

測試報告

Test Report

號碼(No.) : CE/2016/B0289

日期(Date) : 2016/11/09

頁數(Page): 1 of 13

希華晶體科技股份有限公司

SIWARD CRYSTAL TECHNOLOGY CO., LTD.

台中市潭子區中山路三段111巷1之1號

NO. 1-1, LN. 111, SEC. 3, ZHONGSHAN RD., TANZI DIST., TAICHUNG CITY 427, TAIWAN (R. O. C.)



以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as) :

送樣廠商(Sample Submitted By) : 希華晶體科技股份有限公司 (SIWARD CRYSTAL TECHNOLOGY CO., LTD.)
 樣品名稱(Sample Description) : SEAM TYPE (OSCILLATOR)
 樣品型號(Style/Item No.) : OSC SERIES, VCXO SERIES, TXO SERIES, VTX SERIES
 收件日期(Sample Receiving Date) : 2016/11/02
 測試期間(Testing Period) : 2016/11/02 TO 2016/11/09

測試需求(Test Requested) :

- (1) 依據客戶指定，參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚、DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample.)
- (2) 其他測試項目請見下一頁。(Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

結論(Conclusion) : (1) 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚、DBP, BBP, DEHP, DIBP的測試結果符合RoHS指令暨(EU) 2015/863之限值要求。(Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS and amending Directive (EU) 2015/863.)


 Troy Chang, Manager - Tech
 Signed for and on behalf of
 SGS TAIWAN LTD.
 Chemical Laboratory - Taipei



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測試結果(Test Results)

測試部位(PART NAME)No. 1 : SEAM TYPE (OSC52)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
鎘 / Cadmium (Cd)	mg/kg	參考 IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.	100
鉛 / Lead (Pb)	mg/kg	參考 IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.	1000
汞 / Mercury (Hg)	mg/kg	參考 IEC 62321-4 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.	2	n. d.	1000
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考 IEC 62321 (2008), 以 UV-VIS 檢測. / With reference to IEC 62321 (2008) and performed by UV-VIS.	2	n. d.	1000
鹵素 / Halogen					
鹵素 (氟) / Halogen-Fluorine (F) (CAS No. : 14762-94-8)	mg/kg	參考 BS EN 14582 (2007), 以離子層析儀分析. / With reference to BS EN 14582 (2007). Analysis was performed by IC.	50	n. d.	-
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No. : 22537-15-1)	mg/kg		50	n. d.	-
鹵素 (溴) / Halogen-Bromine (Br) (CAS No. : 10097-32-2)	mg/kg		50	n. d.	-
鹵素 (碘) / Halogen-Iodine (I) (CAS No. : 14362-44-8)	mg/kg		50	n. d.	-

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
多溴聯苯總和 / Sum of PBBs	mg/kg	參考 IEC 62321-6 (2015)，以氣相層析/ 質譜儀檢測。 / With reference to IEC 62321-6 (2015) and performed by GC/MS.	—	n. d.	1000
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n. d.	—
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n. d.	—
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n. d.	—
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n. d.	—
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n. d.	—
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n. d.	—
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n. d.	—
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n. d.	—
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n. d.	—
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n. d.	—
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		—	n. d.	1000
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n. d.	—
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n. d.	—
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n. d.	—
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n. d.	—
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n. d.	—
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n. d.	—
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n. d.	—
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n. d.	—
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n. d.	—
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n. d.	—

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No. : 85-68-7)	mg/kg	參考IEC 62321-8/CD (2013), 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8/CD (2013). Analysis was performed by GC/MS.	50	n. d.	1000
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No. : 84-74-2)	mg/kg		50	n. d.	1000
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No. : 84-69-5)	mg/kg		50	n. d.	1000
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No. : 117-81-7)	mg/kg		50	n. d.	1000
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No. : 26761-40-0; 68515-49-1)	mg/kg		50	n. d.	-
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No. : 28553-12-0; 68515-48-0)	mg/kg		50	n. d.	-
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No. : 117-84-0)	mg/kg		50	n. d.	-
六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD) (CAS No. : 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考IEC 62321 (2008), 以氣相層析/質譜儀檢測. / With reference to IEC 62321 (2008). Analysis was performed by GC/MS.	5	n. d.	-
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C (2007), 以液相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.	-
全氟辛酸 / PFOA (CAS No. : 335-67-1)	mg/kg		10	n. d.	-

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				No. 1	
鉍 / Beryllium (Be)	mg/kg	參考US EPA 3050B (1996)，以感應耦合電漿原子發射光譜儀檢測。 / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.	-
銻 / Antimony (Sb)	mg/kg	參考US EPA 3050B (1996)，以感應耦合電漿原子發射光譜儀檢測。 / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	90.6	-

備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n. d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm)，在半成品、成品或零部件中不得超過0.1%(1000ppm)，在紡織品或塗層材料中不得超過1 μ g/m²。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1 μ g/m².)

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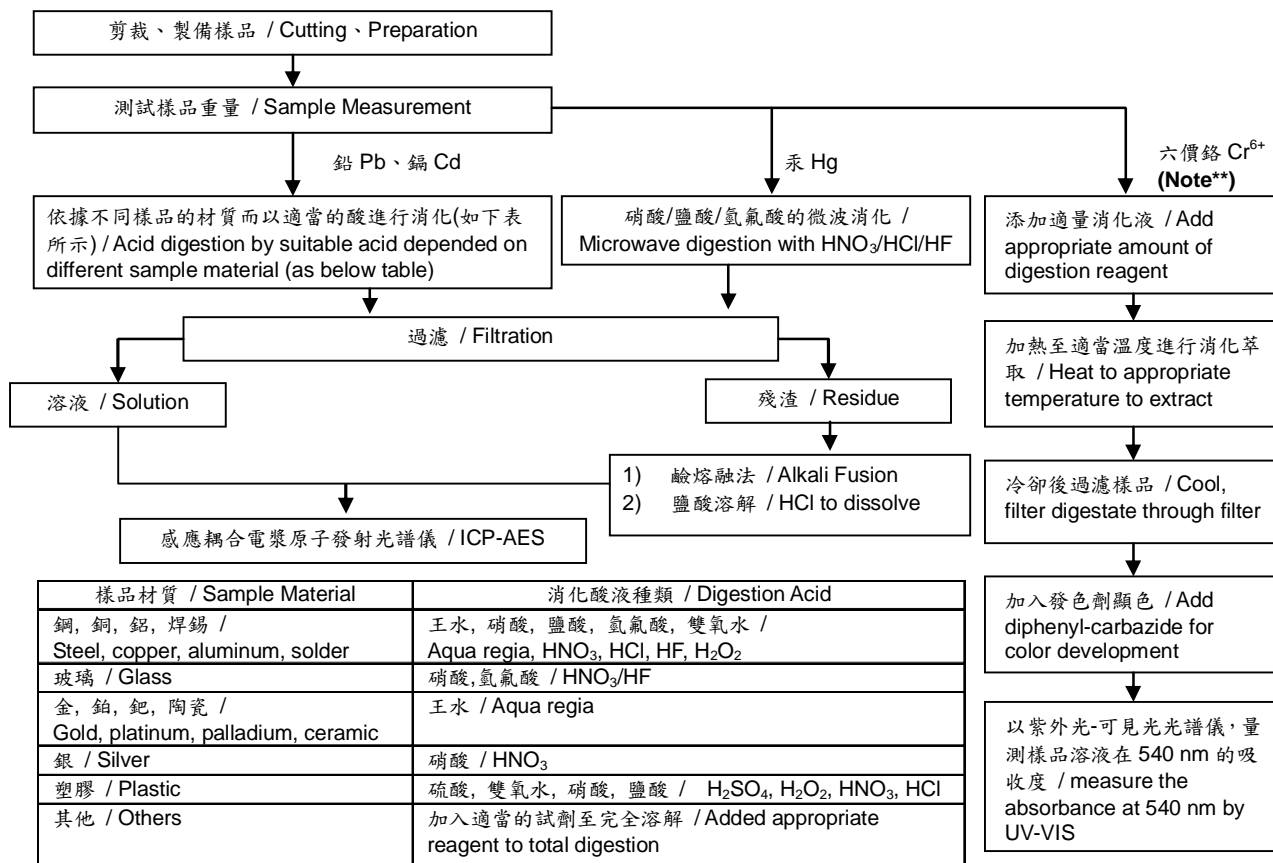
重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外)

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)

■ 測試人員：王志瑋 / Technician : JR Wang

■ 測試負責人：張啟興 / Supervisor: Troy Chang



Note** (For IEC 62321)

- (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95℃ 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
- (2) 針對金屬材料加入純水，加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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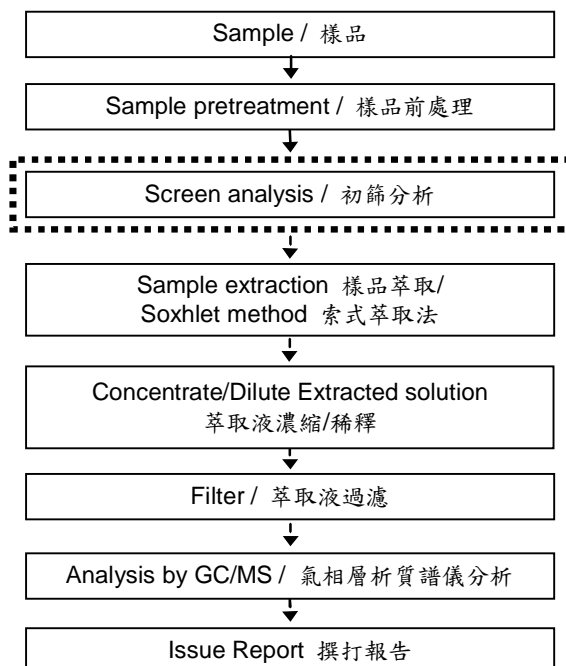
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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process —————→
 選擇性篩檢程序 / Optional screen process
 確認程序 / Confirmation process - - - ->



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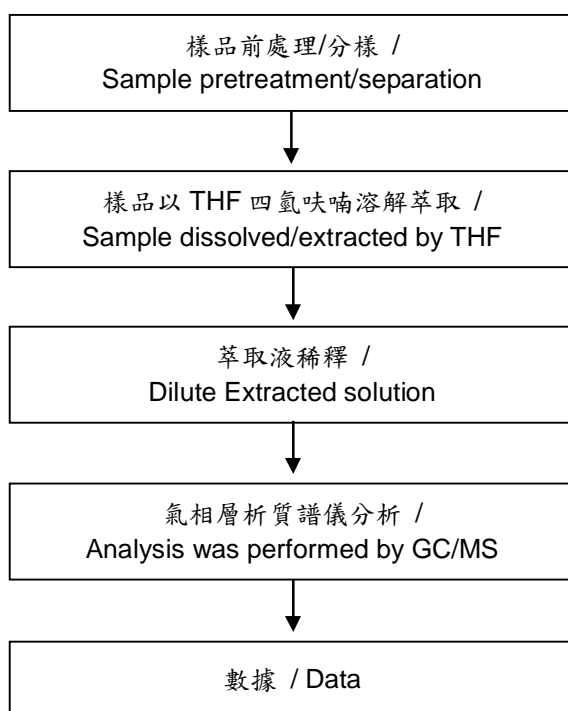
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可塑劑分析流程圖 / Analytical flow chart - Phthalate

- 測試人員：徐毓明 / Technician: Andy Shu
- 測試負責人：張啟興 / Supervisor : Troy Chang

【測試方法/Test method: IEC 62321-8】



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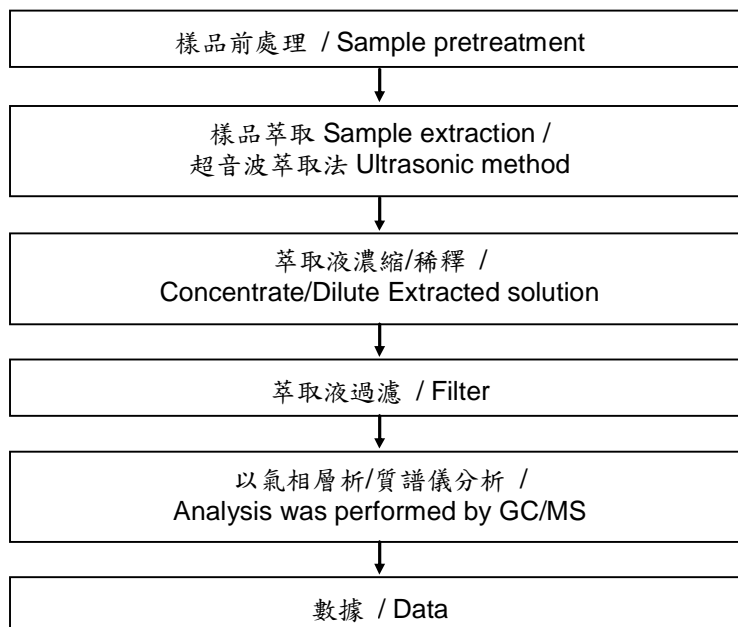
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六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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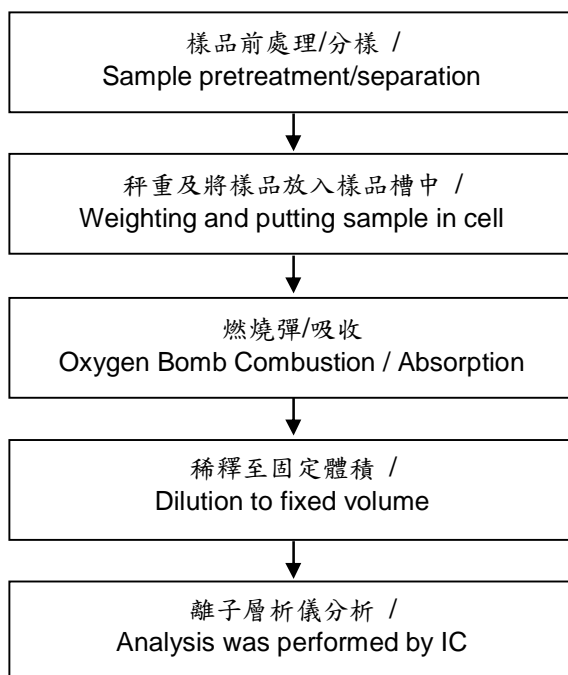
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鹵素分析流程圖 / Analytical flow chart - Halogen

- 測試人員：陳恩臻 / Technician: Rita Chen
- 測試負責人：張啟興 / Supervisor: Troy Chang



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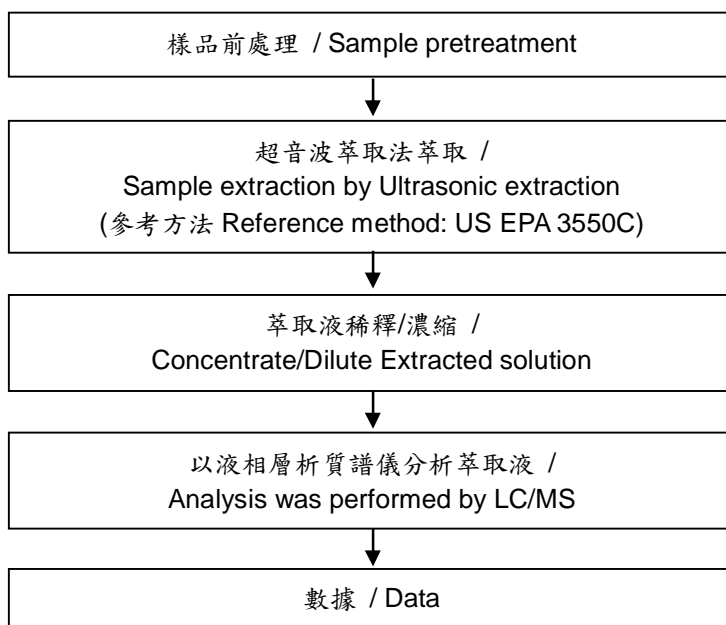
台中市潭子區中山路三段111巷1之1號

NO. 1-1, LN. 111, SEC. 3, ZHONGSHAN RD., TANZI DIST., TAICHUNG CITY 427, TAIWAN (R. O. C.)



全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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測試報告

Test Report

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日期(Date) : 2016/11/09

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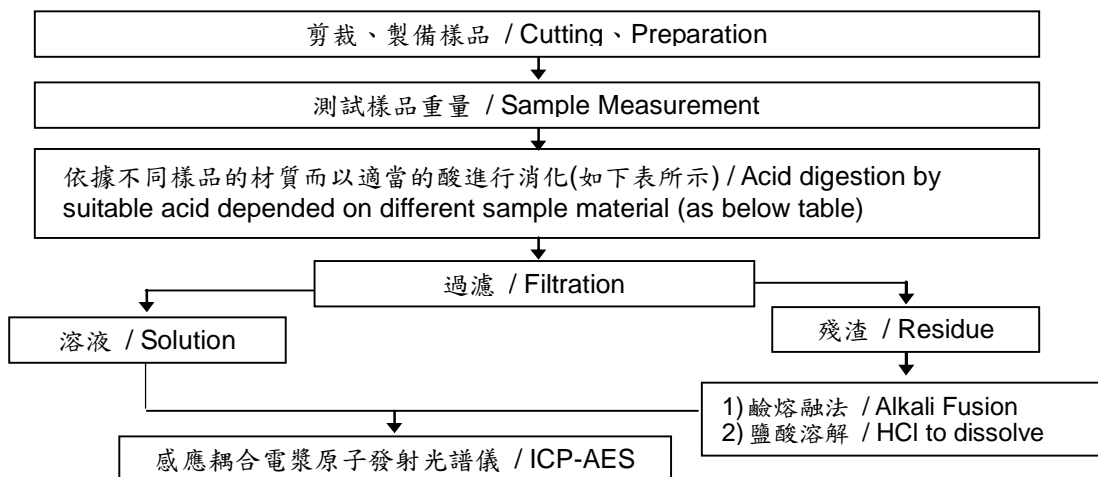
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根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

- 測試人員：王志瑋 / Technician: JR Wang
- 測試負責人：張啟興 / Supervisor: Troy Chang

元素以 ICP-AES 分析的消化流程圖 (Flow Chart of digestion for the elements analysis performed by ICP-AES)



鋼,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
玻璃 / Glass	硝酸,氫氟酸 / HNO ₃ /HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO ₃
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

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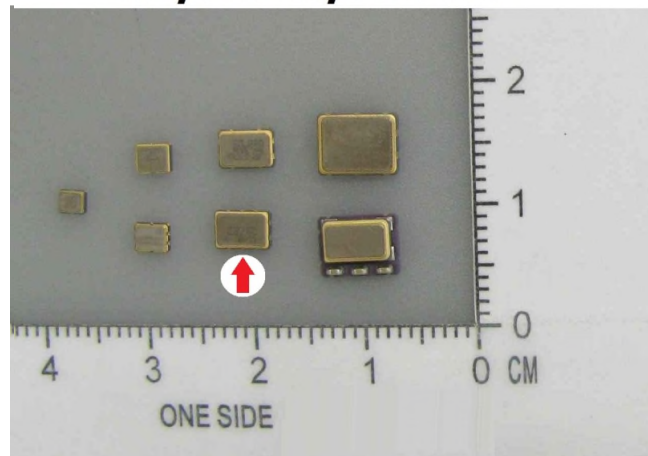
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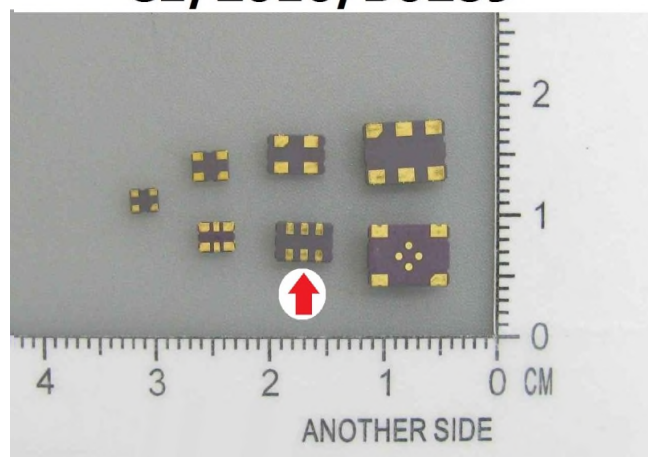


* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*
(The tested sample / part is marked by an arrow if it's shown on the photo.)

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** 報告結尾 (End of Report) **

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