

測試報告 Test Report

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友勁金屬工業有限公司

UGIN ENTERPRISE CO., LTD.

桃園縣龜山鄉南上路290巷33弄12街6號

NO. 6 LONG 12, NONG 33, LANE 290, NANSUN ROAD, KWEISAN HSIANG, TAOYUAN HSIEN



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) : 友勁金屬工業有限公司 (UGIN ENTERPRISE CO., LTD.)
樣品名稱(Sample Description) : COPPER OR SPCC ALLOY STRIP PLATED NICKEL (銅鐵合金板材鍍鎳層)
收件日期(Sample Receiving Date) : 2013/12/03
測試期間(Testing Period) : 2013/12/03 TO 2013/12/10

=====
測試需求(Test Requested) : (1) 依據客戶要求, 參考RoHS 2011/65/EU Annex II 指令進行鎘, 鉛, 汞, 六價鉻, 多溴聯苯, 多溴聯苯醚測試. (As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.)
(2) 依據客戶指定, 進行全氟辛酸、全氟辛烷磺酸、鹵素-氟、氯、溴、碘測試. (As specified by client, to test PFOA, PFOS, Halogen-Fluorine, Chlorine, Bromine, Iodine contents in the submitted sample.)

測試方法(Test Method) : 請見下一頁 (Please refer to next pages).

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

結論(Conclusion) : 根據客戶所選擇的部位測試, 其鎘, 鉛, 汞, 六價鉻, 多溴聯苯, 多溴聯苯醚的測試結果符合RoHS指令2002/95/EC的更新指令2011/65/EU之要求 (Based on the performed tests on selected part of submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.)


Edison Chang / Sr. Supervisor
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 : 銀色金屬鍍層 (PLATING LAYER OF SILVER COLORED METAL)

測試部位(PART NAME)No.2 : 銀色金屬 (含鍍層) (SILVER COLORED METAL (INCLUDING THE PLATING LAYER))

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)		法規 限值 (Limit)
				No.1	No.2	
鎘 / Cadmium (Cd)	mg/kg	酸洗脫鍍層, 參考IEC 62321-5: 2013方法, 以感應耦合電漿原子發 射光譜儀檢測. / IEC 62321-5:	2	n.d.	---	100
鉛 / Lead (Pb)	mg/kg	2013 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---	1000
汞 / Mercury (Hg)	mg/kg	酸洗脫鍍層, 參考IEC 62321-4: 2013方法, 以感應耦合電漿原子發 射光譜儀檢測. / IEC 62321-4: 2013 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---	1000
六價鉻 / Hexavalent Chromium Cr(VI)	**	參考IEC 62321: 2008方法, 以沸 水萃取法檢測. / With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative	---	#
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	µg/m ²	參考US EPA 3550C: 2007方法, 以 液相層析/質譜儀檢測. / With reference to US EPA 3550C:	1	n.d.	---	-
全氟辛酸 / PFOA (CAS No.: 335-67-1)	µg/m ²	2007. Analysis was performed by LC/MS.	1	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)		法規 限值 (Limit)
				No.1	No.2	
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 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)		法規 限值 (Limit)
				No.1	No.2	
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.	-

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)
5. "---" = Not Conducted (未測項目)
6. **= Qualitative analysis (No Unit) 定性分析(無單位)
7. # = a. Positive means the presence of CrVI on the tested areas
(Positive表示測試區域偵測到六價鉻)
b. Negative means the absence of CrVI on the tested areas
(Negative表示測試區域未偵測到六價鉻)

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas. / 該溶液濃度 \geq 0.02 mg/kg with 50 cm² (tested areas)

8. 此份報告取代CE/2013/C0443報告。(This report supersedes the previous document bearing the test report number CE/2013/C0443.)

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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 $1\mu\text{g}/\text{m}^2$ 。

(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 $1\mu\text{g}/\text{m}^2$.)

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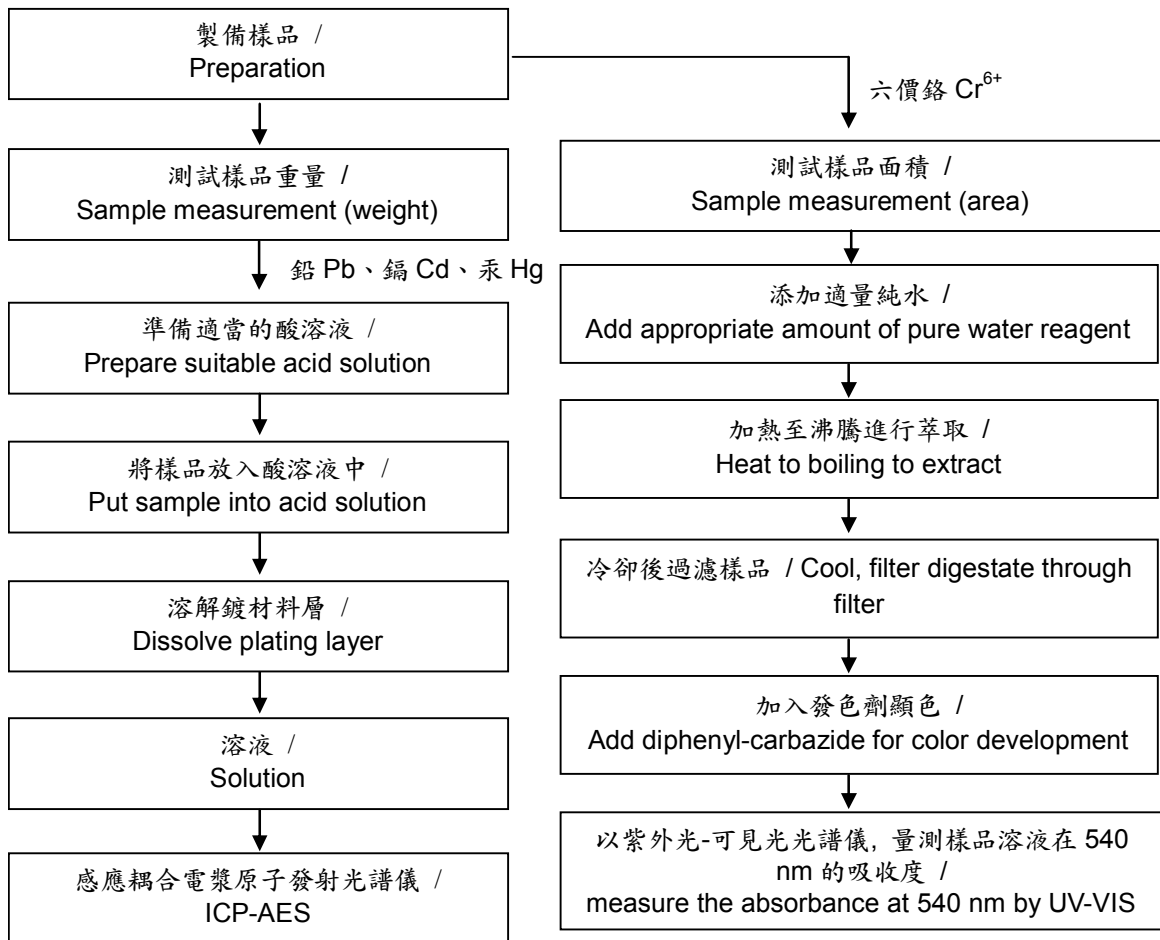
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根據以下的流程圖之條件, 樣品之外部鍍層已完全溶解。(六價鉻測試方法除外) / The plating layer of samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)

- 測試人員: 楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 測試負責人: 張啓興 / Name of the person in charge of measurement: Troy Chang

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



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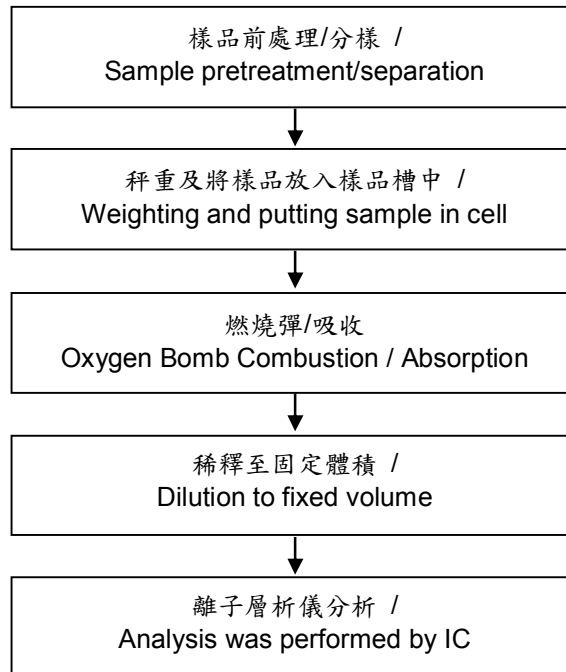
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鹵素分析流程圖 / Analytical flow chart of halogen content

- 測試人員：陳恩臻 / Name of the person who made measurement: Rita Chen
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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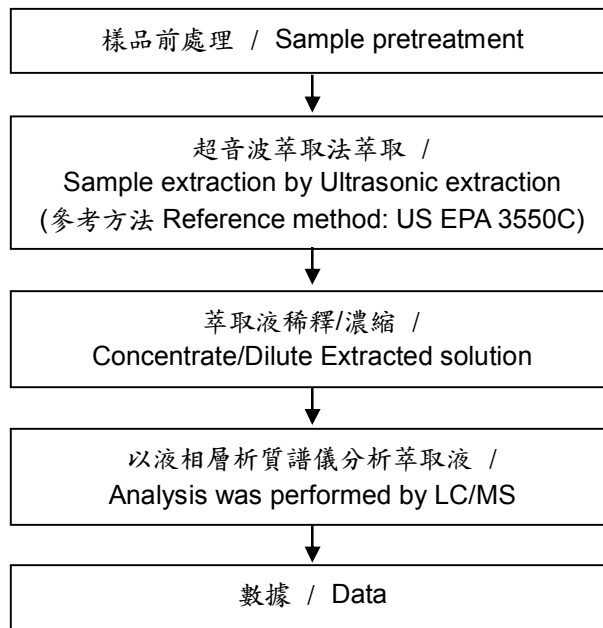
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全氟辛酸/全氟辛烷磺酸分析流程圖 / PFOA/PFOS analytical flow chart

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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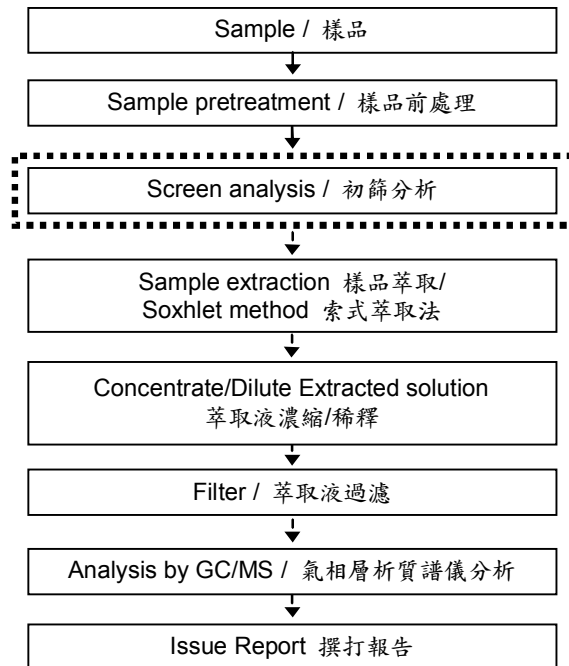
NO. 6 LONG 12, NONG 33, LANE 290, NANSUN ROAD, KWEISAN HSIANG, TAOYUAN HSIEN



多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: 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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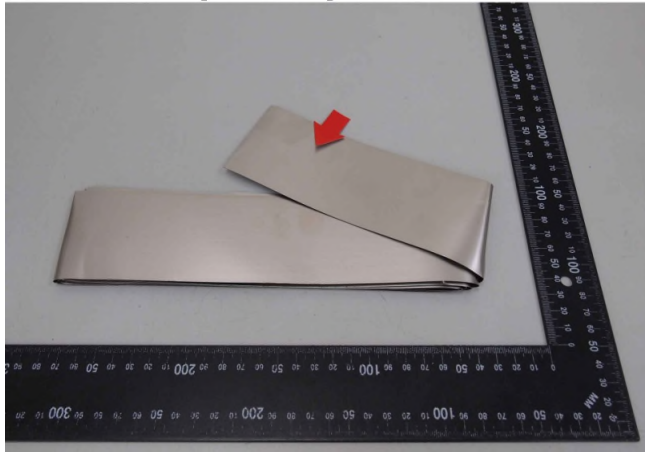
NO. 6 LONG 12, NONG 33, LANE 290, NANSUN ROAD, KWEISAN HSIANG, TAOYUAN HSIEN



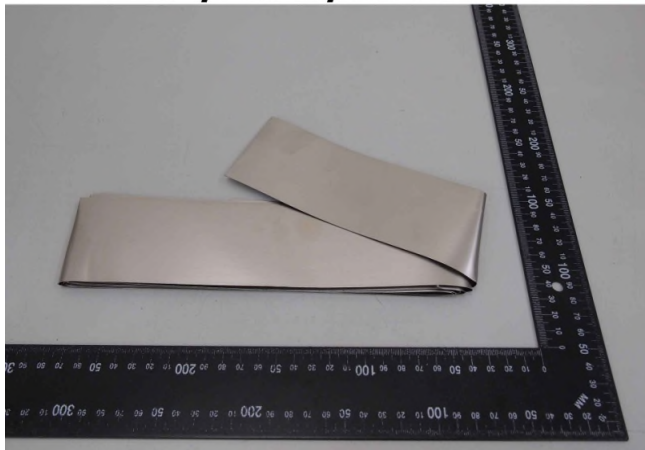
* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*

(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2013/C0443 NO.1



CE/2013/C0443 NO.2



** 報告結尾 (End of Report) **

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