

檢測報告 Test Report



報告編號 A2230196694101001E
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報告抬頭公司名稱 台豐印刷電路工業股份有限公司
Company Name TAI HONG CIRCUIT IND. CO., LTD
shown on Report

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 銅箔
Sample Name (Cu) COPPER
樣品接收日期 2023.04.27
Sample Received Date Apr. 27, 2023
樣品檢測日期 2023.04.27-2023.05.05
Testing Period Apr. 27, 2023 to May 5, 2023

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), 銻(Sb), 鉍(Be), 六溴環十二烷(HBCDD), 全氟辛烷磺酸(PFOS), 全氟辛酸(PFOA)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), Antimony (Sb), Beryllium (Be), Hexabromocyclododecane (HBCDD), Perfluorooctane Sulfonates (PFOS), Perfluorooctanoic Acid (PFOA) in the submitted sample(s).

檢測依據/檢測結果 請參見下頁。
Test Method/Test Result(s) Please refer to the following page(s).



馮智聰

馮智聰
實驗室經理 Laboratory Manager

日期 2023.05.05
Date

No. R392334317

台灣華測檢測技術有限公司檢測中心
Testing Center, Centre Testing International (Taiwan) Co., Ltd.

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檢測依據 Test Method

測試項目 Test 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 62321-7-1:2015	UV-Vis
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
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
全氟辛烷磺酸 Perfluorooctane Sulfonates(PFOS)	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
六溴環十二烷 Hexabromocyclododecane (HBCDD)	IEC 62321-9:2021	GC-MS
全氟辛酸 Perfluorooctanoic Acid(PFOA)	參考CEN/TS 15968:2010 Refer to CEN/TS 15968:2010	LC-MS-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
	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/cm ² (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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檢測結果 Test Result(s)

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
	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	
六溴環十二烷 Hexabromocyclododecane (HBCDD)	N.D.	20 mg/kg
測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
鈹 Beryllium (Be)	N.D.	10 mg/kg
測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
全氟辛酸 Perfluorooctanoic Acid (PFOA)	N.D.	0.01 mg/kg
測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
全氟辛烷磺酸 Perfluorooctane Sulfonates (PFOS)	N.D.	0.01 mg/kg
測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
銻 Antimony (Sb)	N.D.	10 mg/kg

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樣品/部位描述 Sample/Part Description

序號 No.	CTI樣品ID CTI Sample ID	描述 Description
1	001	銅色薄片 Cupreous thin plate

備註: 對於檢測鉛, 鎘, 汞, 鉍, 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 $\mu\text{g}/\text{cm}^2$

-▼六價鉻濃度小於0.10 $\mu\text{g}/\text{cm}^2$, 樣品未檢出六價鉻。

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.

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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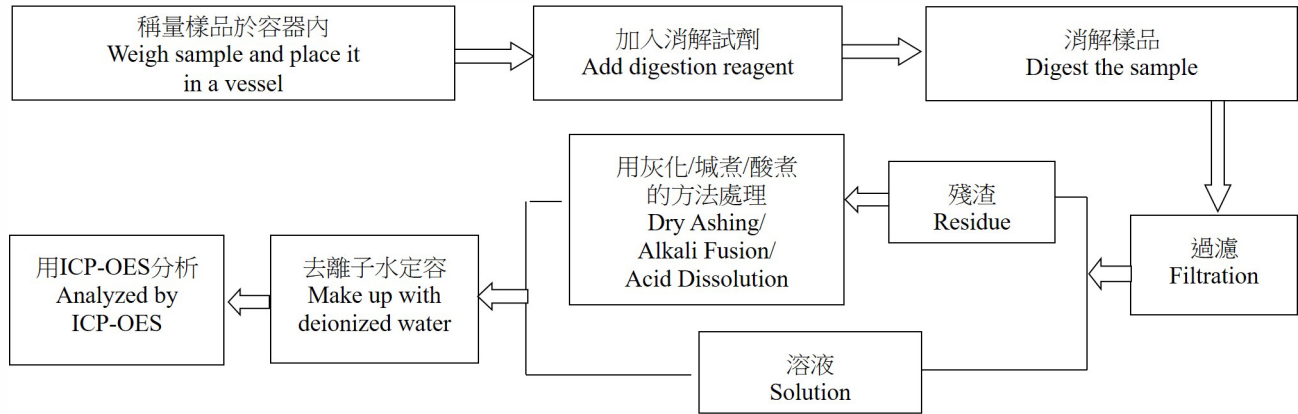
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檢測流程 Test Process

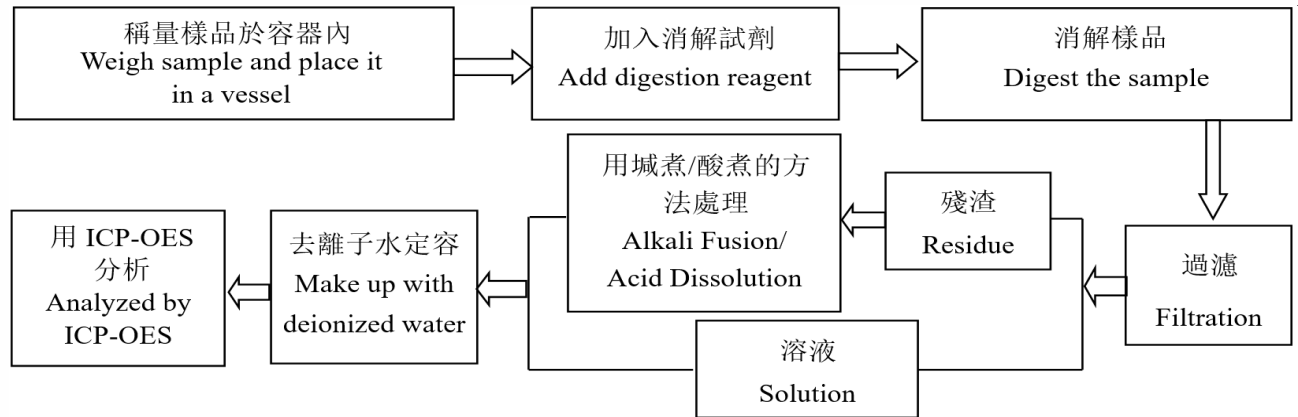
1. 鉛(Pb)， 鎘(Cd)

Lead (Pb), Cadmium (Cd)



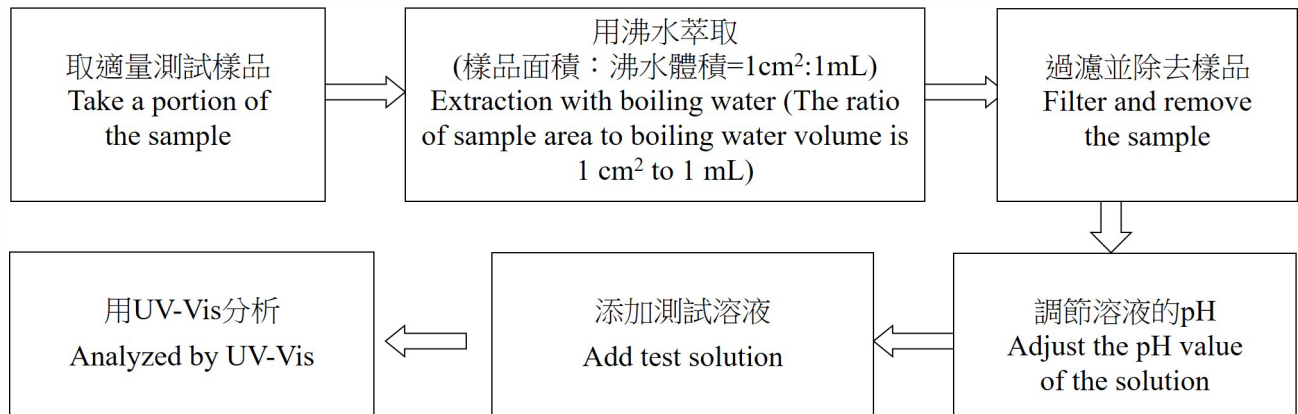
2. 汞(Hg)

Mercury (Hg)



3. 六價鉻(Cr(VI))

Hexavalent Chromium (Cr(VI))



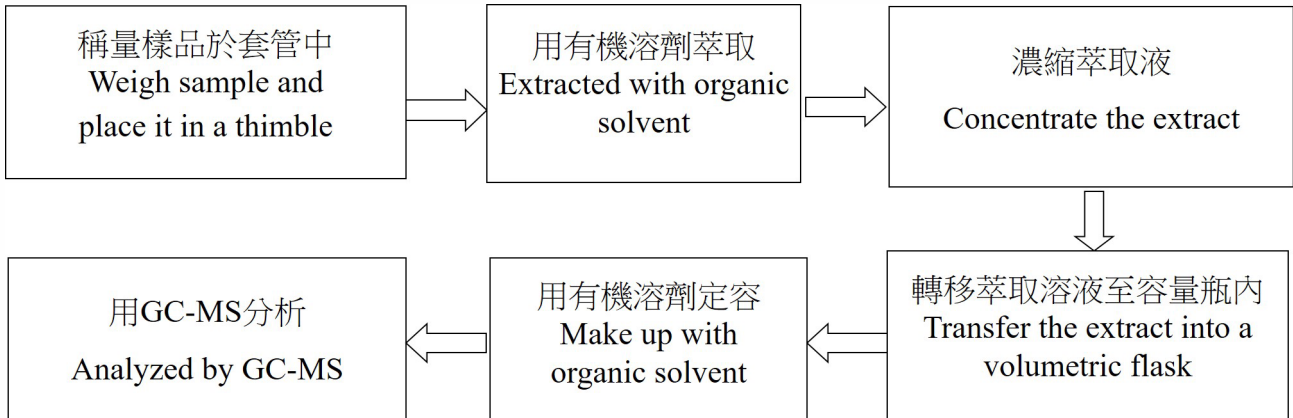
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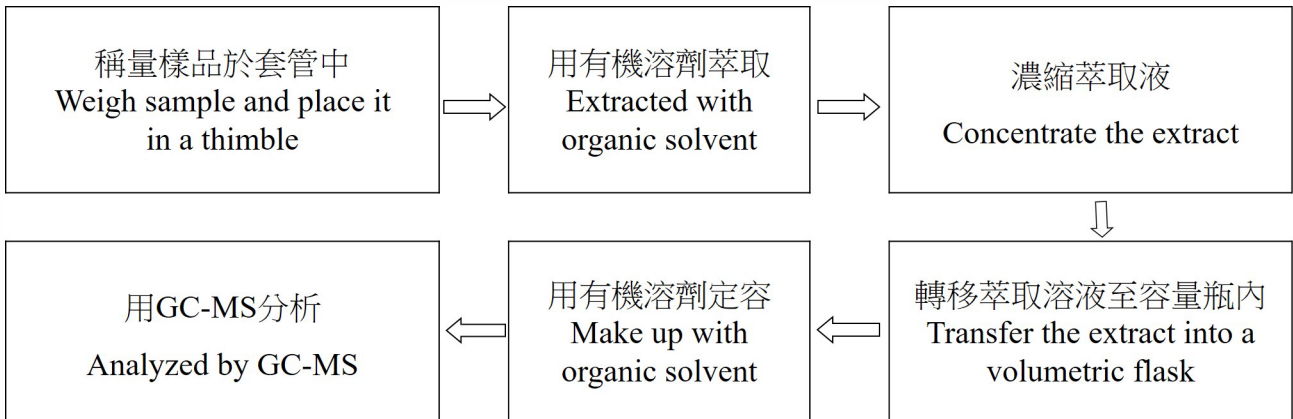
4. 多溴聯苯(PBBs), 多溴二苯醚(PBDEs)

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



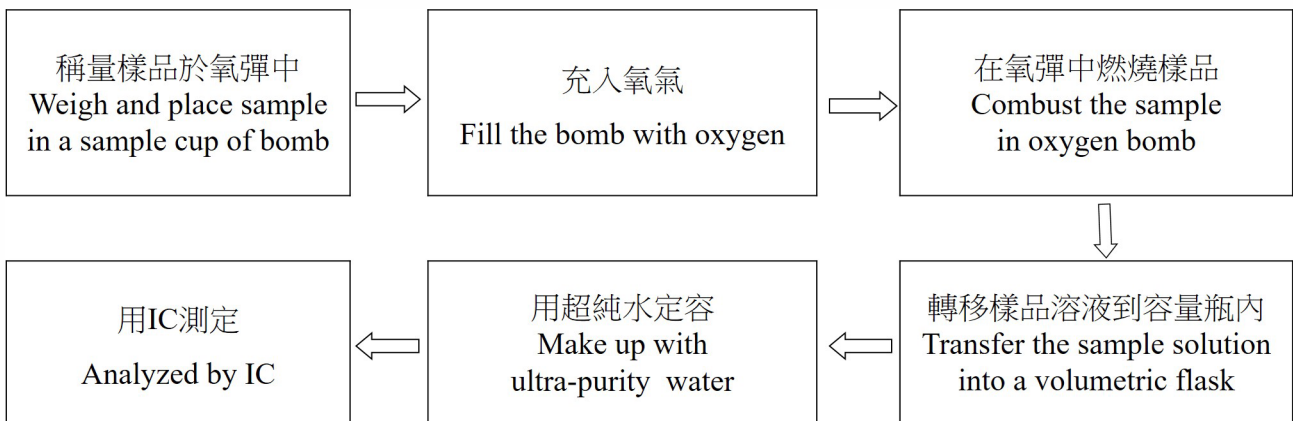
5. 鄰苯二甲酸酯(DBP, BBP, DEHP, DIBP)

Phthalates (DBP, BBP, DEHP, DIBP)



6. 氟(F), 氯(Cl), 溴(Br), 碘(I)

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



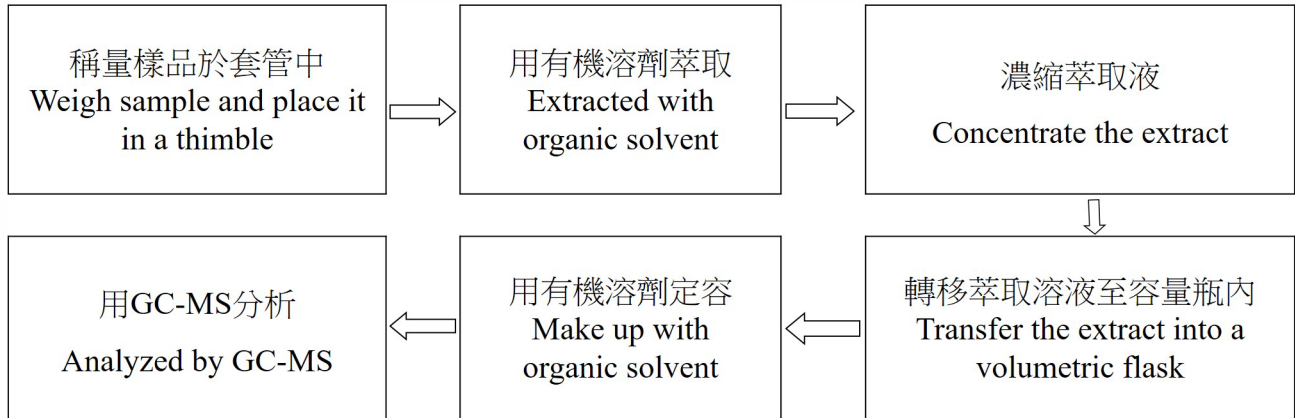
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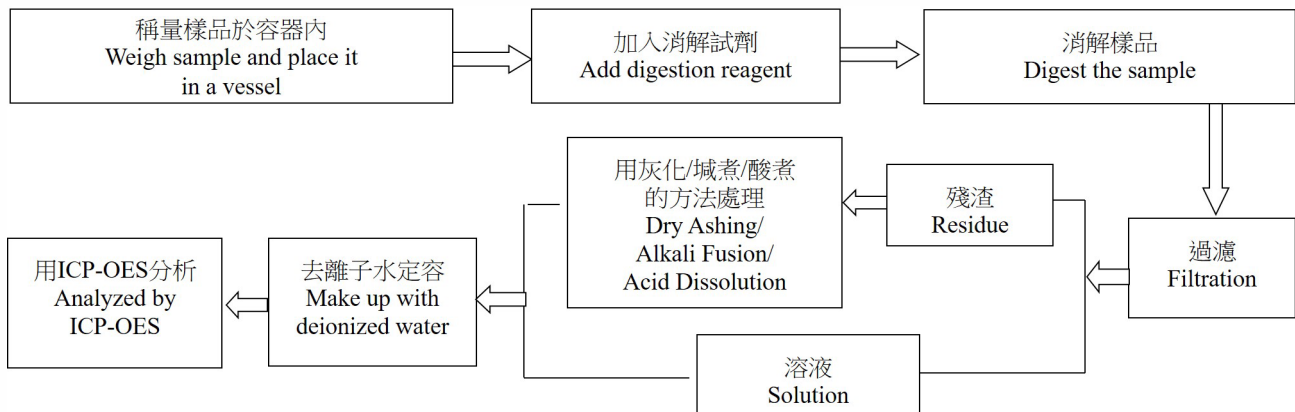
7. 六溴環十二烷(HBCDD)

Hexabromocyclododecane (HBCDD)



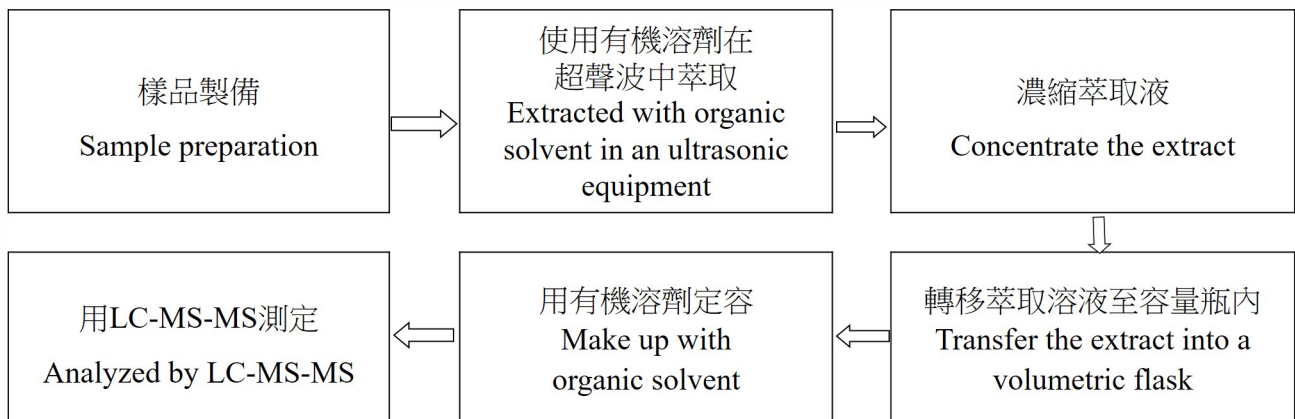
8. 鈹(Be), 銻(Sb)

Beryllium(Be), Antimony(Sb)



9. 全氟辛烷磺酸(PFOS), 全氟辛酸(PFOA)

Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA)

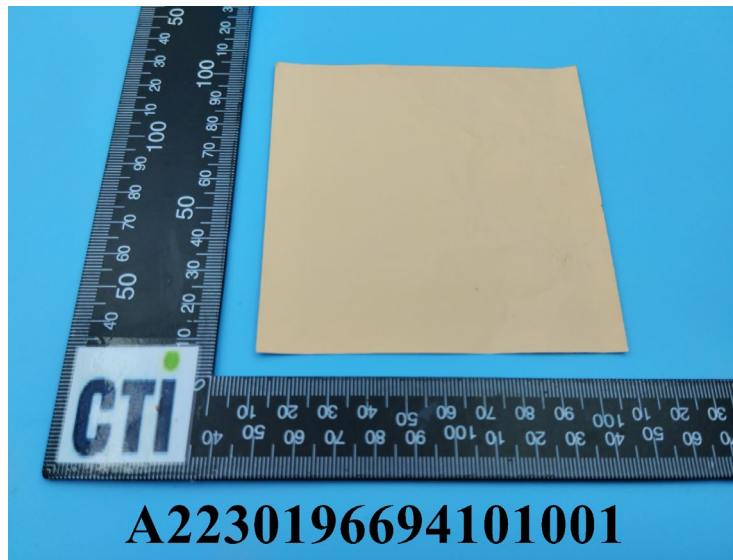


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樣品圖片 Photo(s) of the sample(s)



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