省杭州市余杭区良渚街道莫干山路 2880 号<br>NO.2880 MOGANSHAN ROAD LIANGZHU STREET, YUHANG DIST, HANGZHOU ZHEJIANG |

**以下測試之樣品及樣品資訊由申請者提供並確認**
**The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant**

| | |
|---|---|
| 樣品名稱 Sample Nam | SMD Crystal Series ,Thermistor Crystal Series and SMD Crystal Oscillator Series |
| 樣品型號 Model No. | Seam Sealing Crystal,Thermistor Crystal and SMD OSC/VCXO/PECL/LVDS |
| 供應商 Supplier | 鴻星科技(集團)股份有限公司 HOSONIC TECHNOLOGY (GROUP) CO., LTD. |
| 樣品接收日期<br>Sample Received Date | 2025.03.11<br>Mar. 11, 2025 |
| 樣品檢測日期<br>Testing Period | 2025.03.11-2025.03.17<br>Mar. 11, 2025 to Mar. 17, 2025 |

| | |
|---|---|
| **檢測要求** | 根據客戶要求，對所提交樣品中的鉛(Pb)、鎘(Cd)、汞(Hg)、六價鉻(Cr(VI))、多溴聯苯(PBBs)、多溴二苯醚(PBDEs)、鄰苯二甲酸酯(DBP, BBP, DEHP, DIBP)、氟(F)、氯(Cl)、溴(Br)、碘(I)、鄰苯二甲酸酯、全氟辛酸(PFOA)及其鹽,全氟辛烷磺酸(PFOS)及其鹽和相關物質，六溴環十二烷(HBCDD)、鈹(Be)、銻(Sb)、砷(As)進行測試。 |
| **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 , Perfluorooctanoic acid (PFOA) and its salts, Perfluorooctanesulfonic acid (PFOS) and its salts & related substances, Hexabromocyclododecane (HBCDD), Beryllium(Be), Antimony(Sb), Arsenic(As) in the submitted sample(s). |
| **檢測依據/檢測結果 Test Method/Test Result(s)** | 請參見下頁。<br>Please refer to the following page(s). |


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批　准 Approved by　馮智聰

日　期 Date　2025.03.17

馮智聰
實驗室經理 Laboratory Manager


No. R175255605
台灣華測檢測技術有限公司檢測中心
Testing Center, Centre Testing International (Taiwan) Co., Ltd.
桃園市蘆竹區南崁路二段 9 號 5 樓之 6
5F 6, No.9, Sec.2, Nankan Rd, Luzhu Dist., Taoyuan, Taiwan

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**檢測依據 Test Method**

| 測試項目 Tested Item(s) | 測試方法 Test Method | 測試儀器 Measured Equipment(s) |
|---|---|---|
| 鉛 Lead (Pb) | IEC 62321-5:2013 | ICP-OES |
| 鎘 Cadmium (Cd) | IEC 62321-5:2013 | ICP-OES |
| 汞 Mercury (Hg) | IEC 62321-4:2013+AMD1:2017 CSV | ICP-OES |
| 六價鉻 Hexavalent Chromium (Cr(VI)) | IEC 62321-7-2:2017 和/或 IEC 62321-5:2013 測試總鉻含量 IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013 | UV-Vis/ICP-OES |
| 多溴聯苯 Polybrominated Biphenyls (PBBs) | IEC 62321-6:2015 | GC-MS |
| 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs) | IEC 62321-6:2015 | GC-MS |
| 鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP) | IEC 62321-8:2017 | GC-MS |
| 氟 Fluorine (F) | 參考 EN 14582:2016 Refer to EN 14582:2016 | IC |
| 氯 Chlorine (Cl) | 參考 EN 14582:2016 Refer to EN 14582:2016 | IC |
| 溴 Bromine (Br) | 參考 EN 14582:2016 Refer to EN 14582:2016 | IC |
| 碘 Iodine (I) | 參考 EN 14582:2016 Refer to EN 14582:2016 | IC |
| 鄰苯二甲酸酯 Phthalates | IEC 62321-8:2017 | GC-MS |
| 全氟辛酸 Perfluorooctanoic acid (PFOA) and its salts | 參考 CEN/TS 15968:2010 Refer to CEN/TS 15968:2010 | LC-MS-MS |
| 全氟辛烷磺酸 Perfluorooctanesulfonic acid (PFOS) and its salts & related substances | 參考 CEN/TS 15968:2010 Refer to CEN/TS 15968:2010 | LC-MS-MS |
| 鈹 Beryllium(Be) | 參考 US EPA 3050B:1996 & US EPA 6010D:2018 Refer to US EPA 3050B:1996 & US EPA 6010D:2018 | ICP-OES |
| 銻 Antimony(Sb) | 參考 US EPA 3050B:1996 & US EPA 6010D:2018 Refer to US EPA 3050B:1996 & US EPA 6010D:2018 | ICP-OES |
| 砷 Arsenic(As) | 參考 US EPA 3050B:1996 & US EPA 6010D:2018 Refer to US EPA 3050B:1996 & US EPA 6010D:2018 | ICP-OES |
| 六溴環十二烷 Hexabromocyclododecane (HBCDD) | IEC 62321-9:2021 | GC-MS |


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**檢測結果 Test Result(s)**

| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
|---|---|---|
| | 002 | |
| 鉛 Lead (Pb) | N.D. | 2 mg/kg |
| 鎘 Cadmium (Cd) | N.D. | 2 mg/kg |
| 汞 Mercury (Hg) | N.D. | 2 mg/kg |
| 六價鉻 Hexavalent Chromium (Cr(VI)) | N.D. | 8 mg/kg |

| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
|---|---|---|
| | 002 | |
| **多溴聯苯 Polybrominated Biphenyls (PBBs)** | | |
| 一溴聯苯 Monobromobiphenyl | N.D. | 5 mg/kg |
| 二溴聯苯 Dibromobiphenyl | N.D. | 5 mg/kg |
| 三溴聯苯 Tribromobiphenyl | N.D. | 5 mg/kg |
| 四溴聯苯 Tetrabromobiphenyl | N.D. | 5 mg/kg |
| 五溴聯苯 Pentabromobiphenyl | N.D. | 5 mg/kg |
| 六溴聯苯 Hexabromobiphenyl | N.D. | 5 mg/kg |
| 七溴聯苯 Heptabromobiphenyl | N.D. | 5 mg/kg |
| 八溴聯苯 Octabromobiphenyl | N.D. | 5 mg/kg |
| 九溴聯苯 Nonabromobiphenyl | N.D. | 5 mg/kg |
| 十溴聯苯 Decabromobiphenyl | N.D. | 5 mg/kg |

| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
|---|---|---|
| | 002 | |
| **多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)** | | |
| 一溴二苯醚 Monobromodiphenyl ether | N.D. | 5 mg/kg |
| 二溴二苯醚 Dibromodiphenyl ether | N.D. | 5 mg/kg |
| 三溴二苯醚 Tribromodiphenyl ether | N.D. | 5 mg/kg |
| 四溴二苯醚 Tetrabromodiphenyl ether | N.D. | 5 mg/kg |
| 五溴二苯醚 Pentabromodiphenyl ether | N.D. | 5 mg/kg |
| 六溴二苯醚 Hexabromodiphenyl ether | N.D. | 5 mg/kg |
| 七溴二苯醚 Heptabromodiphenyl ether | N.D. | 5 mg/kg |
| 八溴二苯醚 Octabromodiphenyl ether | N.D. | 5 mg/kg |
| 九溴二苯醚 Nonabromodiphenyl ether | N.D. | 5 mg/kg |
| 十溴二苯醚 Decabromodiphenyl ether | N.D. | 5 mg/kg |

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檢測結果 Test Result(s)

| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
|---|---|---|
| | 002 | |
| **鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)** | | |
| 鄰苯二甲酸丁基苄基酯 Butyl benzyl phthalate (BBP) CAS#:85-68-7 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二(2-乙基)己酯 Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二丁酯 Dibutyl phthalate (DBP) CAS#:84-74-2 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二異丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5 | N.D. | 50 mg/kg |
| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
| | 002 | |
| 氟 Fluorine (F) | N.D. | 50 mg/kg |
| 氯 Chlorine (Cl) | N.D. | 50 mg/kg |
| 溴 Bromine (Br) | N.D. | 50 mg/kg |
| 碘 Iodine (I) | N.D. | 50 mg/kg |

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| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
|---|---|---|
| | 002 | |
| **鄰苯二甲酸酯 Phthalates** | | |
| 鄰苯二甲酸二(2-甲氧基)乙酯 Bis(2-methoxyethyl) phthalate (DMEP) CAS#:117-82-8 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二環己酯 Dicyclohexyl phthalate (DCHP) CAS#:84-61-7 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二己酯 Di-n-hexyl phthalate (DNHP/DHEXP) CAS#:84-75-3 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二甲酯 Dimethyl phthalate (DMP) CAS#:131-11-3 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二壬酯 Dinonyl phthalate (DNP) CAS#:84-76-4 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二乙酯 Diethyl phthalate (DEP) CAS#:84-66-2 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二異癸酯 Di-iso-decyl phthalate (DIDP) CAS#:26761-40-0,68515-49-1 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二異壬酯 Di-isononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0 | N.D. | 50 mg/kg |
| 鄰苯二甲酸二正辛酯 Di-n-octyl phthalate (DNOP) CAS#:117-84-0 | N.D. | 50 mg/kg |
| 鄰苯二甲酸烷基酯(C6-8支型結構,C7富集 ) 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) CAS#:71888-89-6 | N.D. | 50 mg/kg |
| 鄰苯二甲酸烷基酯(C7-11支型和線性結構 ) 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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檢測結果 Test Result(s)

| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
|---|---|---|
| | 002 | |
| 鈹 Beryllium(Be) | N.D. | 2 mg/kg |
| 銻 Antimony(Sb) | N.D. | 2 mg/kg |
| 砷 Arsenic(As) | N.D. | 2 mg/kg |
| 測試項目 Tested Item(s) | 結果 Result | 方法檢出限 MDL |
| | 002 | |
| 六溴環十二烷 Hexabromocyclododecane (HBCDD) | N.D. | 20 mg/kg |

| 測試項目 Tested Item(s) | CAS No. | 結果 Result | 方法檢出限 MDL |
|---|---|---|---|
| | | 002 | |
| **全氟辛酸(PFOA)及其鹽 Perfluorooctanoic acid (PFOA) and its salts** | | | |
| 全氟辛酸 Perfluorooctanoic acid (PFOA) | 335-67-1 | N.D. | 0.01 mg/kg |
| 全氟辛酸銨 Ammonium pentadecafluorooctanoate (APFO)* | 3825-26-1 | N.D. | 0.01 mg/kg |
| 全氟辛酸鈉 Sodium perfluorooctanoate (PFOA-Na)* | 335-95-5 | N.D. | 0.01 mg/kg |
| 全氟辛酸鉀 Potassium perfluorooctanoate (PFOA-K)* | 2395-00-8 | N.D. | 0.01 mg/kg |
| 全氟辛酸銀 Silver perfluorooctanoate (PFOA-Ag)* | 335-93-3 | N.D. | 0.01 mg/kg |
| 全氟辛氟 Perfluorooctanoyl fluoride (PFOA-F)* | 335-66-0 | N.D. | 0.01 mg/kg |

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檢測結果 Test Result(s)

| 測試項目 Tested Item(s) | CAS No. | 結果 Result 002 | 方法檢出限 MDL |
|---|---|---|---|
| **全氟辛烷磺酸(PFOS)及其鹽和相關物質 Perfluorooctanesulfonic acid (PFOS) and its salts & related substances** | | | |
| 全氟辛烷磺酸 Perfluorooctane Sulfonates (PFOS) | 1763-23-1 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸鉀 Perfluorooctanesulfonic acid, potassium salt (PFOS-K)* | 2795-39-3 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸鋰 Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)* | 29457-72-5 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸鈉 Sodium perfluorooctane sulfonate (PFOS-Na)* | 4021-47-0 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸鎂 1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, magnesium salt (2:1) (PFOS-Mg)* | 91036-71-4 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸銨 Perfluorooctanesulfonic acid, ammonium salt (PFOS-$NH_4$)* | 29081-56-9 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸二乙醇銨 Perfluorooctane sulfonate diethanolamine salt (PFOS-$NH(OH)_2$)* | 70225-14-8 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸四乙基胺 Perfluorooctanesulfonic acid, tetraethylammonium salt (PFOS-$N(C_2H_5)_4$)* | 56773-42-3 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸二癸二甲基銨 Didecyl dimethyl ammonium perfluorooctane sulfonate (PFOS-DDA)* | 251099-16-8 | N.D. | 0.01 mg/kg |
| 全氟辛基磺醯氟 Perfluoro-1-octanesulfonyl fluoride (PFOSF)* | 307-35-7 | N.D. | 0.01 mg/kg |
| 全氟辛基磺酸呱啶 Piperidine 1,1,2,2,3,3,4,4,5,5,6,6, 7,7,8,8,8-heptadecafluorooctanesulfonate* | 71463-74-6 | N.D. | 0.01 mg/kg |
| 氟蟲胺 N-Ethylperfluoro-1-octanesulfonamide (N-Et-FOSA) | 4151-50-2 | N.D. | 0.05 mg/kg |
| 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十七氟-N-甲基-辛磺醯胺 N-Methylperfluoro-1-octanesulfonamide (N-Me-FOSA) | 31506-32-8 | N.D. | 0.05 mg/kg |
| N-乙基全氟辛基磺醯胺乙醇 2-(N-Ethylperfluoro-1-octanesulfonamido)-ethanol (N-Et-FOSE) | 1691-99-2 | N.D. | 0.05 mg/kg |
| 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十七氟-N-(2-羥乙基)-N-甲基-1-辛基磺醯胺 2-(N-Methylperfluoro-1-octanesulfonamido)-ethanol (N-Me-FOSE) | 24448-09-7 | N.D. | 0.05 mg/kg |
| 全氟辛基磺醯胺 Perfluorooctanesulfonamide (PFOSA) | 754-91-6 | N.D. | 0.01 mg/kg |

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**樣品/部位描述 Sample/Part Description**

| 序號 | CTI 樣品 ID | 描述 |
|---|---|---|
| No. | CTI Sample ID | Description |
| 1 | 002 | 電子元器件(整體混合測試)<br>Electronic components (Mixed all) |

**備註:** **對於檢測鉛，鎘，汞，鈹，銻，砷之樣品已消解完全。**
-N.D. = 未檢出 (小於方法檢出限或定量限)
-mg/kg = ppm = 百萬分之一
-*=該物質的結果由其特定化合物的結果換算而來。
-按照目前手段，樣品無法進一步拆分，樣品整體測試，測試結果不代表整體測試樣品中任何一種單一材質的含量。

**Remark:** **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury, Beryllium, Antimony, Arsenic.**
-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million
-*=Result(s) shown of the substance(s) is/ are converted from the result(s) of certain compound(s).
-The sample(s) was tested as a whole, because it's impossible to disassemble or separate it by current equipment and technology. The result(s) shown on this report may be different from the content of any homogeneous material.

**注釋:** **本報告中的資料結果供科研、教學、企業內部品質控制、企業產品研發等目的用。**

**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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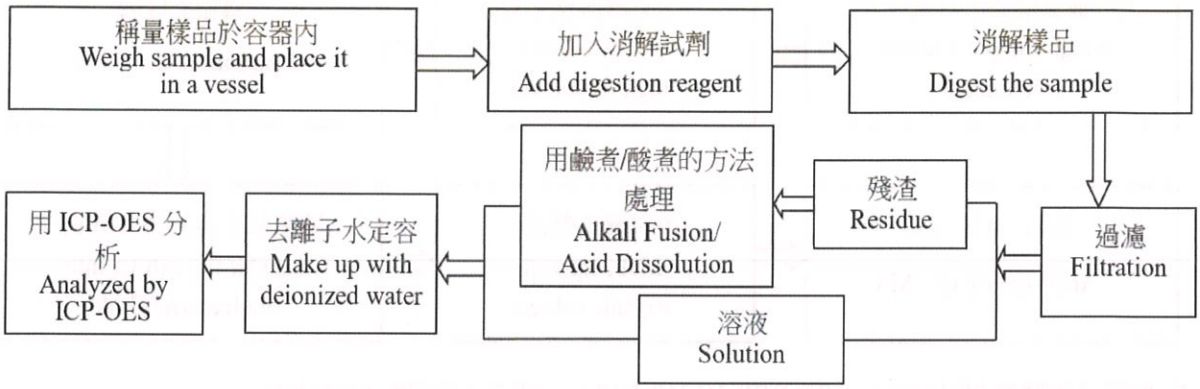
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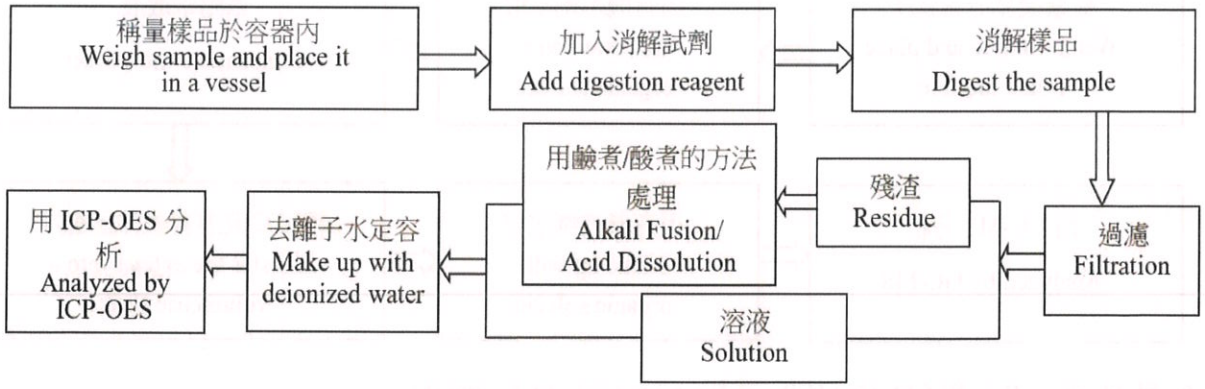


**檢測流程 Test Process**

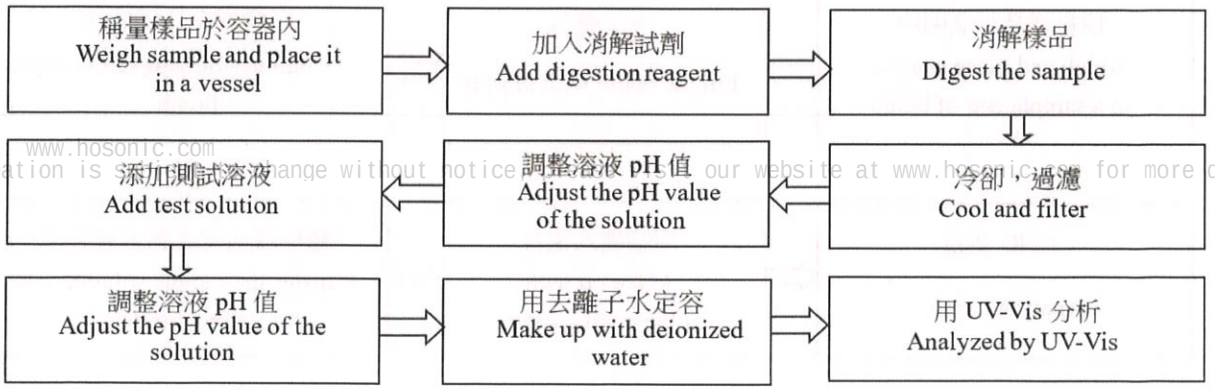
**1. 鉛 Lead (Pb), 鎘 Cadmium (Cd), 鉻 Chromium(Cr)**




**2. 汞 Mercury (Hg)**




**3. 六價鉻 Hexavalent Chromium (Cr(VI))**



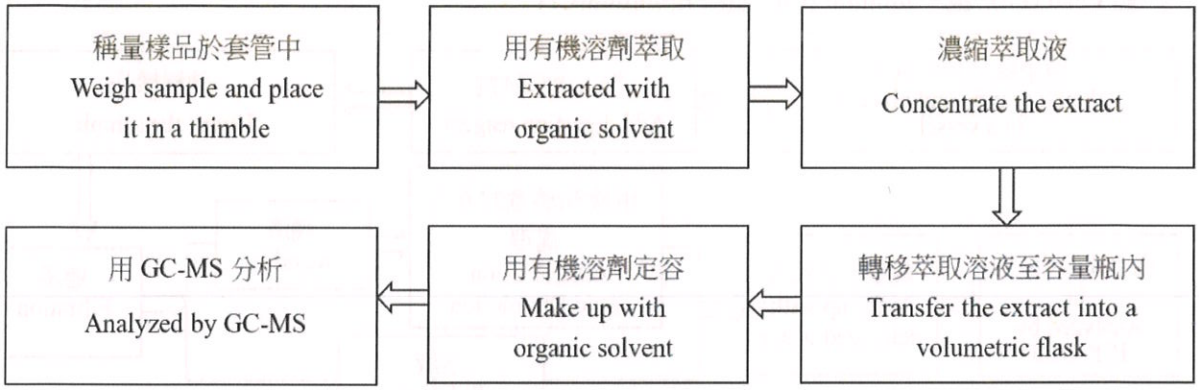


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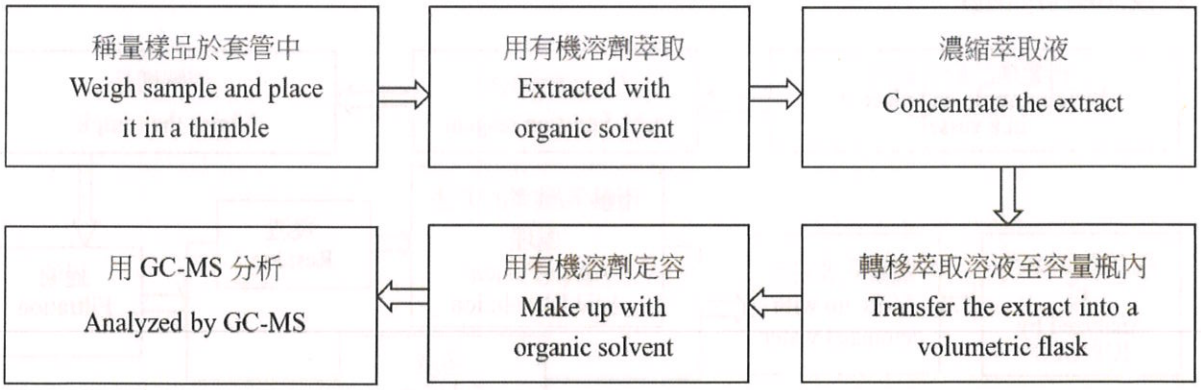
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**4. 多溴聯苯 Polybrominated Biphenyls (PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)**




**5. 鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)，鄰苯二甲酸酯 Phthalates**



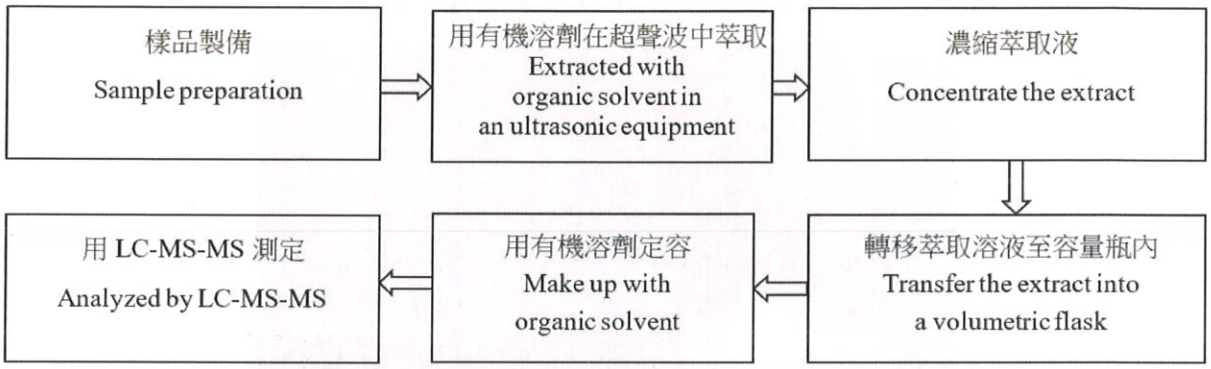

**6. 氟 Fluorine (F), 氯 Chlorine (Cl), 溴 Bromine (Br), 碘 Iodine (I)**



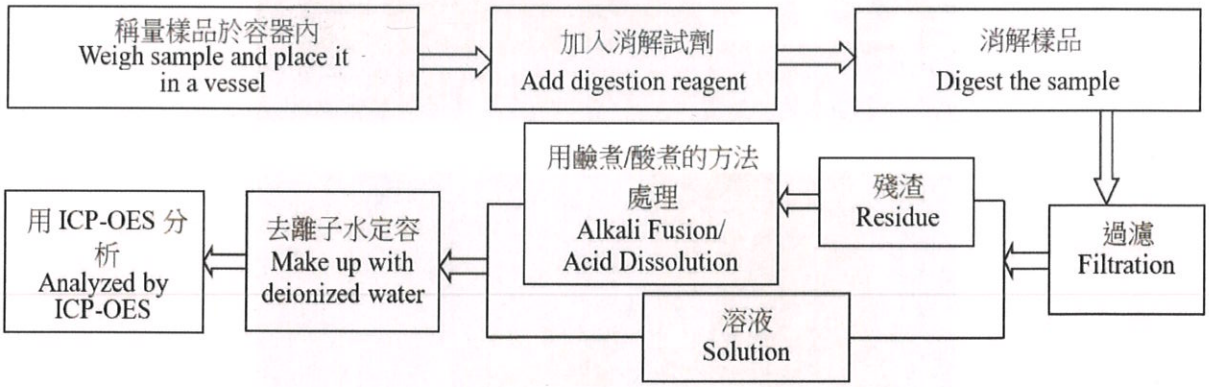

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**7. 全氟辛酸(PFOA)及其鹽,全氟辛烷磺酸(PFOS)及其鹽和相關物質**

**Perfluorooctanoic acid (PFOA) and its salts,Perfluorooctanesulfonic acid (PFOS) and its salts & related substances**

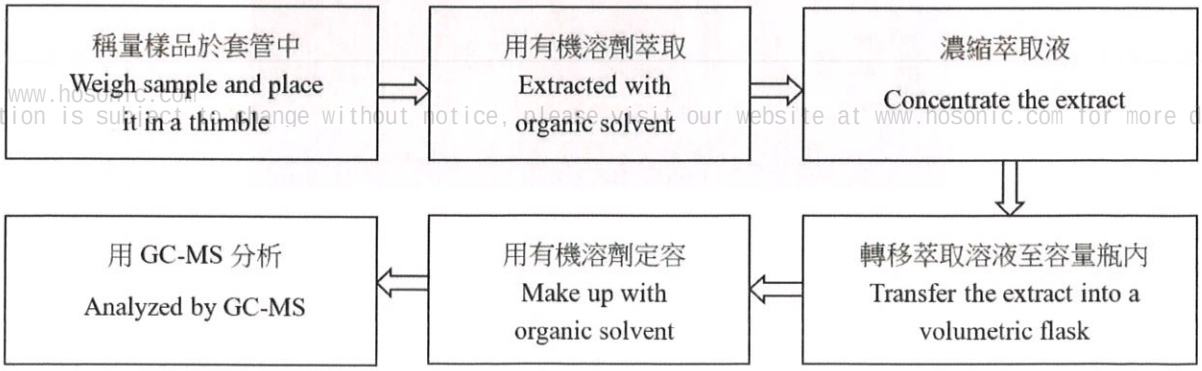



**8. 鈹 Beryllium(Be), 銻 Antimony(Sb), 砷 Arsenic(As)**




**9. 六溴環十二烷 (HBCDD)**

**Hexabromocyclododecane (HBCDD)**

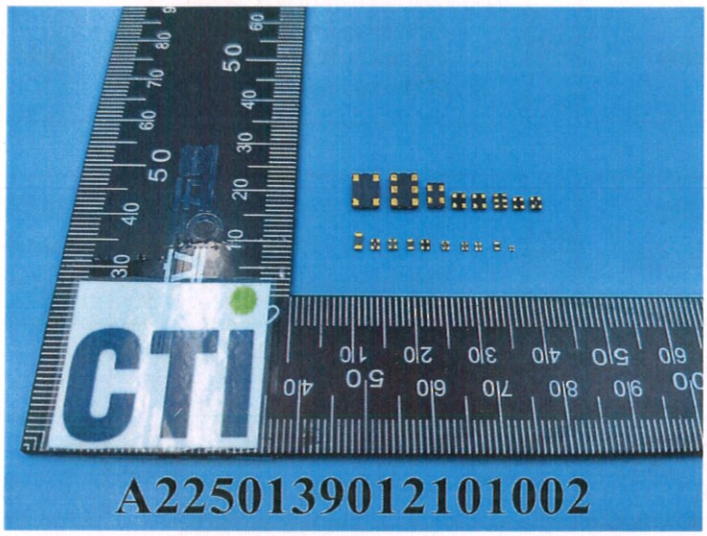


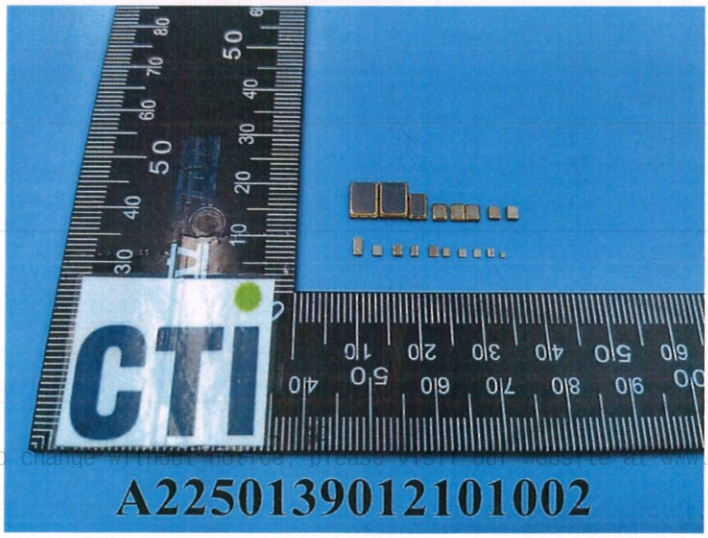

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# 檢測報告
# Test Report



## 樣品圖片
## Photo(s) of the sample(s)




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CTI 華測檢測

# 檢測報告
# Test Report



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