



檢測報告 Test Report

報告編號 A2220442506135E
Report No. A2220442506135E

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報告抬頭公司名稱 鈺邦科技股份有限公司
Company Name APAQ TECHNOLOGY CO., LTD
shown on Report
地 址 苗栗縣竹南鎮科東三路 2&6 號 4 樓
Address 4F., NO.2 & 6, KEDONG 3RD RD., CHUNAN SCIENCE PARK, MIAOLI COUNTY
350, TAIWAN, (R.O.C.)

以下測試之樣品及樣品信息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

成品名稱 Final Product Name Conductive Polymer Aluminum Electrolytic Capacitors(Staking Type)
樣品接收日期 2022.11.14
Sample Received Date Nov. 14, 2022
樣品檢測日期 2022.11.14-2022.11.18
Testing Period Nov. 14, 2022 to Nov. 18, 2022
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)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) 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).

主 檢 賴 牧 輝 審 核 胡 玉 玮
Tested by Reviewed by
批 准 陳凱敏 日 期 2022.11.18
Approved by Date

陳凱敏
實驗室經理 Lab Manager



上海華測品標檢測技術有限公司

Centre Testing International Pinbiao(Shanghai) Co., Ltd.

No. T172799449
上海市閔行區萬芳路 1351 號

No.1351, Wanfang Road, Minhang District, Shanghai, China

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以下測試之樣品及樣品信息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

樣品序號 Sample No.	樣品名稱 Sample Name(s)	引用報告編號-樣品序號 Reference Report No. -Sample No.
001	Package Material	/
002	Lead Frame	/
003	Terminator-B	/
004	Substrate	/
005	Polymer	A2220442506132E-011

備註:
上表格涉及到引用數據的樣品本次未測試。根據客戶聲明,“樣品序號”列測試結果及圖片引自於對應的“引用報告編號-樣品序號”列的數據及圖片。
Remark:

The samples with the reference information in the table above are non-tested in this report. According to the client's statement, test results and the photos of the "Sample No." column reference to "Reference Report Number - Sample No." column.

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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 62321-7-1:2015	UV-Vis
	IEC 62321-7-2:2017	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

檢測結果 Test Result(s)

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	002	003	
鉛 Lead (Pb)	N.D.	17 mg/kg	N.D.	2 mg/kg
鎘 Cadmium (Cd)	N.D.	N.D.	N.D.	2 mg/kg
汞 Mercury (Hg)	N.D.	N.D.	N.D.	2 mg/kg
六價鉻 Hexavalent Chromium (Cr(VI))	N.D.	--	N.D.	8 mg/kg
	--	N.D.▼	--	0.10 µg/cm ² (LOQ)

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測試項目 Tested Item(s)	結果 Result		方法檢出限 MDL
	004	005	
鉛 Lead (Pb)	N.D.	N.D.	2 mg/kg
鎘 Cadmium (Cd)	N.D.	N.D.	2 mg/kg
汞 Mercury (Hg)	N.D.	N.D.	2 mg/kg
六價鉻 Hexavalent Chromium (Cr(VI))	N.D.	N.D.	8 mg/kg
	--	--	0.10 µg/cm² (LOQ)

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	003	004	
多溴聯苯 Polybrominated Biphenyls (PBBs)				
一溴聯苯 Monobromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
二溴聯苯 Dibromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
三溴聯苯 Tribromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
四溴聯苯 Tetrabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
五溴聯苯 Pentabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
六溴聯苯 Hexabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
七溴聯苯 Heptabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
八溴聯苯 Octabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
九溴聯苯 Nonabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
十溴聯苯 Decabromobiphenyl	N.D.	N.D.	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
	005	
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	003	004	
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)				
一溴二苯醚 Monobromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	N.D.	N.D.	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
	005	
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

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	003	004	
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.	N.D.	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.	N.D.	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.	N.D.	N.D.	50 mg/kg
鄰苯二甲酸二異丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	N.D.	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
	005	
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
	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

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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

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

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測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	003	004	
氟 Fluorine (F)	N.D.	N.D.	N.D.	10 mg/kg
氯 Chlorine (Cl)	N.D.	N.D.	N.D.	10 mg/kg
溴 Bromine (Br)	N.D.	N.D.	N.D.	10 mg/kg
碘 Iodine (I)	N.D.	N.D.	N.D.	10 mg/kg

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	005	
氟 Fluorine (F)	N.D.	10 mg/kg
氯 Chlorine (Cl)	N.D.	10 mg/kg
溴 Bromine (Br)	N.D.	10 mg/kg
碘 Iodine (I)	N.D.	10 mg/kg

樣品/部位描述 Sample/Part Description

- 001 黑色固體 Black solid
- 002 有銀色鍍層的金屬 Metal with silvery plating
- 003 灰色膏體 Grey paste
- 004 有灰色塗層的金屬 Metal with grey coating
- 005 無色透明液體 Colorless transparent liquid

備註: 對於檢測鉛, 鎘, 汞之樣品已消解完全。
 -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/cm²
 -▼六價鉻濃度小於 0.10 µg/cm², 樣品未檢出六價鉻。

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

- 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.

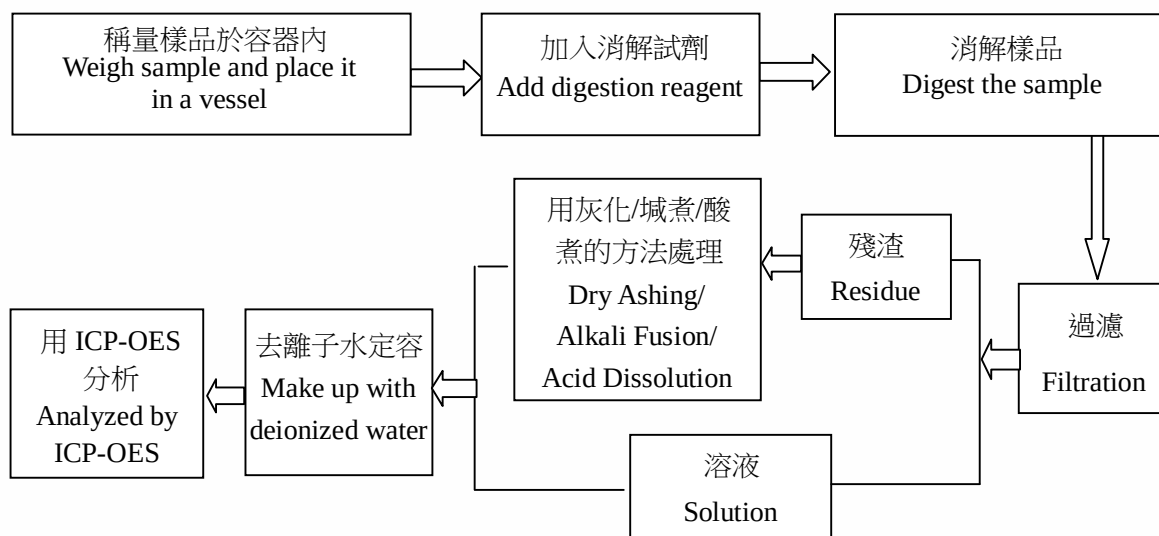
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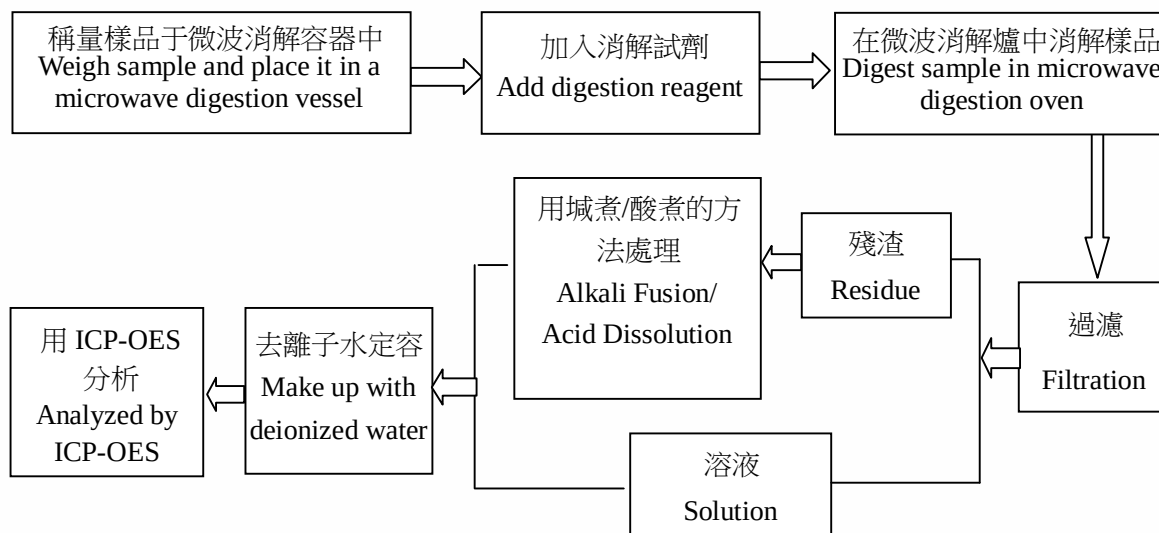
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檢測流程 Test Process

1. 鉛 Lead (Pb), 鎘 Cadmium (Cd)



2. 汞 Mercury (Hg)



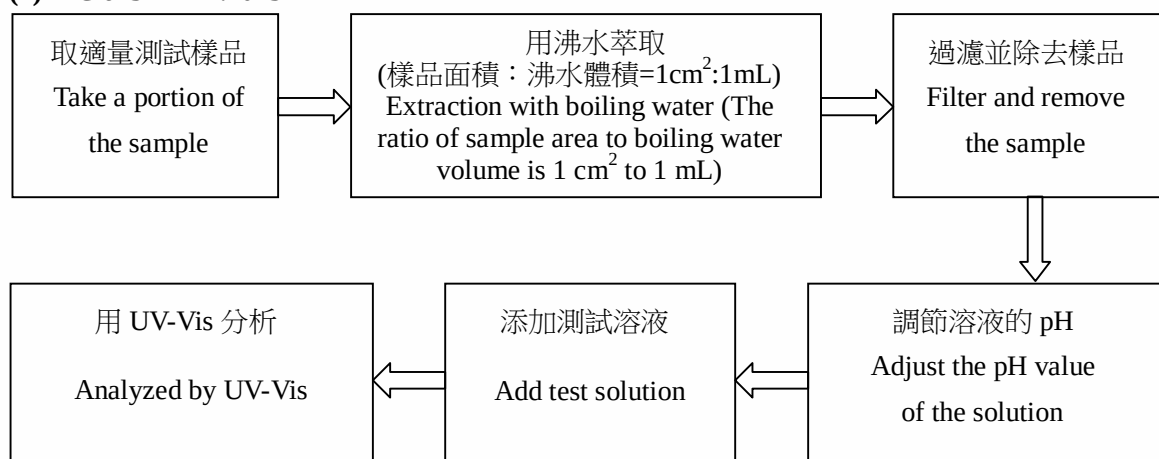
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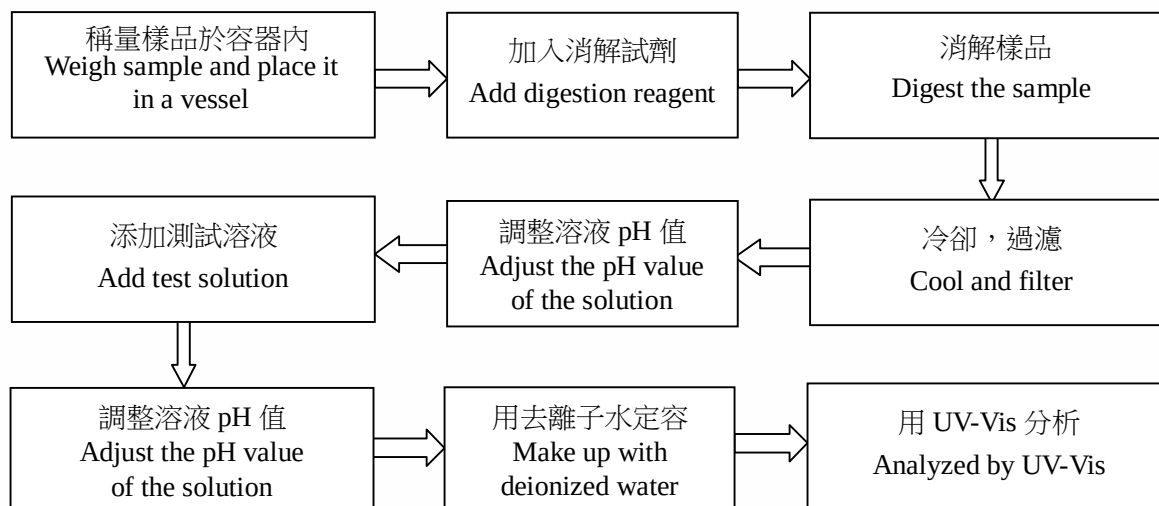
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3. 六價鉻 Hexavalent Chromium (Cr(VI))

(1) IEC 62321-7-1:2015



(2) IEC 62321-7-2:2017

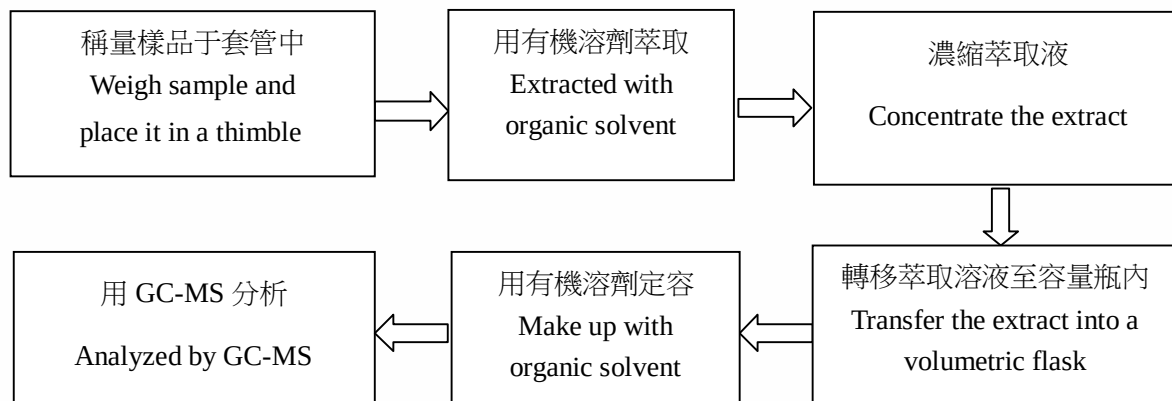


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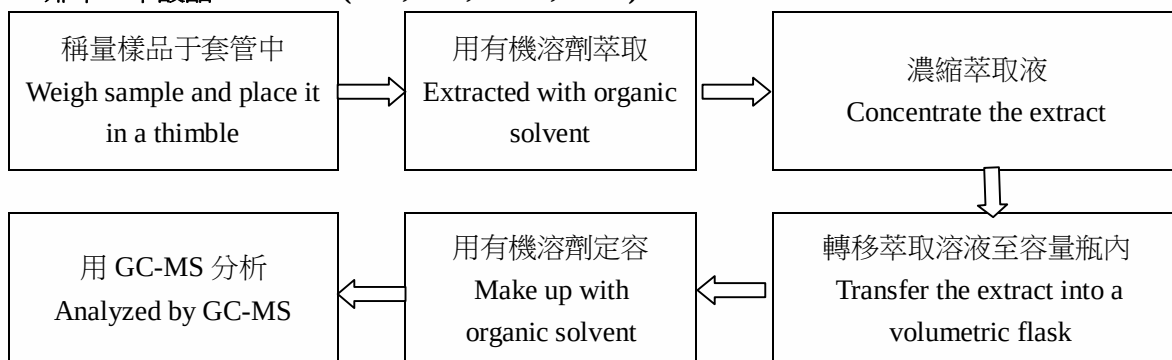
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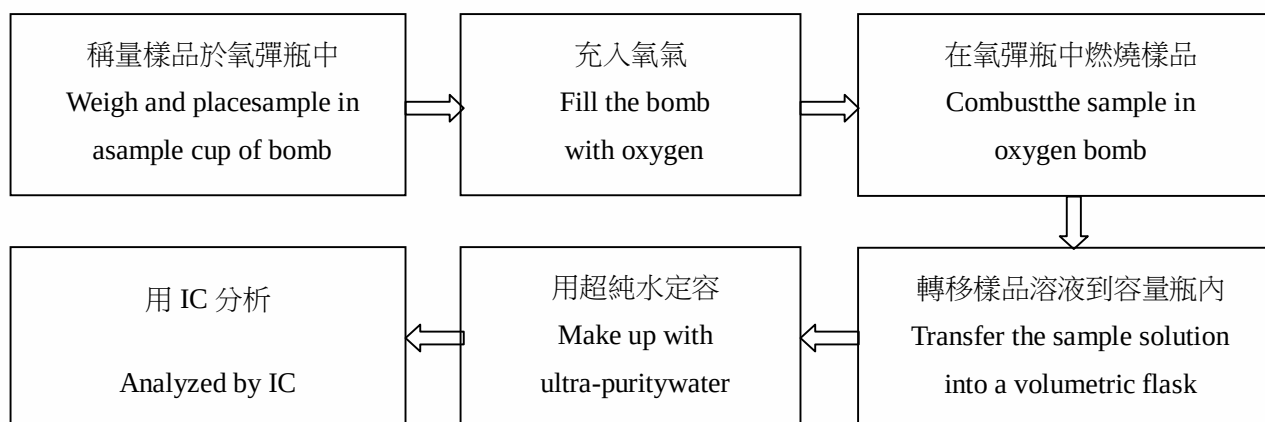
4. 多溴聯苯 Polybrominated Biphenyls (PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



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



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



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樣品圖片

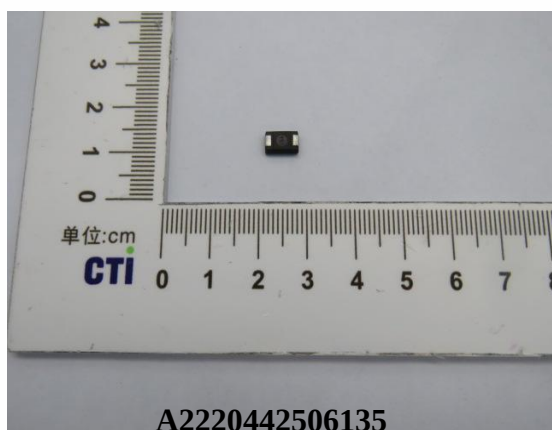
Photo(s) of the sample(s)

成品（客戶參考圖片（非測試樣品））

Final Product

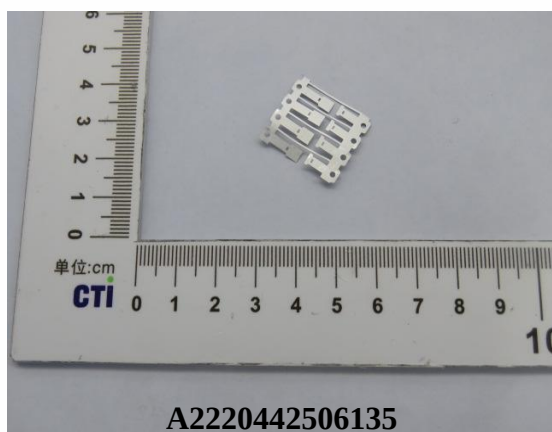
(Client Reference Photo(Non-tested sample))

001



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002

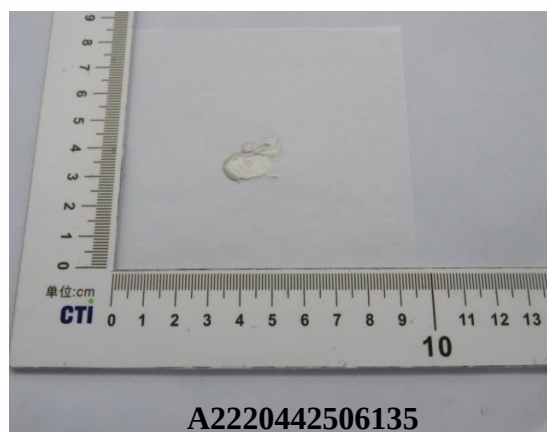


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003



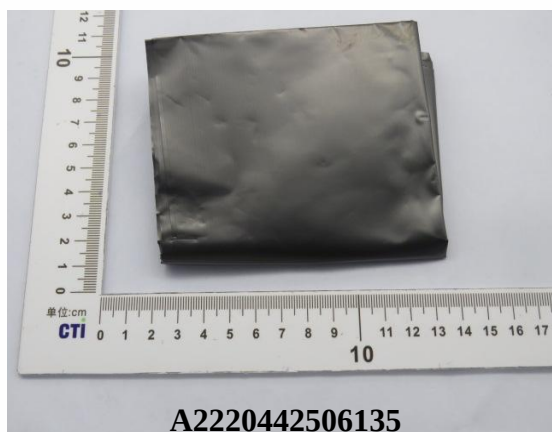
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聲明 Statement :

1. 檢測報告無批准人簽字、“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地址、樣品及樣品信息由申請者提供，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;

4. 未經 CTI 書面同意，不得部分複製本報告；

Without written approval of CTI, this report can't be reproduced except in full;

5. 如檢測報告中的英文內容與中文內容有差異，以中文為準。

In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.

*** 報告結束 ***

*** End of Report ***