

**Test Report** 號碼(No.): ETR24205324 日期(Date): 05-Mar-2024

頁數(Page):1 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

以下測試樣品係由申請廠商/ as) :	所提伯	共及確認 (The following sample(s) was/were submitted and identified by the applicant
送樣廠商(Sample Submitted By)	:	華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)
樣品名稱(Sample Name)	:	VARISTOR (壓敏電阻)
樣品型號(Style/Item No.)	:	MOV:05D \ 07D \ 10D \ 12D \ 14D \ 18D \ 20D \ 25D \ 32D \ 40D \ 53D \ 320D \
		20A \ 14E \ 14M \ 20M \ 25M \ 14N \ 20N \ 8S \ 12S \ 16S \ 20S \ 22S \ 30S \ 32S \
		34S、320S、34Z、34H、34L
=====================================	:===	02-Feb-2024
測試期間(Testing Period)	•	02-Feb-2024 to 16-Feb-2024
	•	02 100 2024 10 10 100 2024
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.)
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 2011/65/EU Annex II暨其修訂指令(EU) 2015/863之限值要求。
		(Based on the performed tests on submitted sample(s), the test results of Cadmium,
		Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set
		by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)

Troy Chang / Department Ma ager Signed for and on behalf SĞS TAIWAN LTD. Chemical Laboratory - Taipei



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SGS Taiwan Ltd. 台灣檢驗科技股份有限公司



Test Report 號碼(No.): ETR24205324 日期(Date): 05-Mar-2024

頁數(Page): 2 of 30

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#### 測試部位敘述 (Test Part Description)

- No.1 : 黑色/銀色陶瓷 (BLACK/SILVER COLORED CERAMIC) ETR24200343
- No.2 : 橘色塊狀 (ORANGE LUMP) ETR24200344
- No.3 : 藍色塊狀 (BLUE LUMP) ETR24200345
- No.4 : 墨綠色塊狀 (BLACKISH GREEN LUMP) ETR24200346
- No.5 : 銀色金屬 (SILVER COLORED METAL) ETR24200347
- No.6 : 銀色膏狀 (SILVER COLORED PASTE) ETR24200353
- No.7 : 銀色金屬線鍍層 (PLATING LAYER OF SILVER COLORED METAL WIRE) ETR24200385 No.1
- No.8 : 銀色金屬線底材 (BASE MATERIAL OF SILVER COLORED METAL WIRE) ETR24200385 No.2
- No.9 : 銀色金屬線 (含鍍層) (SILVER COLORED METAL WIRE (INCLUDING THE PLATING LAYER)) ETR24200385 No.3

					/+ B		
測試項目	測試方法	單位	MDL		結果		限值
(Test Items)	(Method)	(Unit)			(Result)		(Limit)
				No.1	No.2	No.3	
鎘 (Cd) (Cadmium (Cd))	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.	n.d.	n.d.	100
鉛 (Pb) (Lead (Pb))	参考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	11.9	n.d.	n.d.	1000
汞 (Hg) (Mercury (Hg))	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.	n.d.	n.d.	1000

測試結果 (Test Results)

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Test Report 號碼(No.): ETR24205324 日期(D

日期(Date): 05-Mar-2024

頁數(Page): 3 of 30

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新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目	測試方法	單位	MDL		結果		限值
(Test Items)	(Method)	(Unit)			(Result)		(Limit)
				No.1	No.2	No.3	
六價鉻 Cr(VI) (Hexavalent	參考IEC 62321-7-2: 2017 · 以紫外	mg/kg	8	n.d.	n.d.	n.d.	1000
Chromium Cr(VI))	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.)						
一溴聯苯 (Monobromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
二溴聯苯 (Dibromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
三溴聯苯 (Tribromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
四溴聯苯 (Tetrabromobiphenyl)	參考IEC 62321-6: 2015,以氣相層	mg/kg	5	n.d.	n.d.	n.d.	-
五溴聯苯 (Pentabromobiphenyl)	析儀/質譜儀分析。(With reference)	mg/kg	5	n.d.	n.d.	n.d.	-
六溴聯苯 (Hexabromobiphenyl)	to IEC 62321-6: 2015, analysis	mg/kg	5	n.d.	n.d.	n.d.	-
七溴聯苯 (Heptabromobiphenyl)	was performed by GC/MS.)	mg/kg	5	n.d.	n.d.	n.d.	-
八溴聯苯 (Octabromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
九溴聯苯 (Nonabromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
十溴聯苯 (Decabromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
多溴聯苯總和 (Sum of PBBs)		mg/kg	-	n.d.	n.d.	n.d.	1000
一溴聯苯醚 (Monobromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
二溴聯苯醚 (Dibromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
三溴聯苯醚 (Tribromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
四溴聯苯醚 (Tetrabromodiphenyl ether)	參考IEC 62321-6: 2015 · 以氣相層	mg/kg	5	n.d.	n.d.	n.d.	-
五溴聯苯醚 (Pentabromodiphenyl ether)	析儀/質譜儀分析。(With reference	mg/kg	5	n.d.	n.d.	n.d.	-
六溴聯苯醚 (Hexabromodiphenyl ether)	to IEC 62321-6: 2015, analysis	mg/kg	5	n.d.	n.d.	n.d.	-
七溴聯苯醚 (Heptabromodiphenyl ether)	was performed by GC/MS.)	mg/kg	5	n.d.	n.d.	n.d.	-
八溴聯苯醚 (Octabromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
九溴聯苯醚 (Nonabromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
十溴聯苯醚 (Decabromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
多溴聯苯醚總和 (Sum of PBDEs)		mg/kg	-	n.d.	n.d.	n.d.	1000
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	1000
benzyl phthalate (BBP))	析儀/質譜儀分析。(With reference						
	to IEC 62321-8: 2017, analysis						
	was performed by GC/MS.)						

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#### Test Report 號碼(No.): ETR24205324 日期(Date): 05-Mar-2024

頁數(Page): 4 of 30

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測試項目 (Test Items)	測試方法	單位 (Unit)	MDL		結果 (Result)		限值 (Linsit)
(Test Items)	(Method)	(Unit)		No.1	No.2	No.3	(Limit)
	参考IEC 62321-8: 2017,以氣相層	mg/kg	50	n.d.	n.d.	n.d.	1000
(Dibutyl phthalate (DBP))	析儀/質譜儀分析。(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	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	1000
(DEHP) (Di-(2-ethylhexyl)	析儀/質譜儀分析。(With reference	0 0					
phthalate (DEHP))	to IEC 62321-8: 2017, analysis						
	was performed by GC/MS.)						
鄰苯二甲酸二異丁酯 (DIBP)	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	1000
(Diisobutyl phthalate (DIBP))	析儀/質譜儀分析。(With reference						
	to IEC 62321-8: 2017, analysis						
	was performed by GC/MS.)						
鄰苯二甲酸二異癸酯 (DIDP)	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	-
(Diisodecyl phthalate (DIDP))	析儀/質譜儀分析。(With reference						
(CAS No.: 26761-40-0, 68515-	to IEC 62321-8: 2017, analysis						
49-1)	was performed by GC/MS.)						
鄰苯二甲酸二異壬酯 (DINP)	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	-
(Diisononyl phthalate (DINP))	析儀/質譜儀分析。(With reference						
(CAS No.: 28553-12-0, 68515-	to IEC 62321-8: 2017, analysis						
48-0)	was performed by GC/MS.)			-		-	
鄰苯二甲酸二正辛酯 (DNOP)	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	-
(Di-n-octyl phthalate (DNOP))	析儀/質譜儀分析。(With reference						
(CAS No.: 117-84-0)	to IEC 62321-8: 2017, analysis						
	was performed by GC/MS.)						
鄰苯二甲酸二(支鏈及直鏈戊基)酯	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	-
	析儀/質譜儀分析。(With reference						
acid, dipentylester, branched	to IEC 62321-8: 2017, analysis						
and linear (DPP)) (CAS No.:	was performed by GC/MS.)						
84777-06-0)							

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## Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page): 5 of 30

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測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL		結果 (Result)		限值 (Limit)
(Test items)	(Method)	(Unit)		No.1	No.2	No.3	(LIIIII)
六溴環十二烷及所有主要被辨別出的 異構物(HBCDD) ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD) (Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD)) (CAS No.: 25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	參考IEC 62321-9: 2021 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-9: 2021, analysis was performed by GC/MS.)	mg/kg	20	n.d.	n.d.	n.d.	-
氟 (F) (Fluorine (F)) (CAS No.: 14762-94-8)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	n.d.	n.d.	-
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1)	參考BS EN 14582: 2016,以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	298	216	-
溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	n.d.	n.d.	-
碘 (I) (Iodine (I)) (CAS No.: 14362-44-8)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	n.d.	n.d.	-

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頁數(Page): 6 of 30

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(Test Items)	(Method)	(Unit)			(Result)		(Limit)
				No.1	No.2	No.3	
全氟辛烷磺酸及其鹽類 (PFOS	參考CEN/TS 15968: 2010 · 以液相	mg/kg	0.01	n.d.	n.d.	n.d.	-
and its salts) (CAS No.: 1763-	層析串聯質譜儀分析。(With						
23-1 and its salts)	reference to CEN/TS 15968:						
	2010, analysis was performed by LC/MS/MS.)						
全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and	參考CEN/TS 15968: 2010,以液相 層析串聯質譜儀分析。(With	mg/kg	0.01	n.d.	n.d.	n.d.	-
its salts)	reference to CEN/TS 15968:						
	2010, analysis was performed by						
	LC/MS/MS.)						
鈹 (Be) (Beryllium (Be)) (CAS	參考US EPA 3052: 1996,以感應	mg/kg	2	n.d.	n.d.	n.d.	-
No.: 7440-41-7)	耦合電漿發射光譜儀分析。(With						
	reference to US EPA 3052: 1996,						
	analysis was performed by ICP-						
	OES.)						
銻 (Sb) (Antimony (Sb)) (CAS	參考US EPA 3052: 1996,以感應	mg/kg	2	24000	n.d.	n.d.	-
No.: 7440-36-0)	耦合電漿發射光譜儀分析。(With						
	reference to US EPA 3052: 1996,						
	analysis was performed by ICP-						
	OES.)						
紅磷 (Red Phosphorus)	以熱裂解-氣相層析儀/質譜儀分	**	-	Negative	Negative	Negative	-
	$栃 \circ$ (Analysis was performed by						
	Pyrolyzer-GC/MS.)						

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Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page):7 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL		結果 (Result)		限值 (Limit)
				No.4	No.5	No.6	
鎘 (Cd) (Cadmium (Cd))	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.	n.d.	n.d.	100
鉛 (Pb) (Lead (Pb))	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.	18.4	29.8	1000
汞 (Hg) (Mercury (Hg))	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.	n.d.	n.d.	1000
六價鉻 Cr(VI) (Hexavalent Chromium Cr(VI))	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.		n.d.	1000
六價鉻 (Hexavalent Chromium) Cr(VI) (#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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Test Report <sub>號碼(No.): ETR24205324</sub> 日期(I

日期(Date): 05-Mar-2024

頁數(Page): 8 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目	測試方法	單位	MDL		結果		限值
(Test Items)	(Method)	(Unit)			(Result)		(Limit)
				No.4	No.5	No.6	
一溴聯苯 (Monobromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
二溴聯苯 (Dibromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
三溴聯苯 (Tribromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
四溴聯苯 (Tetrabromobiphenyl)	參考IEC 62321-6: 2015,以氣相層	mg/kg	5	n.d.	n.d.	n.d.	-
五溴聯苯 (Pentabromobiphenyl)	析儀/質譜儀分析。(With reference	mg/kg	5	n.d.	n.d.	n.d.	-
六溴聯苯 (Hexabromobiphenyl)	to IEC 62321-6: 2015, analysis was performed by GC/MS.)	mg/kg	5	n.d.	n.d.	n.d.	-
七溴聯苯 (Heptabromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
八溴聯苯 (Octabromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
九溴聯苯 (Nonabromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
十溴聯苯 (Decabromobiphenyl)		mg/kg	5	n.d.	n.d.	n.d.	-
多溴聯苯總和 (Sum of PBBs)		mg/kg	-	n.d.	n.d.	n.d.	1000
一溴聯苯醚 (Monobromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
二溴聯苯醚 (Dibromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
三溴聯苯醚 (Tribromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
四溴聯苯醚 (Tetrabromodiphenyl ether)	參考IEC 62321-6: 2015,以氣相層	mg/kg	5	n.d.	n.d.	n.d.	-
五溴聯苯醚 (Pentabromodiphenyl ether)	析儀/質譜儀分析。(With reference)	mg/kg	5	n.d.	n.d.	n.d.	-
六溴聯苯醚 (Hexabromodiphenyl ether)	が ) 展/ 員	mg/kg	5	n.d.	n.d.	n.d.	-
七溴聯苯醚 (Heptabromodiphenyl ether)	was performed by GC/MS.)	mg/kg	5	n.d.	n.d.	n.d.	-
八溴聯苯醚 (Octabromodiphenyl ether)	was performed by GC/MS.)	mg/kg	5	n.d.	n.d.	n.d.	-
九溴聯苯醚 (Nonabromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
十溴聯苯醚 (Decabromodiphenyl ether)		mg/kg	5	n.d.	n.d.	n.d.	-
多溴聯苯醚總和 (Sum of PBDEs)		mg/kg	-	n.d.	n.d.	n.d.	1000
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	1000
benzyl phthalate (BBP))	析儀/質譜儀分析。(With reference						
	to IEC 62321-8: 2017, analysis						
	was performed by GC/MS.)						
鄰苯二甲酸二丁酯 (DBP)	參考IEC 62321-8: 2017 · 以氣相層	mg/kg	50	n.d.	n.d.	n.d.	1000
(Dibutyl phthalate (DBP))	析儀/質譜儀分析。(With reference	5 5					
	to IEC 62321-8: 2017, analysis						
	was performed by GC/MS.)						

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SGS Taiwan Ltd. 台灣檢驗科技股份有限公司



#### Test Report 號碼(No.): ETR24205324 日期(Date): 05-Mar-2024

頁數(Page): 9 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Test Items)	測試方法 (Mathad)	單位 (Unit)	MDL		結果 (Result)		限值 (Limpit)
(Test items)	(Method)	(Unit)		No.4	No.5	No.6	(Limit)
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl)	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference	mg/kg	50	n.d.	n.d.	n.d.	1000
phthalate (DEHP))	to IEC 62321-8: 2017, analysis was performed by GC/MS.)						
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP))	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	n.d.	n.d.	1000
鄰苯二甲酸二異癸酯 (DIDP) (Diisodecyl phthalate (DIDP)) (CAS No.: 26761-40-0, 68515- 49-1)	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	n.d.	n.d.	-
鄰苯二甲酸二異壬酯 (DINP) (Diisononyl phthalate (DINP)) (CAS No.: 28553-12-0, 68515- 48-0)	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	n.d.	n.d.	-
鄰苯二甲酸二正辛酯 (DNOP) (Di-n-octyl phthalate (DNOP)) (CAS No.: 117-84-0)	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	n.d.	n.d.	-
鄰苯二甲酸二(支鏈及直鏈戊基)酯 (DPP) (1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (DPP)) (CAS No.: 84777-06-0)	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	n.d.	n.d.	-

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## Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page): 10 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL		結果 (Result)		限值 (Limit)
(Test items)	(Method)	(0111)		No.4	No.5	No.6	(Emm)
<ul> <li>六溴環十二烷及所有主要被辨別出的</li> <li>異構物(HBCDD) (α- HBCDD, β-</li> <li>HBCDD, γ- HBCDD)</li> <li>(Hexabromocyclododecane</li> <li>(HBCDD) and all major</li> <li>diastereoisomers identified (α-</li> <li>HBCDD, β- HBCDD, γ- HBCDD))</li> <li>(CAS No.: 25637-99-4, 3194-55-6</li> <li>(134237-51-7, 134237-50-6, 134237-52-8))</li> </ul>	參考IEC 62321-9: 2021 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-9: 2021, analysis was performed by GC/MS.)	mg/kg	20	n.d.	n.d.	n.d.	-
氟 (F) (Fluorine (F)) (CAS No.: 14762-94-8)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	n.d.	n.d.	-
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	455	n.d.	n.d.	-
溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	n.d.	n.d.	-
碘 (I) (lodine (I)) (CAS No.: 14362-44-8)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	n.d.	n.d.	-

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#### Test Report 號碼(No.): ETR24205324 日期(Date): 05-Mar-2024

頁數(Page): 11 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL		結果 (Result)		限值 (Limit)
(,	(	(0		No.4	No.5	No.6	(,
全氟辛烷磺酸及其鹽類 (PFOS and its salts) (CAS No.: 1763- 23-1 and its salts)	參考CEN/TS 15968: 2010 · 以液相 層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	n.d.	n.d.	-
全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	參考CEN/TS 15968: 2010 · 以液相 層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	n.d.	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.	n.d.	n.d.	-
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.	81.7	52.3	-
紅磷 (Red Phosphorus)	以熱裂解-氣相層析儀/質譜儀分 析。(Analysis was performed by Pyrolyzer-GC/MS.)	**	-	Negative	Negative	Negative	-

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Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page): 12 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目	測試方法	單位	MDL		結果		限值
(Test Items)	(Method)	(Unit)		No.7	(Result) No.8	No.9	(Limit)
鎘 (Cd) (Cadmium (Cd))	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.			100
鉛 (Pb) (Lead (Pb))	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	24.0			1000
汞 (Hg) (Mercury (Hg))	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.			1000
六價鉻 (Hexavalent Chromium) Cr(VI) (#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.	n.d.		-
鎘 (Cd) (Cadmium (Cd))	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.		100

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SGS Taiwan Ltd. 台灣檢驗科技股份有限公司



Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page): 13 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Test Items)			MDL	- 結果 (Result)			限值 (Limit)
				No.7	No.8	No.9	
鉛 (Pb) (Lead (Pb))	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.		1000
汞 (Hg) (Mercury (Hg))	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.		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)	● 參考IEC 62321-6: 2015,以氣相層	mg/kg	5			n.d.	-
五溴聯苯 (Pentabromobiphenyl)	が儀/質譜儀分析。(With reference	mg/kg	5			n.d.	-
六溴聯苯 (Hexabromobiphenyl)		mg/kg	5			n.d.	-
七溴聯苯 (Heptabromobiphenyl)	to IEC 62321-6: 2015, analysis	mg/kg	5			n.d.	-
八溴聯苯 (Octabromobiphenyl)	was performed by GC/MS.)	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.	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)	參考IEC 62321-6: 2015 · 以氣相層	mg/kg	5			n.d.	-
六溴聯苯醚 (Hexabromodiphenyl ether)	析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.)	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	_			n.d.	1000

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SGS Taiwan Ltd. 台灣檢驗科技股份有限公司



#### Test Report 號碼(No.): ETR24205324 日期(Date): 05-Mar-2024

頁數(Page): 14 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL		結果 (Result)		限值 (Limit)
				No.7	No.8	No.9	
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl phthalate (BBP))	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50			n.d.	1000
鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP))	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50			n.d.	1000
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP))	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50			n.d.	1000
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP))	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50			n.d.	1000
	參考IEC 62321-8: 2017 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50			n.d.	-
六溴環十二烷及所有主要被辨別出的 異構物(HBCDD) (α- HBCDD, β- HBCDD, γ- HBCDD) (Hexabromocyclododecane (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))	參考IEC 62321-9: 2021 · 以氣相層 析儀/質譜儀分析。(With reference to IEC 62321-9: 2021, analysis was performed by GC/MS.)	mg/kg	20			n.d.	-

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## Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page): 15 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL		結果 (Result)		限值 (Limit)
				No.7	No.8	No.9	
氟 (F) (Fluorine (F)) (CAS No.: 14762-94-8)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50			n.d.	-
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50			n.d.	-
溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50			n.d.	_
碘 (I) (lodine (I)) (CAS No.: 14362-44-8)	參考BS EN 14582: 2016 · 以離子 層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50			n.d.	-
全氟辛烷磺酸及其鹽類 (PFOS and its salts) (CAS No.: 1763- 23-1 and its salts)	參考CEN/TS 15968: 2010 · 以液相 層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01			n.d.	-
全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	參考CEN/TS 15968: 2010 · 以液相 層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01			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.	-

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SGS Taiwan Ltd. 台灣檢驗科技股份有限公司



## Test Report <sub>號碼(No.): ETR24205324</sub> 日期(Date): 05-Mar-2024

頁數(Page): 16 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

測試項目 (Teast Items)	測試方法	單位	MDL		結果 (Descult)		限值
(Test Items)	(Method)	(Unit)			(Result)		(Limit)
				No.7	No.8	No.9	
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.	-
紅磷 (Red Phosphorus)	以熱裂解-氣相層析儀/質譜儀分 析。(Analysis was performed by Pyrolyzer-GC/MS.)	**	-			Negative	-

備註(Note):

- 1. mg/kg = ppm ; 0.1wt% = 0.1% = 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/未檢出); Positive = Detectable 陽性(已偵測到/檢出)
- 8. (#2) =

a. 當六價鉻結果大於0.13 µg/cm<sup>2</sup> · 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 µg/cm<sup>2</sup>. 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 µg/cm<sup>2</sup>) · 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 µg/cm<sup>2</sup>). The coating is considered a non-Cr(VI) based coating) c. 當六價鉻結果介於 0.10 及 0.13 µg/cm<sup>2</sup> 時 · 無法確定塗層是否含有六價鉻。(The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive - unavoidable coating variations may influence the determination.)

- 9. 除非另有說明,參照ILAC-G8:09/2019,採用簡單二元(w=0)允收規則進行符合性判定;根據此規則,符合性結果之判定 係以測試結果與限值做比較。(Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019. According to this rule, the judgement of conformity is based on the comparing test results with limits.)
- 10. 本報告為合併ETR24200343,ETR24200344,ETR24200345,ETR24200346,ETR24200347,ETR24200353及ETR24200385 之報告。(This report is combined with reports of ETR24200343,ETR24200344,ETR24200345,ETR24200346, ETR24200347,ETR24200353 and ETR24200385.)

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SGS Taiwan Ltd. 台灣檢驗科技股份有限公司



## 測試報告 Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page): 17 of 30

華格科技股份有限公司 (ACPA TECHNOLOGY CO., LTD.)

新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

#### PFAS Remark :

現有PFAS定量技術是分析PFAS物質的特定結構,但同碳數族群之PFAS酸及鹽類物質,其可被辨識的特定結構相同,因此無法區別所 分析的特定結構是來自酸或者鹽類,故測試結果為同碳數族群之PFAS之酸及鹽類物質的濃度總合。下表PFAS物質濃度皆已包含在測試 結果中,相關資訊請參見下表:(下表列舉PFAS物質僅為範例,並不包含所有同碳數族群之PFAS鹽類。)

(The quantitative technology of PFAS is to analyze the specific structure of PFAS substances. However, PFAS acid and its salts with the same carbon number group have the same specific structure that can be identified. The tested results of the analyzed specific structure cannot be distinguished to identify the contribution from PFAS acid or its salts. Therefore, the tested results display the sum of concentrations of PFAS acids and its salts with the same carbon number group. The concentration of PFAS substances in the below table have been included in the tested results, please refer to the table for relevant information: (The listed PFAS substances are examples only, it do not include all PFAS salts with the same carbon number group.))

群組名稱 (Group Name)	物質名稱 (Substance Name)	CAS No.
	全氟辛烷磺酸 (Perfluorooctane sulfonates) (PFOS)	1763-23-1
	全氟辛基磺酸鉀 (PFOS-K) Potassium perfluorooctanesulfonate (PFOS-K)	2795-39-3
	全氟辛基磺酸鋰 (PFOS-Li) Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	29457-72-5
	全氟辛基磺酸銨 (PFOS-NH <sub>4</sub> ) Perfluorooctanesulfonic acid, ammonium salt (PFOS-NH <sub>4</sub> )	29081-56-9
PFOS, 及其鹽&衍生物 (PFOS, its salts & derivatives)	全氟辛基磺酸二乙醇銨 (PFOS-NH(OH) <sub>2</sub> ) Perfluorooctane sulfonate diethanolamine salt (PFOS-NH(OH) <sub>2</sub> )	70225-14-8
	全氟辛基磺酸四乙基銨 (PFOS-N(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> ) Perfluorooctanesulfonic acid,tetraethylammonium salt (PFOS-N(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> )	56773-42-3
	全氟辛基磺酸二癸二甲基銨 (PFOS-DDA) N-decyl-N,N-dimethyldecan-1-aminium 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8- heptadecafluorooctane-1-sulfonate (PFOS-DDA)	251099-16-8

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Test Report 號碼(No.): ETR24205324 日期(Date): 05-Mar-2024

頁數(Page): 18 of 30

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新北市三峽區介壽路一段311巷4號2樓 (2F, NO. 4, LANE 311, SEC. 1, JIESHOU RD., SANXIA DIST., NEW TAIPEI CITY 237, TAIWAN)

群組名稱	物質名稱	CAS No.
(Group Name)	(Substance Name)	
PFOS, 及其鹽&衍生物 (PFOS, its salts & derivatives)	全氟辛基磺醯氟 (POSF) Perfluorooctane sulfonyl fluoride (POSF)	307-35-7
	全氟辛基磺酸鎂 (PFOS-Mg) Perfluorooctanesulfonic acid, magnesium salt (PFOS-Mg)	91036-71-4
	全氟辛基磺酸鈉 (PFOS-Na) Perfluorooctanesulfonic acid, sodium salt (PFOS- Na)	4021-47-0
	全氟辛烷磺酸哌啶 Piperidine 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8- heptadecafluorooctanesulfonate	71463-74-6
PFOA, 及其鹽&衍生物 (PFOA, its salts & derivatives)	全氟辛酸 (Perfluorooctanoic acid) (PFOA)	335-67-1
	全氟辛酸鈉 (PFOA-Na) Sodium perfluorooctanoate (PFOA-Na)	335-95-5
	全氟辛酸鉀 (PFOA-K) Potassium perfluorooctanoate (PFOA-K)	2395-00-8
	全氟辛酸銀 (PFOA-Ag) Silver perfluorooctanote (PFOA-Ag)	335-93-3
	全氟辛氟 (PFOA-F) Perfluorooctanoyl fluoride (PFOA-F)	335-66-0
	全氟辛酸銨 (APFO) Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
	全氟辛酸鋰 (PFOA-Li) Lithium perfluorooctanoate (PFOA-Li)	17125-58-5

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日期(Date): 05-Mar-2024

頁數(Page): 19 of 30

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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<sup>6+</sup> test method excluded)



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頁數(Page): 20 of 30

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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<sup>6+</sup> test method excluded )



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頁數(Page): 21 of 30

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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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頁數(Page): 22 of 30

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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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頁數(Page): 23 of 30

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頁數(Page): 24 of 30

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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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頁數(Page): 26 of 30

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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.

【參考方法/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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頁數(Page): 27 of 30

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#### 紅磷分析流程 / Analytical flow chart - Red phosphorus



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## 測試報告 Test Report <sub>號碼(No.): ETR24205324</sub>

日期(Date): 05-Mar-2024

頁數(Page): 28 of 30

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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.)

No.1

No.3





No.2





ETR24200345



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Test Report <sub>號碼(No.): ETR24205324</sub> 日期

日期(Date): 05-Mar-2024

頁數(Page): 29 of 30

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Test Report 號碼(No.): ETR24205324 日期(Dat

日期(Date): 05-Mar-2024

頁數(Page): 30 of 30

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SIL

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### ETR24200385 NO.3



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