CTI 华测检测

檢測報告
Test Report

報告編號 A2210480387103E
Report No. A2210480387103E

報告抬頭公司名稱 鈺邦科技股份有限公司
Company Name shown on Report APAQ TECHNOLOGY CO., LTD
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

總樣品名稱 Final Product Name	Conductive Polymer Hybrid Aluminum Solid Capacitors(Surface Mount Type)
樣品接收日期	2021.11.19
Sample Received Date	Nov. 19, 2021
樣品檢測日期	2021.11.19-2021.11.24
Testing Period	Nov. 19, 2021 to Nov. 24, 2021
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 Tested by ____ 審 核 Reviewed by ____

批 准 Approved by ____ 日 期 Date 2021.11.24

陳凱敏
實驗室經理 Lab Manager

No. T172792635

上海華測品標檢測技術有限公司
Centre Testing International Pinbiao(Shanghai) Co., Ltd.
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	Sealing Material	A2210480387101E-001
002	Lead Wire (RPSS)	A2210480387101E-002
003	Anode Foil	A2210480387101E-003
004	Cathode Foil	A2210480387101E-004
005	Separator Paper	A2210480387101E-005
006	Fixing tape	A2210480387101E-006
007	Aluminum Can	A2210480387101E-007
008	Printing Ink Red	A2210480387101E-008
009	Electrolyte	/
010	Base	A2210480387102E-010

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)	14 mg/kg	N.D.	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/cm² (LOQ)

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測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	004	005	006	
鉛 Lead (Pb)	N.D.	N.D.	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.	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
	007	008	009	
鉛 Lead (Pb)	N.D.	N.D.	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/cm² (LOQ)

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	010	
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
	--	0.10 μg/cm² (LOQ)

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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

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	005	006	008	
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
	009	010	
多溴聯苯 Polybrominated Biphenyls (PBBs)			
一溴聯苯 Monobromobiphenyl	N.D.	N.D.	5 mg/kg
二溴聯苯 Dibromobiphenyl	N.D.	N.D.	5 mg/kg
三溴聯苯 Tribromobiphenyl	N.D.	N.D.	5 mg/kg
四溴聯苯 Tetrabromobiphenyl	N.D.	N.D.	5 mg/kg
五溴聯苯 Pentabromobiphenyl	N.D.	N.D.	5 mg/kg
六溴聯苯 Hexabromobiphenyl	N.D.	N.D.	5 mg/kg
七溴聯苯 Heptabromobiphenyl	N.D.	N.D.	5 mg/kg
八溴聯苯 Octabromobiphenyl	N.D.	N.D.	5 mg/kg
九溴聯苯 Nonabromobiphenyl	N.D.	N.D.	5 mg/kg
十溴聯苯 Decabromobiphenyl	N.D.	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	006	008	
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

測試項目 Tested Item(s)	結果 Result		方法檢出限 MDL
	009	010	
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)			
一溴二苯醚 Monobromodiphenyl ether	N.D.	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	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
	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

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	005	006	008	
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
	009	010	
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.	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.	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.	50 mg/kg
鄰苯二甲酸二異丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	N.D.	50 mg/kg

測試項目 Tested Item(s)	結果 Result		方法檢出限 MDL
	002	007	
多溴聯苯 Polybrominated Biphenyls (PBBs)			
一溴聯苯 Monobromobiphenyl	N.D.	N.D.	5 mg/kg
二溴聯苯 Dibromobiphenyl	N.D.	N.D.	5 mg/kg
三溴聯苯 Tribromobiphenyl	N.D.	N.D.	5 mg/kg
四溴聯苯 Tetrabromobiphenyl	N.D.	N.D.	5 mg/kg
五溴聯苯 Pentabromobiphenyl	N.D.	N.D.	5 mg/kg
六溴聯苯 Hexabromobiphenyl	N.D.	N.D.	5 mg/kg
七溴聯苯 Heptabromobiphenyl	N.D.	N.D.	5 mg/kg
八溴聯苯 Octabromobiphenyl	N.D.	N.D.	5 mg/kg
九溴聯苯 Nonabromobiphenyl	N.D.	N.D.	5 mg/kg
十溴聯苯 Decabromobiphenyl	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
	002	007	
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)			
一溴二苯醚 Monobromodiphenyl ether	N.D.	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	N.D.	N.D.	5 mg/kg

測試項目 Tested Item(s)	結果 Result		方法檢出限 MDL
	002	007	
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.	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.	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.	50 mg/kg
鄰苯二甲酸二異丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5	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
	001	005	006	
氟 Fluorine (F)	93 mg/kg	N.D.	N.D.	10 mg/kg
氯 Chlorine (Cl)	187 mg/kg	N.D.	563 mg/kg	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
	008	009	010	
氟 Fluorine (F)	N.D.	N.D.	77 mg/kg	10 mg/kg
氯 Chlorine (Cl)	111 mg/kg	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

樣品/部位描述 Sample/Part Description

001 黑色塑膠 Black plastic
002 銀色金屬 Silvery metal
003 有灰色塗層的金屬 Metal with grey coating
004 有黑色塗層的金屬 Metal with black coating
005 白色紙 White paper
006 白色半透明塑膠膜與膠 White translucent plastic film and adhesive
007 銀色金屬 Silvery metal
008 紅色膏體 Red paste
009 黑色液體 Black liquid
010 黑色塑膠 Black plastic

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備註: **對於檢測鉛，鎘，汞之樣品已完全溶解。**

-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。

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/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.

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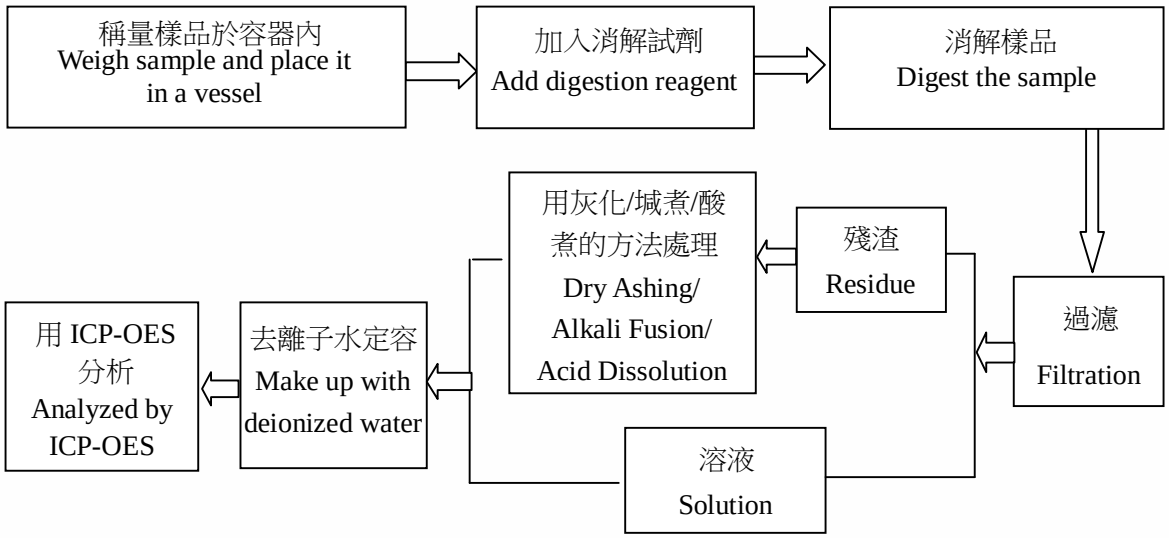
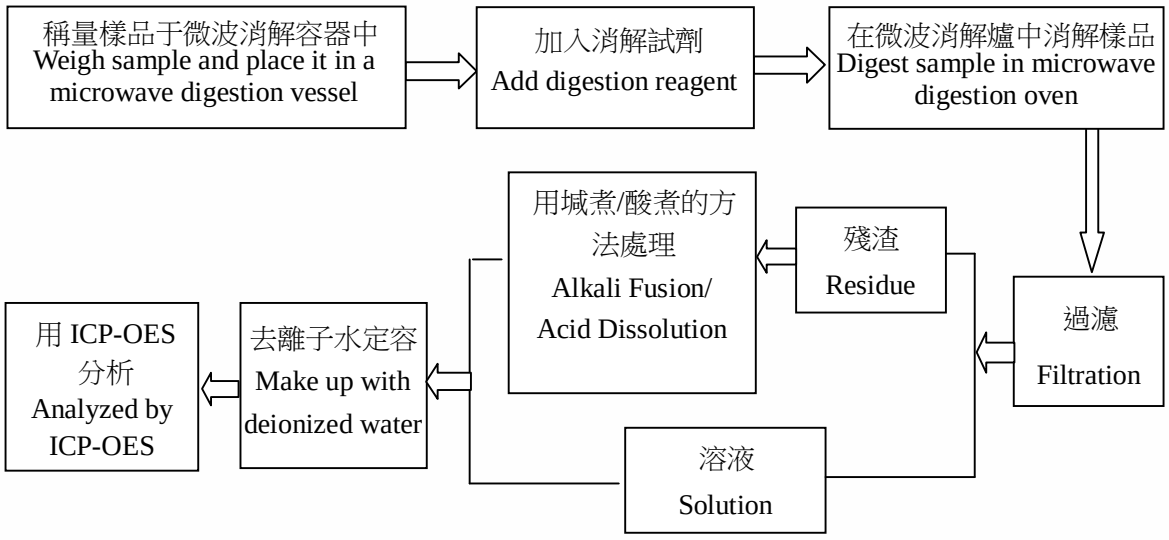
檢測流程 Test Process

1. 鉛 Lead (Pb), 鎘 Cadmium (Cd)

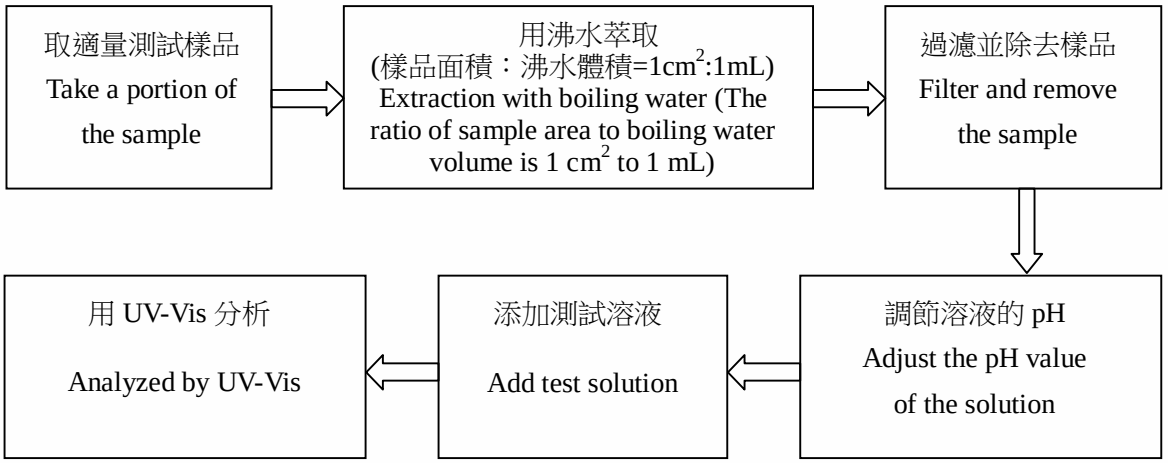


2. 汞 Mercury (Hg)

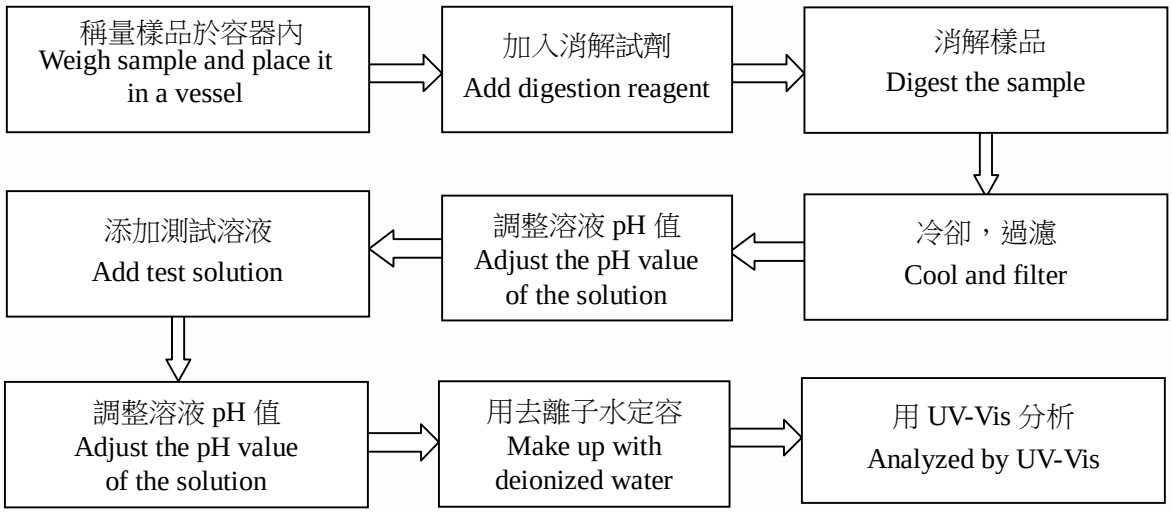


3. 六價鉻 Hexavalent Chromium (Cr(VI))

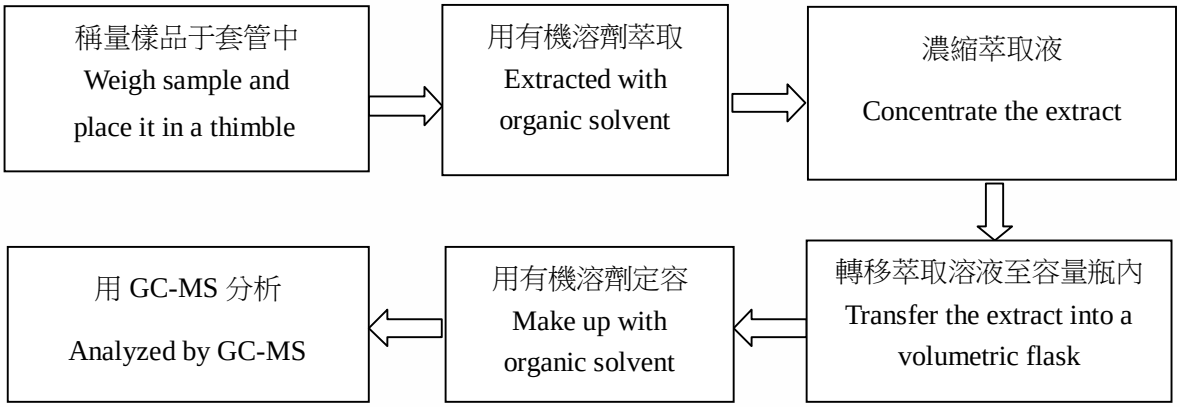
(1) IEC 62321-7-1:2015



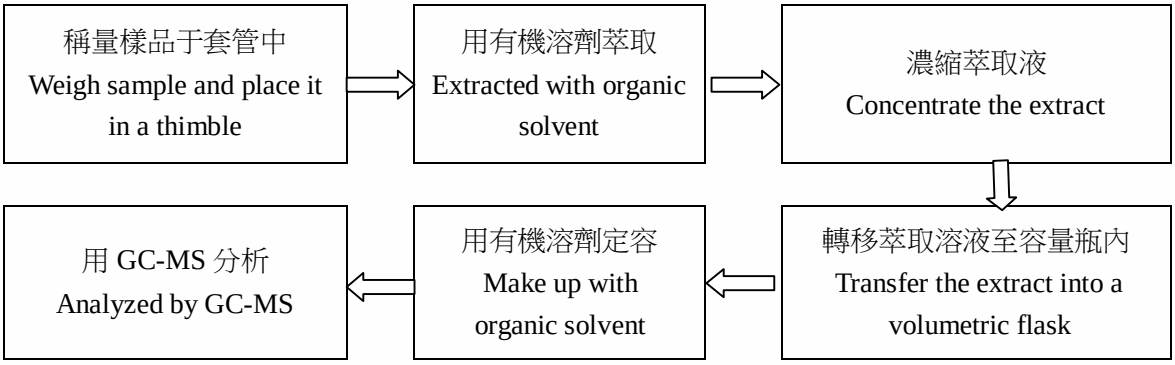
(2) IEC 62321-7-2:2017



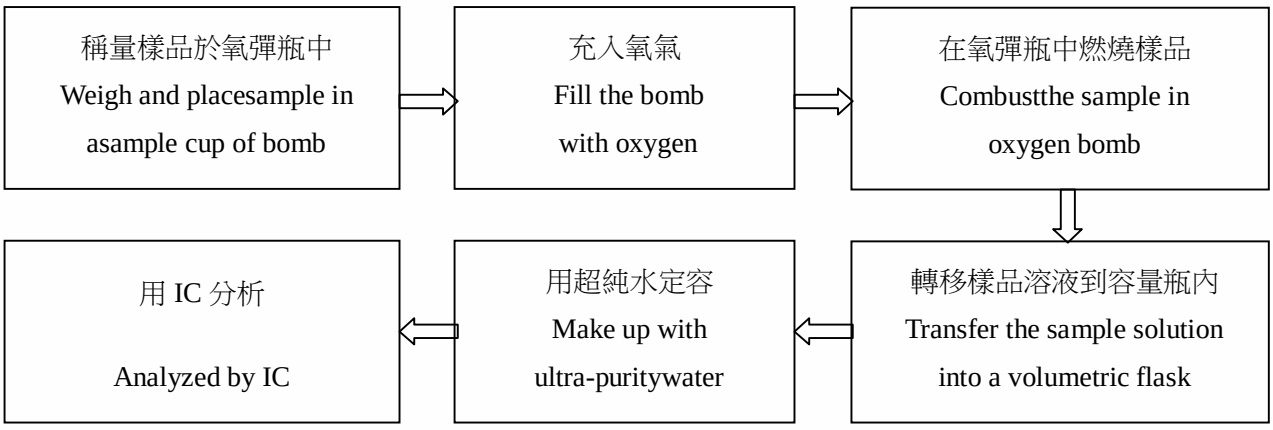
4. 多溴聯苯 Polybrominated Biphenyls (PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



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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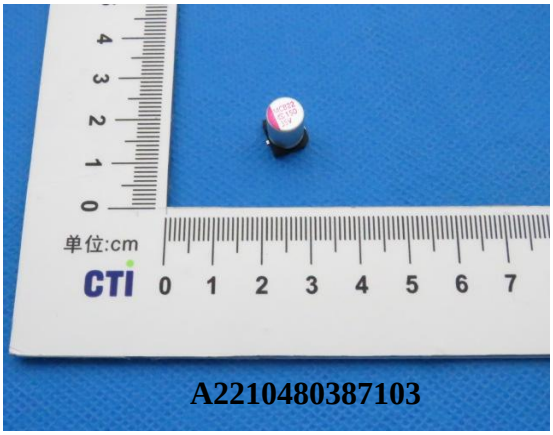
樣品圖片

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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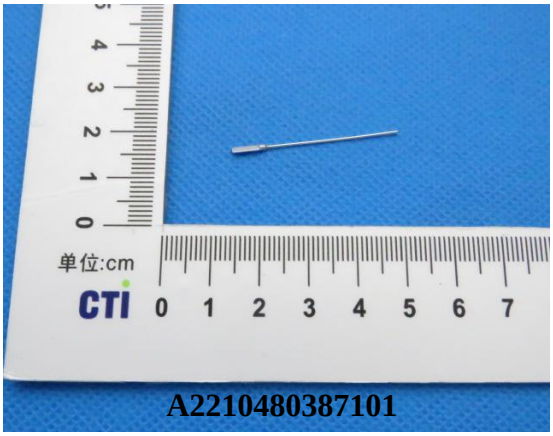

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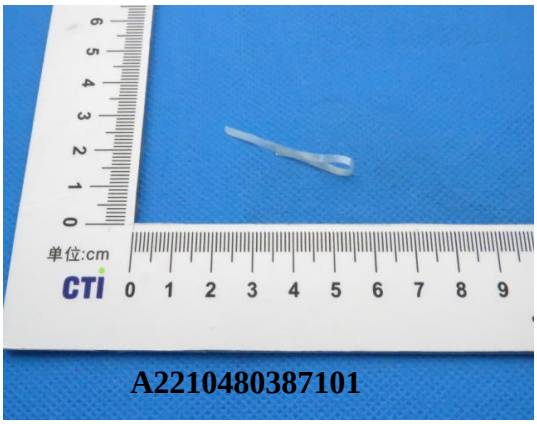
006



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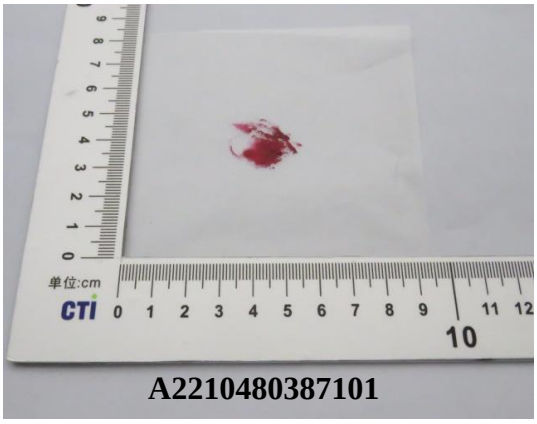
008



009

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The result(s) shown in this report refer(s) only to the sample(s) tested;

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