CTI 華測檢測

檢測報告
Test Report

報告抬頭公司名稱	台豐印刷電路工業股份有限公司
Company Name shown on Report	TAI HONG CIRCUIT IND. CO., LTD
地　　址	新竹縣湖口鄉鳳山村光復路 81 號
Address	NO.81, GUANGFU RD., FENGSHAN VILLAGE, HUKOU TOWNSHIP, HSINCHU COUNTY, TAIWAN

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 Name	銅箔 (Cu) COPPER
樣品接收日期 Sample Received Date	2026.04.20 Apr. 20, 2026
樣品檢測日期 Testing Period	2026.04.20-2026.04.24 Apr. 20, 2026 to Apr. 24, 2026
檢測要求 **Test Requested**	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)，全氟辛酸（PFOA）及其鹽，全氟辛烷磺酸（PFOS）及其鹽和相關物質，氟(F)，氯(Cl)，溴(Br)，碘(I)，六溴環十二烷(HBCDD)，鈹(Be)，銻(Sb)進行測試。 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), Perfluorooctanoic acid (PFOA) and its salts, Perfluorooctanesulfonic acid (PFOS) and its salts & related substances, Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Hexabromocyclododecane (HBCDD), Beryllium(Be), Antimony(Sb) in the submitted sample(s).
檢測依據/檢測結果 **Test Method/Test Result(s)**	請參見下頁。 Please refer to the following page(s).

批　准
Approved by

馮智聰
實驗室經理 Laboratory Manager

日　　期
Date 2026.04.24

No. R855151848

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 13
5F.-13, 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)	參考 IEC 62321-5:2013 Refer to IEC 62321-5:2013	ICP-OES
鎘 Cadmium (Cd)	參考 IEC 62321-5:2013 Refer to IEC 62321-5:2013	ICP-OES
汞 Mercury (Hg)	參考 IEC 62321-4:2013+AMD1:2017 CSV Refer to IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES
六價鉻 Hexavalent Chromium (Cr(VI))	參考 IEC 62321-7-1:2015 Refer to IEC 62321-7-1:2015	UV-Vis
多溴聯苯 Polybrominated Biphenyls (PBBs)	參考 IEC 62321-6:2015 Refer to IEC 62321-6:2015	GC-MS
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)	參考 IEC 62321-6:2015 Refer to IEC 62321-6:2015	GC-MS
鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)	參考 IEC 62321-8:2017 Refer to IEC 62321-8:2017	GC-MS
全氟辛酸（PFOA）及其鹽 Perfluorooctanoic acid (PFOA) and its salts	參考 EN 17681-1:2025 Refer to EN 17681-1:2025	LC-MS-MS
全氟辛烷磺酸（PFOS）及其鹽和相關物質 Perfluorooctanesulfonic acid (PFOS) and its salts & related substances	參考 EN 17681-1:2025 Refer to EN 17681-1:2025	LC-MS-MS
氟 Fluorine (F)	參考 BS EN 14582:2016 Refer to BS EN 14582:2016	IC
氯 Chlorine (Cl)	參考 BS EN 14582:2016 Refer to BS EN 14582:2016	IC
溴 Bromine (Br)	參考 BS EN 14582:2016 Refer to BS EN 14582:2016	IC
碘 Iodine (I)	參考 BS EN 14582:2016 Refer to BS EN 14582:2016	IC
六溴環十二烷 Hexabromocyclododecane (HBCDD)	參考 IEC 62321-9:2021 Refer to IEC 62321-9:2021	GC-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

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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
	001	
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.▼	0.10 μg/cm² (LOQ)

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
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
	001	
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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測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)		
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
	001	
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

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
鈹 Beryllium (Be)	N.D.	2 mg/kg

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
銻 Antimony (Sb)	N.D.	2 mg/kg

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
六溴環十二烷 Hexabromocyclododecane (HBCDD)	N.D.	20 mg/kg

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測試項目 Tested Item(s)	CAS No.	結果 Result 001	方法檢出限 MDL
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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測試項目 Tested Item(s)	CAS No.	結果 Result 001	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	001	銅色薄片 Cupreous thin plate

備註: **對於檢測鉛，鎘，汞，鈹，銻之樣品已消解完全。**

-N.D. = 未檢出 (小於方法檢出限或定量限)

-mg/kg = ppm = 百萬分之一

-LOQ = 定量限，六價鉻的定量限為 0.10 μg/cm^2

-▼六價鉻濃度小於 0.10 μg/cm^2，樣品未檢出六價鉻。由於未獲知樣品的存儲條件和生產日期，樣品的六價鉻測試結果僅能代表測試時樣品含六價鉻的狀態。

-表列 PFAS 物質僅為範例，並不包含所有同碳數之 PFAS 鹽類。

-*=該物質的結果由其特定化合物的結果換算而來。

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

-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/cm^2

-▼The sample is negative for Cr(VI) - The Cr(VI) concentration is below 0.10 μg/cm^2. The coating is considered a non-Cr(VI) based coating. Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

-The PFAS listed are examples only. The list does not include all the PFAS.

-*=Result(s) shown of the substance(s) is/ are converted from the result(s) of certain compound(s).

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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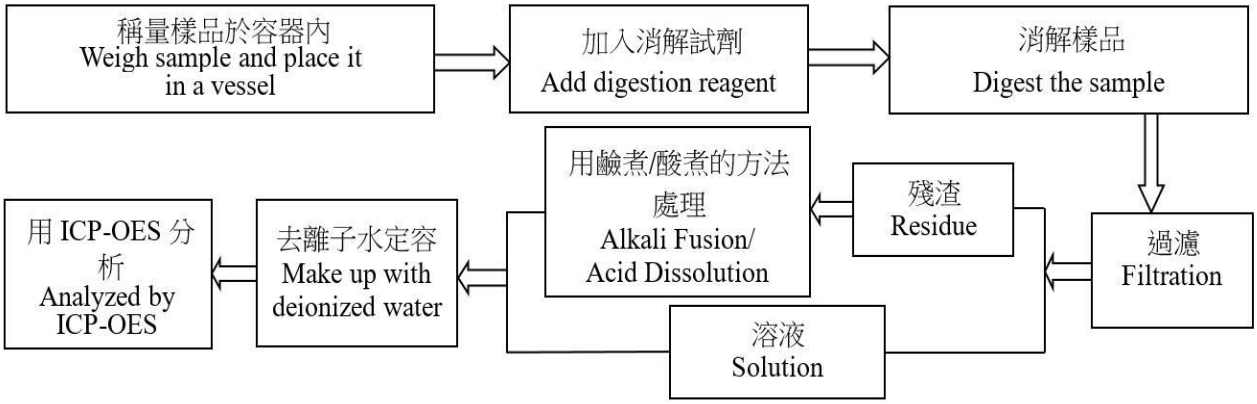
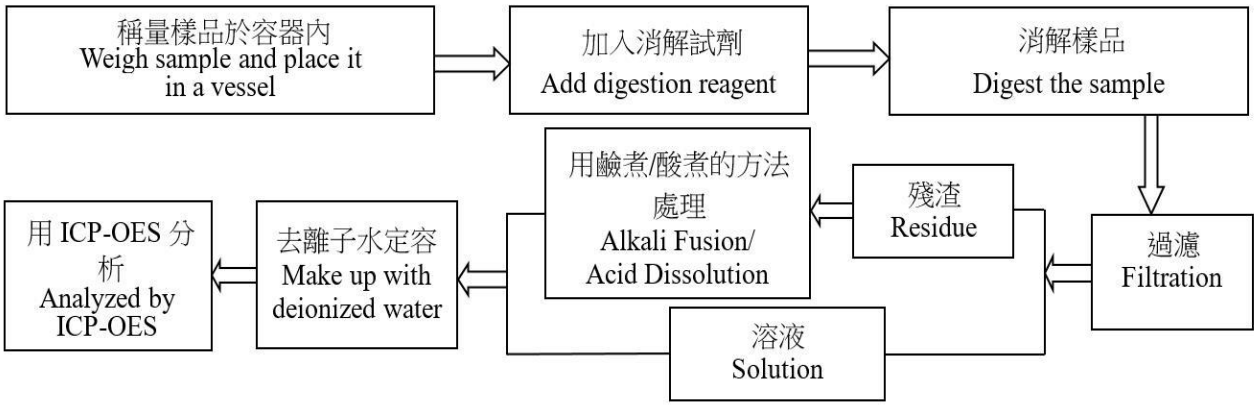
檢測流程 Test Process

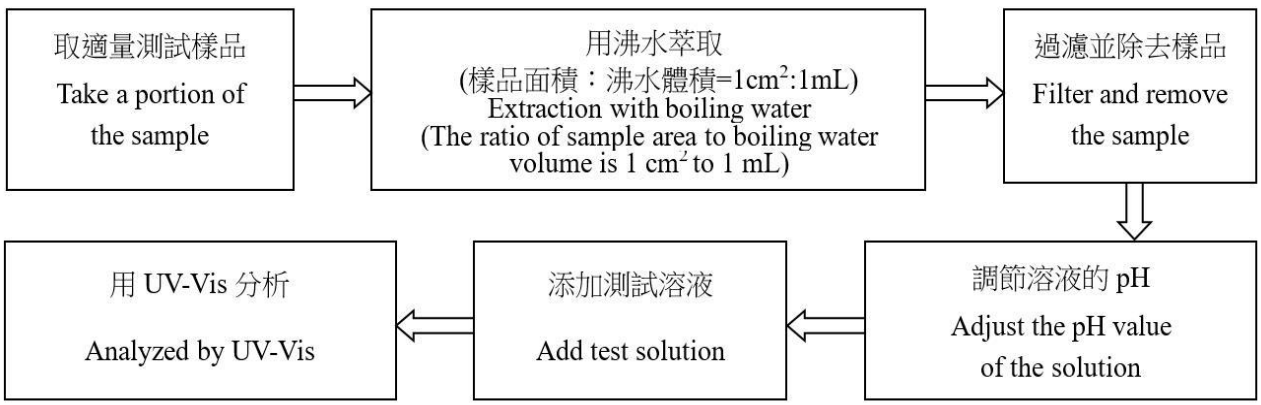
1. 鉛 Lead (Pb), 鎘 Cadmium (Cd)



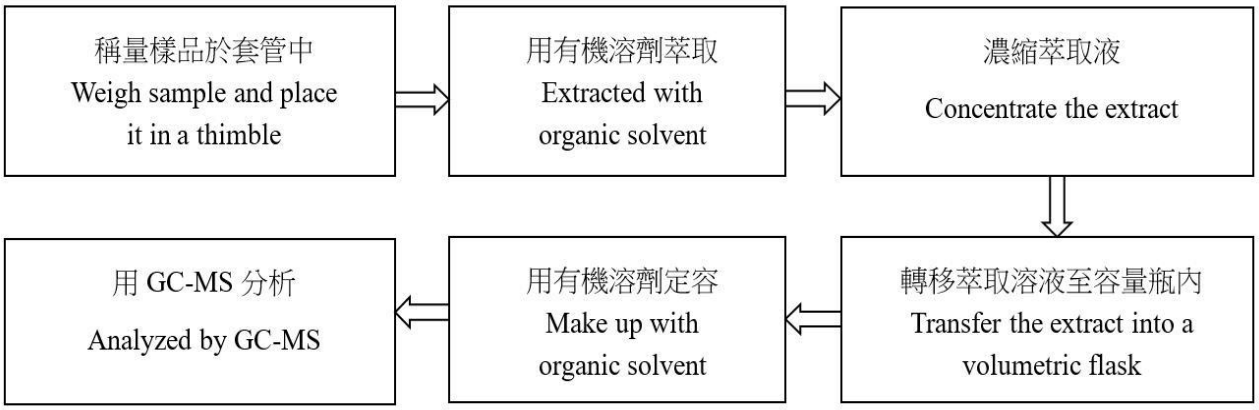
2. 汞 Mercury (Hg)



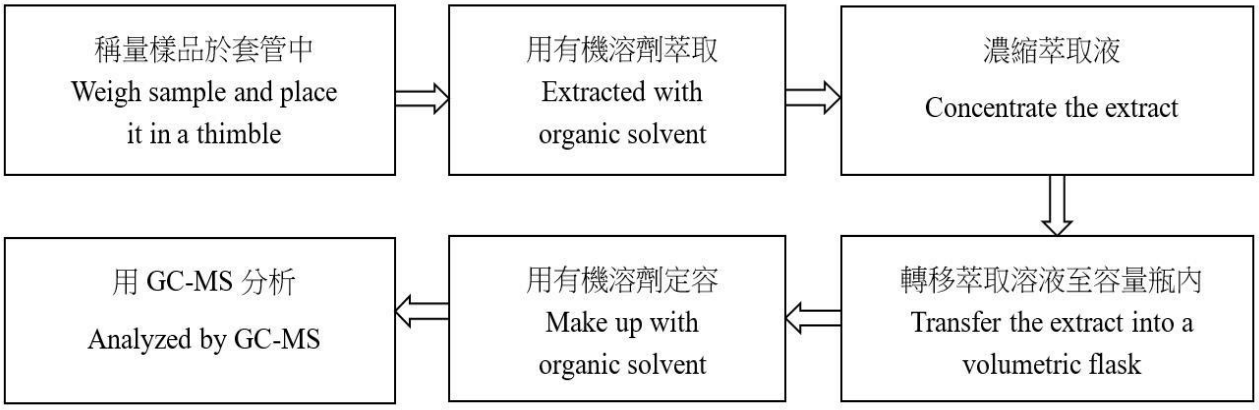
3. 六價鉻 Hexavalent Chromium (Cr(VI))



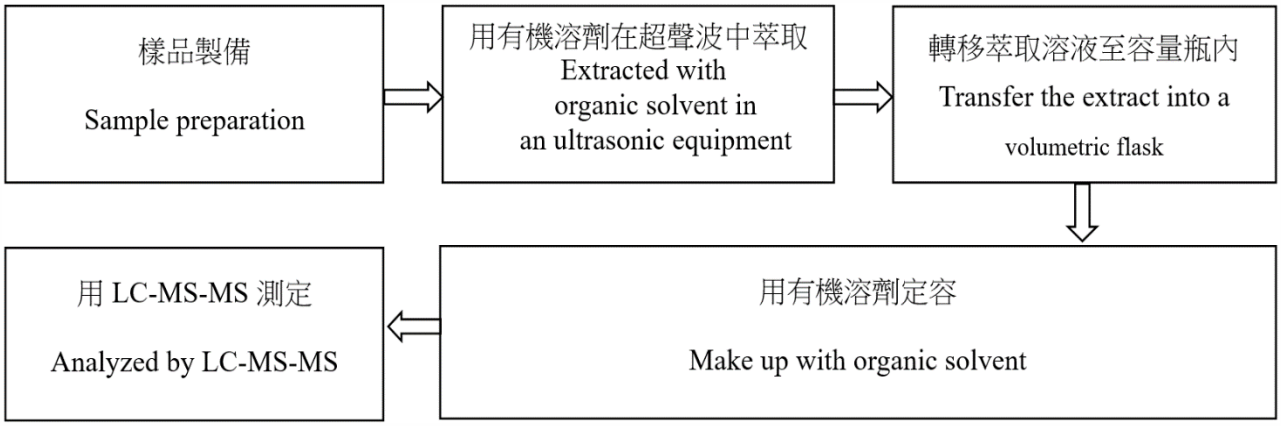
4. 多溴聯苯 Polybrominated Biphenyls (PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



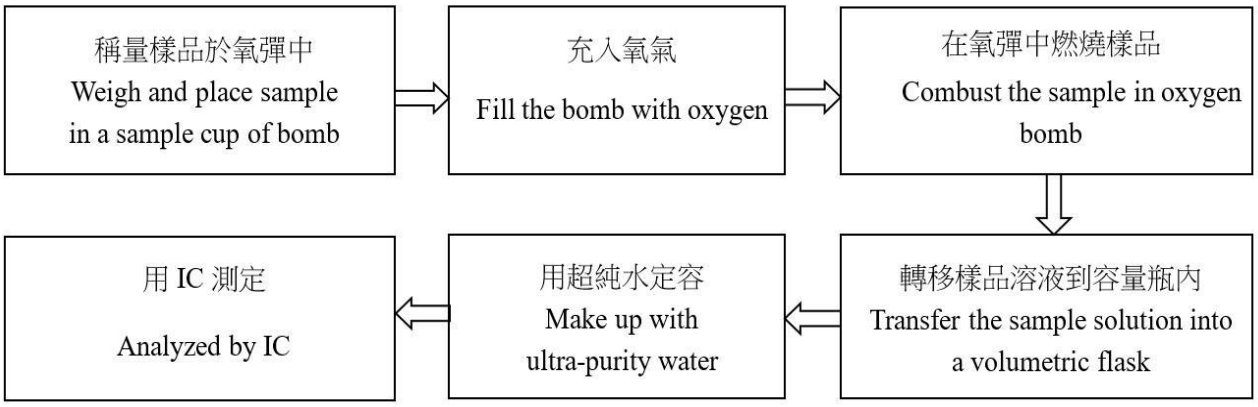
5. 鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)



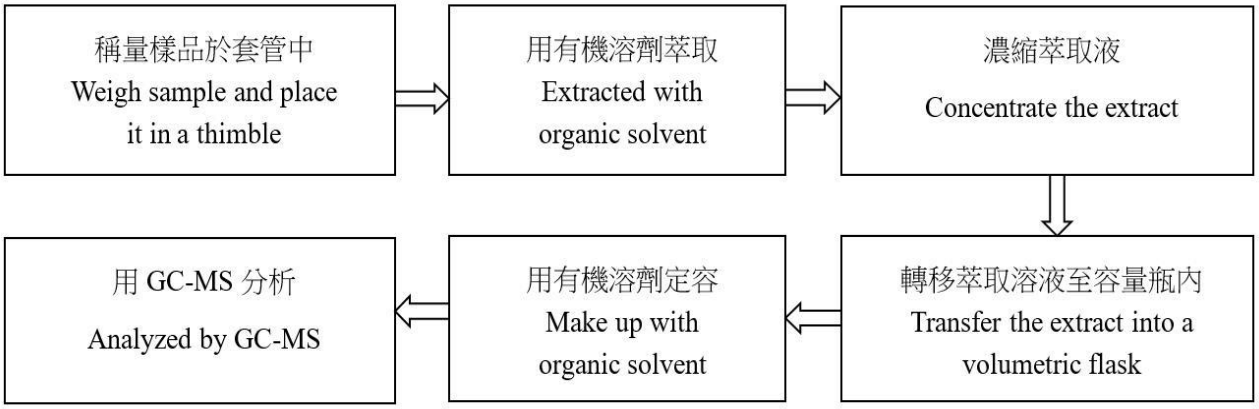
6. 全氟辛酸（PFOA）及其鹽 Perfluorooctanoic acid (PFOA) and its salts, 全氟辛烷磺酸（PFOS）及其鹽和相關物質 Perfluorooctanesulfonic acid (PFOS) and its salts & related substances



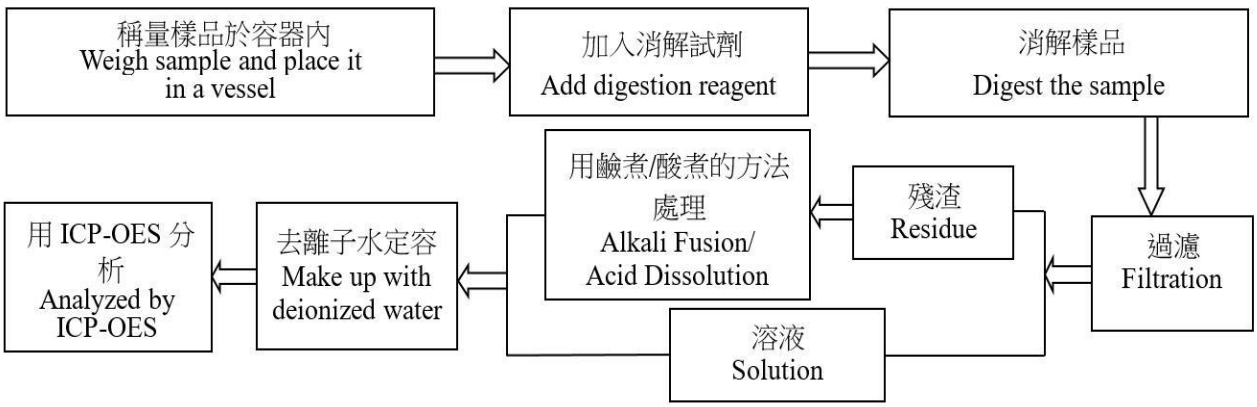
7. 氟 Fluorine (F), 氯 Chlorine (Cl), 溴 Bromine (Br), 碘 Iodine (I)



8. 六溴環十二烷 Hexabromocyclododecane (HBCDD)



9. 鈹 Beryllium(Be), 銻 Antimony(Sb)



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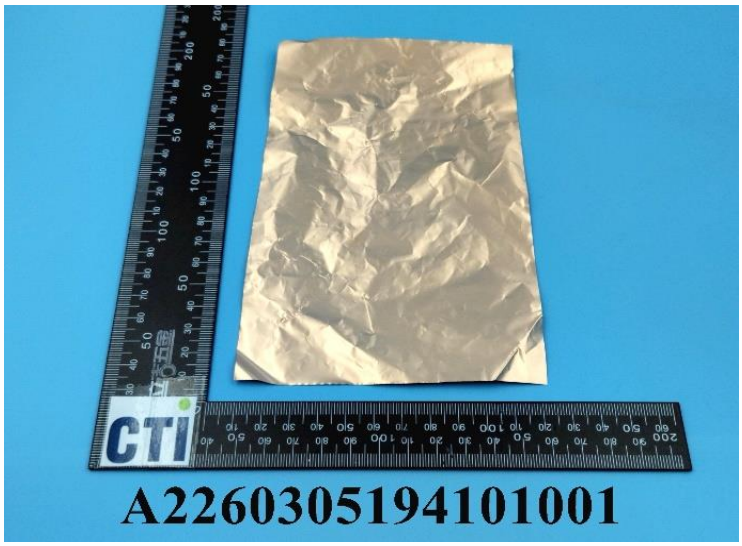
樣品圖片

Photo(s) of the sample(s)



聲明 Statement：

1. 本報告無批准人簽字、“專用章”及報告騎縫章無效；
   This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. 報告抬頭公司名稱及位址、樣品及樣品資訊由申請者提供，申請者應對其真實性負責，CTI 未核實其真實性；
   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. 本報告檢測結果僅對受測樣品負責；
   The result(s) shown in this report refer(s) only to the sample(s) tested;
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   In case of any discrepancy between the English version and Chinese version of the reports (if generated), the Chinese version shall prevail.

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*** End of Report ***