

Test Report

號碼(No.): ETR21C06077 日期(Date): 12-Jan-2022 頁數(Page): 1 of 18

景碩科技股份有限公司 (KINSUS INTERCONNECT TECHNOLOGY CORP.) 桃園市新屋區中華路1245號 (NO. 1245, JUNGHUA RD., SHIN-WU DISTRICT, TAOYUAN 327, TAIWAN)

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)

景碩科技股份有限公司 (KINSUS INTERCONNECT TECHNOLOGY CORP.)

樣品名稱(Sample Name)

PLATING NICKEL

收件日(Sample Receiving Date)

: 29-Dec-2021

測試期間(Testing Period)

: 29-Dec-2021 to 12-Jan-2022

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(s).)

(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)

請參閱下一頁 (Please refer to following pages.)







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測試部位敘述 (Test Part Description)

No.1 : 銀色金屬鍍層 (PLATING LAYER OF SILVER COLORED METAL)

No.2 : 銀色金屬 (含鍍層) (SILVER COLORED METAL (INCLUDING THE PLATING LAYER))

測試結果 (Test Results)

測試項目	測試方法	單位	MDL	結	果
(Test Items)	(Method)	(Unit)		(Result)	
				No.1	No.2
鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440-43-9)	酸洗脫鍍層·參考IEC 62321-5: 2013 ·以感應耦合電漿發射光譜儀分析。 (IEC 62321-5: 2013 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	
鉛 (Pb) (Lead (Pb)) (CAS No.: 7439-92-1)	酸洗脫鍍層,參考IEC 62321-5: 2013 ,以感應耦合電漿發射光譜儀分析。 (IEC 62321-5: 2013 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	
汞 (Hg) (Mercury (Hg)) (CAS No.: 7439-97-6)	酸洗脫鍍層·參考IEC 62321-4: 2013+ AMD1: 2017·以感應耦合電 漿發射光譜儀分析。(IEC 62321-4: 2013+AMD1: 2017 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	
六價鉻 (Hexavalent Chromium) Cr(VI) (CAS No.: 18540-29-9) (#2)	參考IEC 62321-7-1: 2015 · 以紫外 光-可見光分光光度計分析。(With reference to IEC 62321-7-1: 2015, analysis was performed by UV- VIS.)	μg/cm²	0.1	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	No.2
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)	參考IEC 62321-6: 2015,以氣相層析	mg/kg	5		n.d.
多溴聯苯總和 (Sum of PBBs)	儀/質譜儀分析。(With reference to	mg/kg	-		n.d.
一溴聯苯醚 (Monobromodiphenyl ether)	IEC 62321-6: 2015, analysis was	mg/kg	5		n.d.
二溴聯苯醚 (Dibromodiphenyl ether)	performed by GC/MS.)	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.
多溴聯苯醚總和 (Sum of PBDEs)		mg/kg	ı		n.d.
六溴環十二烷及所有主要被辨別出的異	參考IEC 62321: 2008,以氣相層析儀	mg/kg	5		n.d.
構物(HBCDD) (α- HBCDD, β- HBCDD,	-				
γ- HBCDD)	IEC 62321: 2008, analysis was				
(Hexabromocyclododecane (HBCDD)	performed by GC/MS.)				
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))					
JU-U, 134237-32-0))					



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測試項目	測試方法	單位	MDL	結	果
(Test Items)	(Method)	(Unit)		(Res	sult)
				No.1	No.2
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl		mg/kg	50		n.d.
benzyl phthalate (BBP)) (CAS No.: 85-					
68-7)					
鄰苯二甲酸二丁酯 (DBP) (Dibutyl		mg/kg	50		n.d.
phthalate (DBP)) (CAS No.: 84-74-2)					
鄰苯二甲酸二(2-乙基己基)酯 (DEHP)		mg/kg	50		n.d.
(Di-(2-ethylhexyl) phthalate (DEHP))					
(CAS No.: 117-81-7)					
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl		mg/kg	50		n.d.
phthalate (DIBP)) (CAS No.: 84-69-5)					
鄰苯二甲酸二異癸酯 (DIDP)		mg/kg	50		n.d.
(Diisodecyl phthalate (DIDP)) (CAS					
No.: 26761-40-0, 68515-49-1)					
鄰苯二甲酸二異壬酯 (DINP)	參考IEC 62321-8: 2017,以氣相層析	mg/kg	50		n.d.
(Diisononyl phthalate (DINP)) (CAS	儀/質譜儀分析。(With reference to				
No.: 28553-12-0, 68515-48-0)	IEC 62321-8: 2017, analysis was				
鄰苯二甲酸二正辛酯 (DNOP) (Di-n-	performed by GC/MS.)	mg/kg	50		n.d.
octyl phthalate (DNOP)) (CAS No.:					
117-84-0)					
鄰苯二甲酸二正己酯 (DNHP) (Di-n-		mg/kg	50		n.d.
hexyl phthalate (DNHP)) (CAS No.:					
84-75-3)					
鄰苯二甲酸雙(2-甲氧基乙基)酯 (DMEP)		mg/kg	50		n.d.
(Bis(2-methoxyethyl) phthalate					
(DMEP)) (CAS No.: 117-82-8)					
鄰苯二甲酸二(C7-11支鏈與直鏈)烷基		mg/kg	50		n.d.
酯 (DHNUP) (1,2-					
Benzenedicarboxylic acid, di-C7-11-					
branched and linear alkyl esters					
(DHNUP)) (CAS No.: 68515-42-4)					



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測試項目	測試方法	單位	MDL		果
(Test Items)	(Method)	(Unit)		No.1	sult) No.2
 鄰苯二甲酸二 (C6-8支鏈)烷基酯·富C7	 参考IEC 62321-8: 2017 · 以氣相層析	mg/kg	50		n.d.
(DIHP) (1,2-Benzenedicarboxylic	儀/質譜儀分析。(With reference to	<i>J, J</i>			
acid, di-C6-8-branched alkyl esters,	IEC 62321-8: 2017, analysis was				
C7-rich (DIHP)) (CAS No.: 71888-89-	performed by GC/MS.)				
6)					
氟 (F) (Fluorine (F)) (CAS No.: 14762-		mg/kg	50		n.d.
94-8)					
氯 (CI) (Chlorine (CI)) (CAS No.:	參考BS EN 14582: 2016,以離子層	mg/kg	50		n.d.
22537-15-1)	析儀分析。(With reference to BS				
溴 (Br) (Bromine (Br)) (CAS No.:	EN 14582: 2016, analysis was	mg/kg	50		n.d.
10097-32-2)	performed by IC.)				
碘 (I) (Iodine (I)) (CAS No.: 14362-44-		mg/kg	50		n.d.
8)					
多氯聯苯 (PCBs) (Polychlorinated	參考US EPA 3550C: 2007,以氣相層	mg/kg	0.5		n.d.
biphenyls (PCBs))	析儀/質譜儀分析。(With reference				
	to US EPA 3550C: 2007, analysis				
	was performed by GC/MS.)				
多氯奈 (PCNs) (Polychlorinated	參考US EPA 3550C: 2007,以氣相層	mg/kg	5		n.d.
naphthalene (PCNs))	析儀/質譜儀分析。(With reference				
	to US EPA 3550C: 2007, analysis				
	was performed by GC/MS.)				
多氯三聯苯 (PCTs) (Polychlorinated	參考US EPA 3550C: 2007·以氣相層	mg/kg	0.5		n.d.
terphenyls (PCTs))	析儀/質譜儀分析。(With reference				
	to US EPA 3550C: 2007, analysis				
	was performed by GC/MS.)				
		mg/kg	50		n.d.
Chain Chlorinated Paraffins(C10-	儀/質譜儀分析。(With reference to				
C13) (SCCP)) (CAS No.: 85535-84-8)	ISO 18219: 2015, analysis was				
	performed by GC/MS.)				



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測試項目	測試方法	單位	MDL		i果 !+\
(Test Items)	(Method)	(Unit)		No.1	sult) No.2
 三丁基錫 (TBT) (Tributyl tin (TBT))	┃ 参考ISO 17353: 2004,以氣相層析	mg/kg	0.03		n.d.
三苯基錫 (TPT) (Triphenyl tin (TPT))	儀/火焰光度偵測器分析。(With	mg/kg	0.03		n.d.
二丁基錫 (DBT) (Dibutyl tin (DBT))	reference to ISO 17353: 2004,	mg/kg	0.03		n.d.
二辛基錫 (DOT) (Dioctyl tin (DOT))	analysis was performed by GC/FPD.)	mg/kg	0.03		n.d.
氧化雙三丁基錫 (TBTO) (Bis(tributyltin) oxide (TBTO)) (CAS No.: 56-35-9)	由三丁基錫測試結果計算得之。 (Calculated from the result of Tributyl Tin (TBT).)	mg/kg	0.03▲		n.d.
聚氯乙烯 (Polyvinyl chloride) (PVC)	參考ASTM E1252: 2013 · 以傅立葉 轉換紅外線光譜儀及焰色法分析。 (With reference to ASTM E1252: 2013, analysis was performed by FT-IR and Flame Test.)	**	-		Negative
銻 (Sb) (Antimony (Sb)) (CAS No.: 7440-36-0)	參考US EPA 3052: 1996 · 以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2		n.d.
鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-41-7)	參考US EPA 3052: 1996 · 以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2		n.d.
全氟辛烷磺酸及其鹽類 (PFOS and its salts) (CAS No.: 1763-23-1 and its salts)	参考CEN/TS 15968: 2010 · 以液相 層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010,	μg/m²	1	n.d.	
全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	analysis was performed by LC/MS/MS.)	μg/m²	1	n.d.	



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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. "---" = Not Conducted (未測試項目)
- 6. **= Qualitative analysis (No Unit) 定性分析(無單位)
- 7. Negative = Undetectable 陰性(未偵測到); Positive = Detectable 陽性(已偵測到)
- 8. 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.
- 9. 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.
- 10. (#2) =
 - a. 當六價鉻結果大於 $0.13~\mu g/cm^2\cdot$ 表示樣品表層含有六價鉻。(The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than $0.13~\mu g/cm^2$. The sample coating is considered to contain Cr(VI).) b. 當六價鉻結果為n.d. (濃度小於 $0.10~\mu g/cm^2$)·表示表層不含六價鉻。(The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than $0.10~\mu g/cm^2$). The coating is considered a non-Cr(VI) based coating) c. 當六價鉻結果介於 0.10~ 及 $0.13~\mu g/cm^2~$ 時,無法確定塗層是否含有六價鉻。(The result between $0.10~\mu g/cm^2~$ and $0.13~\mu g/cm^2~$ is considered to be inconclusive unavoidable coating variations may influence the determination.)
- 11. ▲: MDL是針對元素/測試化合物之評估。(The MDL was evaluated for element / tested substance.) 換算公式 (Conversion Formula): AX = A × F

3691 24 0 (30111 31111 31111 3111 3111 3111 311		
AX	Α	F
氧化雙三丁基錫	丁草伊 /Tsib.utul Tip) /TDT)	1 024
(Bis(tributyltin)oxide) (TBTO)	三丁基錫 (Tributyl Tin) (TBT)	1.024

參數換算表 (Parameter Conversion Table):

https://eecloud.sgs.com/Region_TW/DocDownload.aspx#otherDoc



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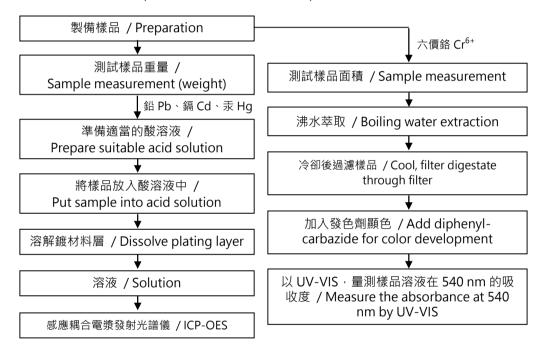
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鍍層重金屬測試流程圖 / Flow Chart of Stripping method for metal analysis

根據以下的流程圖之條件‧樣品之外部鍍層已完全溶解。(六價鉻測試方法除外) / The plating layer of samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)





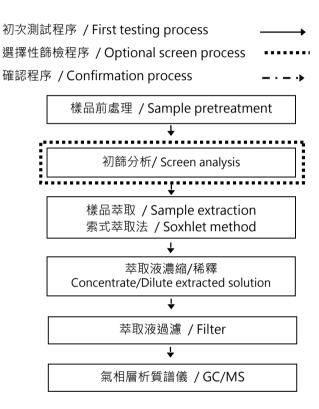
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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs



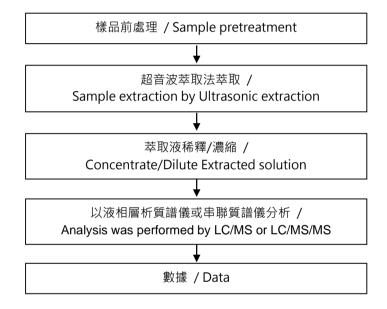


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全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS





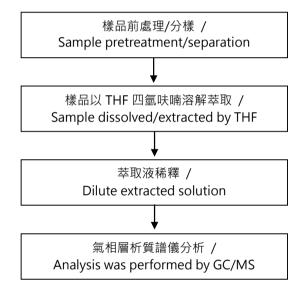
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可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



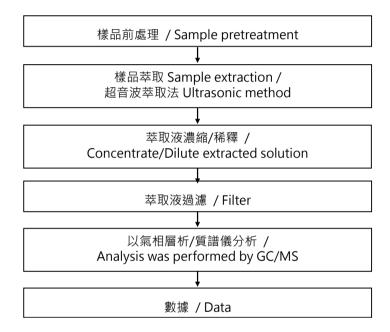


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六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



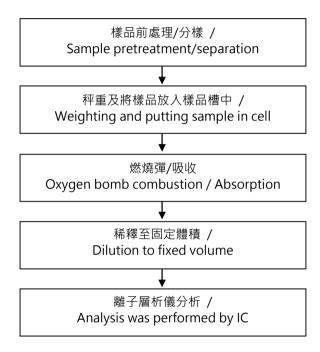


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鹵素分析流程圖 / Analytical flow chart - Halogen





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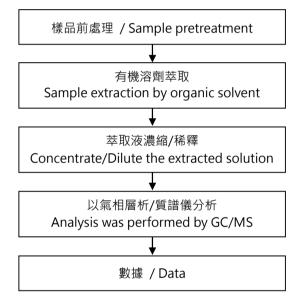
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分析流程圖 / Analytical flow chart

【適用於:多氯聯苯、多氯奈、多氯三聯苯、滅蟻靈、氯化石蠟、DBBT】

*Apply to: PCBs, PCNs, PCTs, Mirex, Chlorinated Paraffins, DBBT



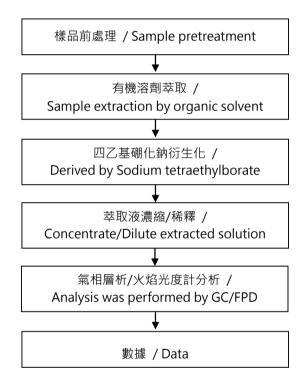


Test Report

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景碩科技股份有限公司 (KINSUS INTERCONNECT TECHNOLOGY CORP.) 桃園市新屋區中華路1245號 (NO. 1245, JUNGHUA RD., SHIN-WU DISTRICT, TAOYUAN 327, TAIWAN)

有機錫分析流程圖 / Analytical flow chart - Organic-Tin



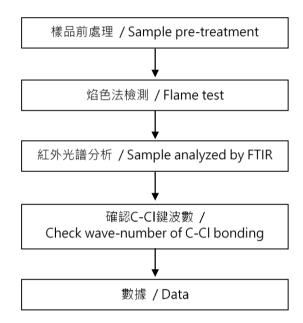


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聚氯乙烯物質判定分析流程圖 / Analysis flow chart - PVC





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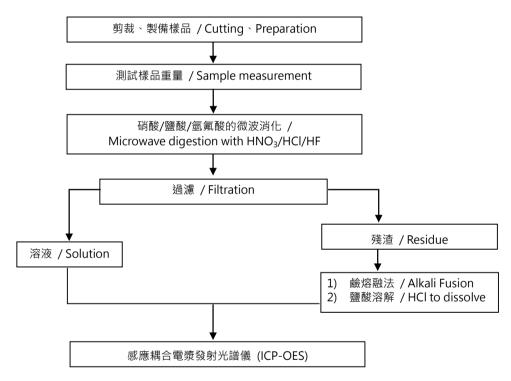
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元素(含重金屬)分析流程圖 / Analytical flow chart of Elements (Heavy metal included)

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.

【参考方法/Reference method: US EPA 3051A、US EPA 3052】



* US EPA 3051A 方法未添加氫氟酸 / US EPA 3051A method does not add HF.



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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.)

ETR21C06077 NO.1



ETR21C06077 NO.2



** 報告結尾 (End of Report) **