

Test Report

號碼(No.): ETA21B00048 日期(Date): 10-Nov-2021 頁數(Page): 1 of 12

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 Name) : SEAM TYPE (OSCILLATOR)

樣品型號(Style/Item No.) : OSC SERIES / VCXO SERIES / TXO SERIES / VTX SERIES

收件日(Sample Receiving Date) : 03-Nov-2021

測試期間(Testing Period) : 03-Nov-2021 to 10-Nov-2021

測試需求(Test Requested) : 依據客戶要求進行測試,測試項目請參閱測試結果表格。(Testing item(s)

is/are specified by client. Please refer to result table for testing item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages.)





PIN CODE: 164A91BA



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測試部位敘述 (Test Part Description)

No.1 : 整體混測 (MIXED ALL PARTS)

測試結果 (Test Results)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1
鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440-43-9)	參考IEC 62321-5: 2013 · 以感應耦合電漿發射光 譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	n.d.
鉛 (Pb) (Lead (Pb)) (CAS No.: 7439-92-1)	參考IEC 62321-5: 2013 · 以感應耦合電漿發射光 譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	n.d.
汞 (Hg) (Mercury (Hg)) (CAS No.: 7439-97-6)	參考IEC 62321-4: 2013 + AMD1: 2017 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-4: 2013 + AMD1: 2017, analysis was performed by ICP-OES.)	mg/kg	2	n.d.
六價鉻 Cr(VI) (Hexavalent Chromium Cr(VI)) (CAS No.: 18540-29-9)	參考IEC 62321-7-2: 2017·以紫外光-可見光分光 光度計分析。(With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.)	mg/kg	8	n.d.
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)	參考IEC 62321-6: 2015,以氣相層析儀/質譜儀分	mg/kg	5	n.d.
六溴聯苯 (Hexabromobiphenyl)	析。(With reference to IEC 62321-6: 2015,	mg/kg	5	n.d.
七溴聯苯 (Heptabromobiphenyl)	analysis was performed by GC/MS.)	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.
多溴聯苯總和 (Sum of PBBs)		mg/kg	-	n.d.



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測試項目	測試方法	單位	MDL	結果
(Test Items)	(Method)	(Unit)		(Result)
				No.1
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)	参考IEC 62321-6: 2015·以氣相層析儀/質譜儀分	mg/kg	5	n.d.
六溴聯苯醚 (Hexabromodiphenyl ether)	析。(With reference to IEC 62321-6: 2015,	mg/kg	5	n.d.
七溴聯苯醚 (Heptabromodiphenyl ether)	analysis was performed by GC/MS.)	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.
多溴聯苯醚總和 (Sum of PBDEs)		mg/kg	1	n.d.
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl	參考IEC 62321-8: 2017·以氣相層析儀/質譜儀分	mg/kg	50	n.d.
phthalate (BBP)) (CAS No.: 85-68-7)	析。(With reference to IEC 62321-8: 2017,			
	analysis was performed by GC/MS.)			
鄰苯二甲酸二丁酯 (DBP) (Dibutyl	參考IEC 62321-8: 2017·以氣相層析儀/質譜儀分	mg/kg	50	n.d.
phthalate (DBP)) (CAS No.: 84-74-2)	析。(With reference to IEC 62321-8: 2017,			
	analysis was performed by GC/MS.)			
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-	參考IEC 62321-8: 2017·以氣相層析儀/質譜儀分	mg/kg	50	n.d.
(2-ethylhexyl) phthalate (DEHP)) (CAS	析。(With reference to IEC 62321-8: 2017,			
No.: 117-81-7)	analysis was performed by GC/MS.)			
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl	參考IEC 62321-8: 2017·以氣相層析儀/質譜儀分	mg/kg	50	n.d.
phthalate (DIBP)) (CAS No.: 84-69-5)	析。(With reference to IEC 62321-8: 2017,			
	analysis was performed by GC/MS.)			
氟 (F) (Fluorine (F)) (CAS No.: 14762-94-		mg/kg	50	n.d.
8)				
氯 (CI) (Chlorine (CI)) (CAS No.: 22537-] 参考BS EN 14582: 2016·以離子層析儀分析。	mg/kg	50	n.d.
15-1)	参考BS EN 14502. 2010,以無丁層が 展力が 。 (With reference to BS EN 14582: 2016, analysis			
溴 (Br) (Bromine (Br)) (CAS No.: 10097-	was performed by IC.)	mg/kg	50	n.d.
32-2)	was periorified by ie./			
碘 (I) (Iodine (I)) (CAS No.: 14362-44-8)		mg/kg	50	n.d.



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測試項目	測試方法	單位	MDL	結果
(Test Items)	(Method)	(Unit)		(Result)
				No.1
全氟辛烷磺酸及其鹽類 (PFOS and its	 参考CEN/TS 15968: 2010·以液相層析串聯質譜	mg/kg	0.01	n.d.
salts) (CAS No.: 1763-23-1 and its salts)	儀分析。(With reference to CEN/TS 15968:			
全氟辛酸及其鹽類 (PFOA and its salts)	2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.
(CAS No.: 335-67-1 and its salts)	2010, analysis was performed by Le, 1413, 1413.)			
六溴環十二烷及所有主要被辨別出的異構	參考IEC 62321: 2008,以氣相層析儀/質譜儀分	mg/kg	5	n.d.
物(HBCDD) (α- HBCDD, β- HBCDD, γ-	析。(With reference to IEC 62321: 2008, analysis			
HBCDD) (Hexabromocyclododecane	was performed by GC/MS.)			
(HBCDD) and all major				
diastereoisomers identified (α - HBCDD,				
β- HBCDD, γ- HBCDD)) (CAS No.:				
25637-99-4, 3194-55-6 (134237-51-7,				
134237-50-6, 134237-52-8))				
銻 (Sb) (Antimony (Sb)) (CAS No.: 7440-	A ≠ I C F D A 20 F O D · 100 C □ \/ □ 以 成 座 押 仝 面 悠 於 計	mg/kg	2	n.d.
36-0)	參考US EPA 3050B: 1996,以感應耦合電漿發射			
鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-	光譜儀分析。(With reference to US EPA 3050B: 1996, analysis was performed by ICP-OES.)	mg/kg	2	n.d.
41-7)	11990, analysis was performed by ICP-OES.)			

備註(Note):

- 1. mg/kg = ppm; 0.1wt% = 1000ppm
- 2. MDL = Method Detection Limit (方法偵測極限值)
- 3. n.d. = Not Detected (未檢出); 小於MDL / Less than MDL
- 4. "-" = Not Regulated (無規格值)
- 5. 全氟辛烷磺酸及其鹽類包含 (PFOS and its salts including):

CAS No.: 29081-56-9, 2795-39-3, 29457-72-5, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7.

- 6. 全氟辛酸及其鹽類包含 (PFOA and its salts including):
 - CAS No.: 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0.
- 7. 樣品的測試是基於申請人要求混合測試‧報告中的混合測試結果不代表其中個別單一材質的含量。
 The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) was/were only given as the informality value.



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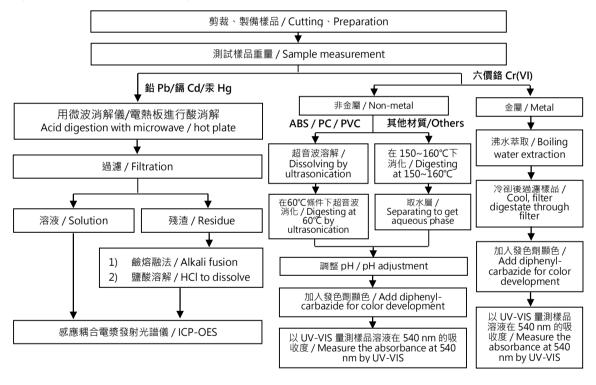
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重金屬流程圖 / Analytical flow chart of Heavy Metal

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. (Cr^{6+} test method excluded)



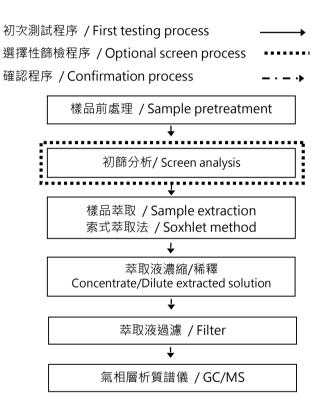


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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs





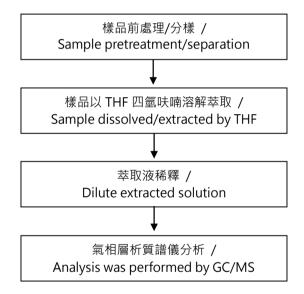
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可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



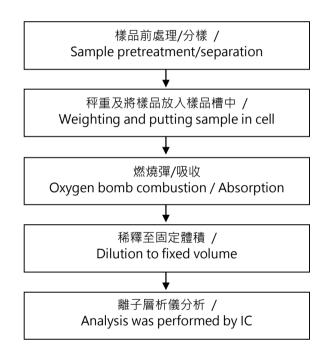


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鹵素分析流程圖 / Analytical flow chart - Halogen



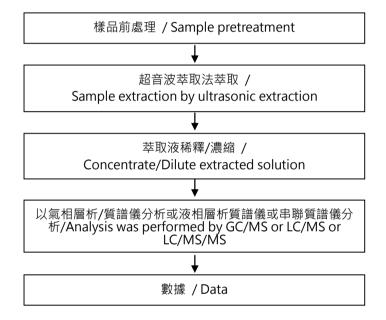


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全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



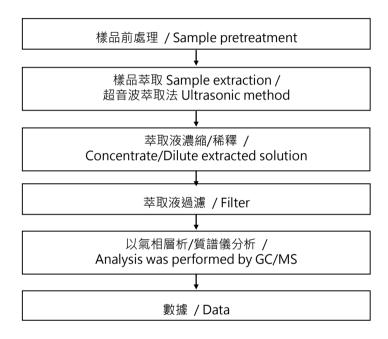


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六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD





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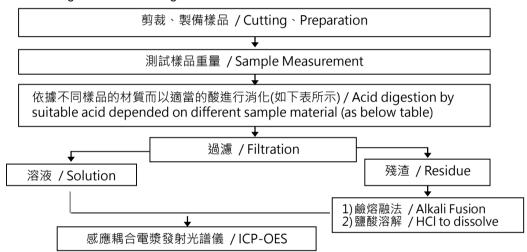
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元素以 ICP-OES 分析的消化流程圖

(Flow Chart of digestion for the elements analysis performed by ICP-OES)

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



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 / HNO₃/HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO₃
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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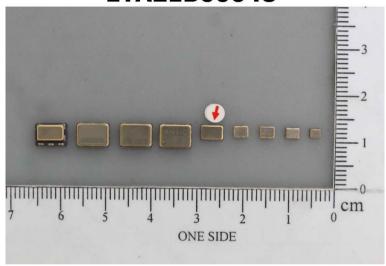
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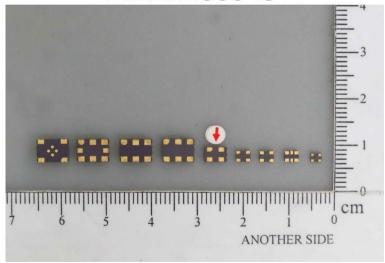
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* 照片中如有箭頭標示,則表示為實際檢測之樣品/部位. * (The tested sample / part is marked by an arrow if it's shown on the photo.)

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** 報告結尾 (End of Report) **