

測試報告

Test Report

號碼(No.): ETR24102270

日期(Date): 16-Jan-2024

頁數(Page): 1 of 10

阿爾發金屬化工股份有限公司 (ALPHA ASSEMBLY SOLUTIONS (TAIWAN) LIMITED)

桃園市蘆竹區南山路二段12巷20號 (NO. 20, LANE 12, SEC. 2, NAN-SHAN RD., LUZHU DISTRICT, TAOYUAN CITY, 33860 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 the applicant as) :

送樣廠商(Sample Submitted By) : 阿爾發金屬化工股份有限公司 (ALPHA ASSEMBLY SOLUTIONS (TAIWAN) LIMITED)

樣品名稱(Sample Name) : OM5100 series Solder Paste (Sn5/Pb92.5/Ag2.5 OM5100、Sn63/Pb37 OM5100、Sn62/Pb36/Ag2 OM5100、NTM4S OM5100)

收件日(Sample Receiving Date) : 09-Jan-2024


測試期間(Testing Period) : 09-Jan-2024 to 16-Jan-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) 依據客戶指定·測試鹵素-氟、氯、溴、碘。 (As specified by client, to test Halogen-Fluorine, Chlorine, Bromine, Iodine in the submitted sample.)

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


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



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測試部位敘述 (Test Part Description)

- No.1 : 灰色膏狀 (乾基) (GRAY PASTE (DRY BASE))
No.2 : 灰色粉末 (GRAY POWDER)

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 | No.2 |
| 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. | --- |
| 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 | - | --- | 924400 (*) |
| 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. | --- |
| 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. | --- |

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| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | |
|---|--|--------------|------|----------------|------|
| | | | | No.1 | No.2 |
| 一溴聯苯 (Monobromobiphenyl) | 參考IEC 62321-6: 2015 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.) | mg/kg | 5 | n.d. | --- |
| 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. | --- |
| 多溴聯苯總和 (Sum of PBBs) | | mg/kg | - | n.d. | --- |
| 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. | --- |
| 多溴聯苯醚總和 (Sum of PBDEs) | mg/kg | - | n.d. | --- | |
| 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. | --- |
| 鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP)) | | mg/kg | 50 | n.d. | --- |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP)) | | mg/kg | 50 | n.d. | --- |
| 鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP)) | | mg/kg | 50 | n.d. | --- |

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桃園市蘆竹區南山路二段12巷20號 (NO. 20, LANE 12, SEC. 2, NAN-SHAN RD., LUZHU DISTRICT, TAOYUAN CITY, 33860 TAIWAN)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | |
|--|---|--------------|-----|----------------|------|
| | | | | No.1 | No.2 |
| 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) | | mg/kg | 50 | n.d. | --- |
| 溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2) | | mg/kg | 50 | n.d. | --- |
| 碘 (I) (Iodine (I)) (CAS No.: 14362-44-8) | | mg/kg | 50 | n.d. | --- |

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. For No.1: 樣品在250 °C 持溫 10分鐘乾燥後測試。(The sample(s) was/were tested after drying at 250 °C for 10 minutes.)
7. (*) : 此結果是以100%扣除其餘元素含量而得。(The test result of balance was calculated by subtracting positive results of other elements from 100%.)

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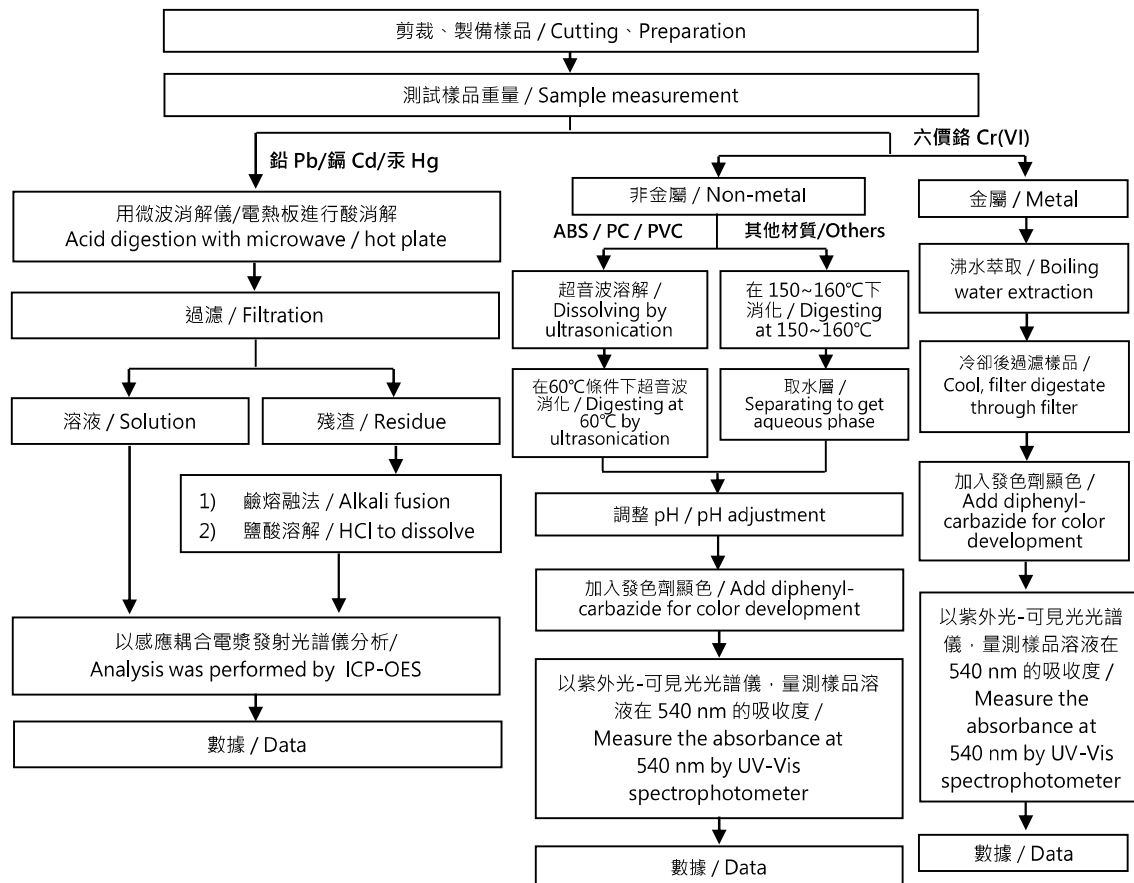
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重金屬流程圖 / Analytical flow chart of heavy metal

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.

(Cr⁶⁺ test method excluded)



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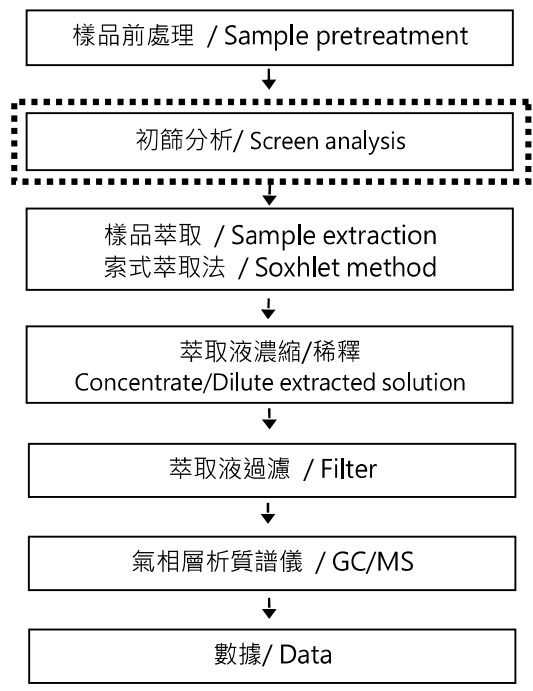
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多溴聯苯/多溴聯苯醌分析流程圖 / Analytical flow chart - PBBs/PBDEs

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 - - - ->



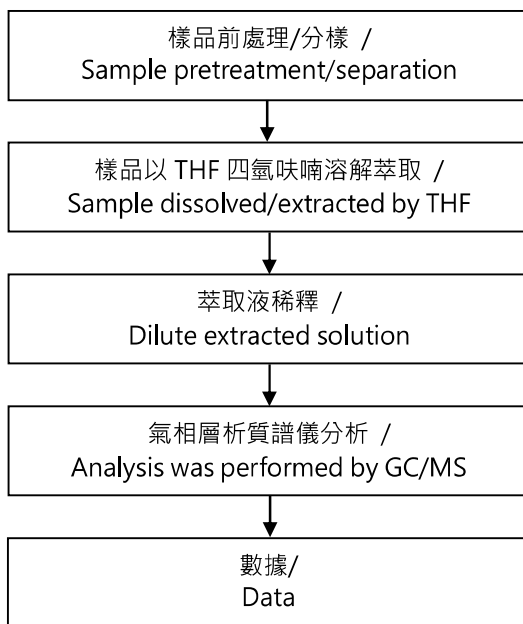
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可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



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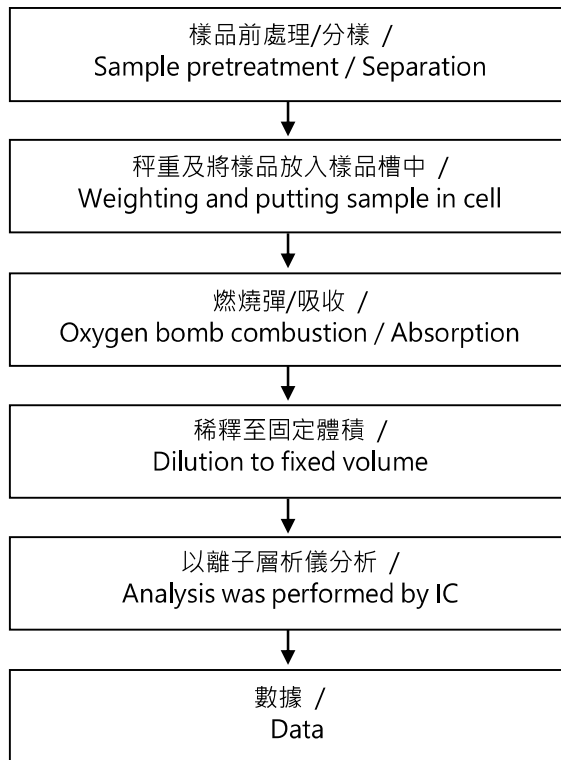
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鹵素分析流程圖 / Analytical flow chart - Halogen



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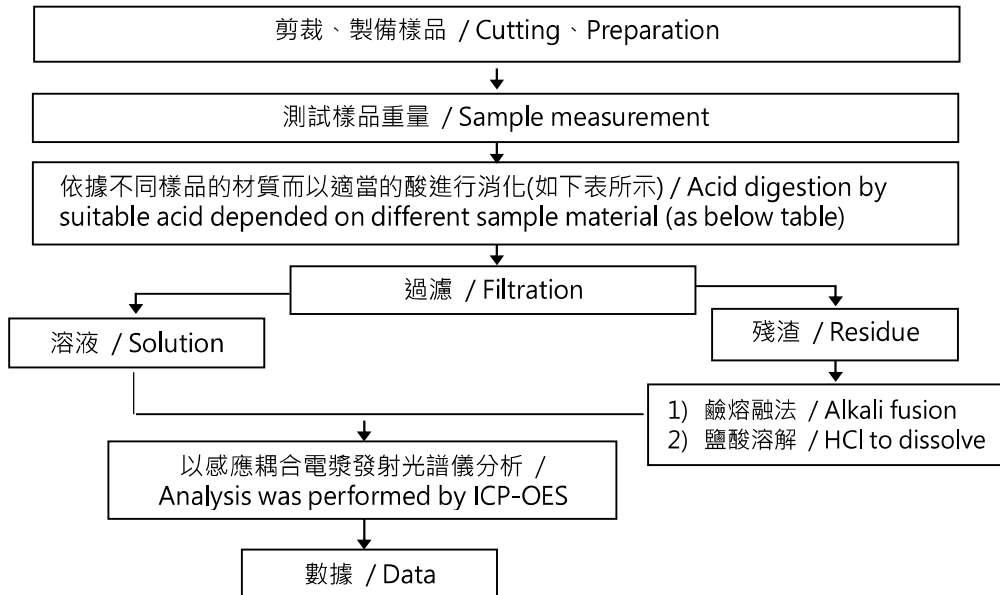
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元素以 ICP-OES 分析的消化流程圖

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

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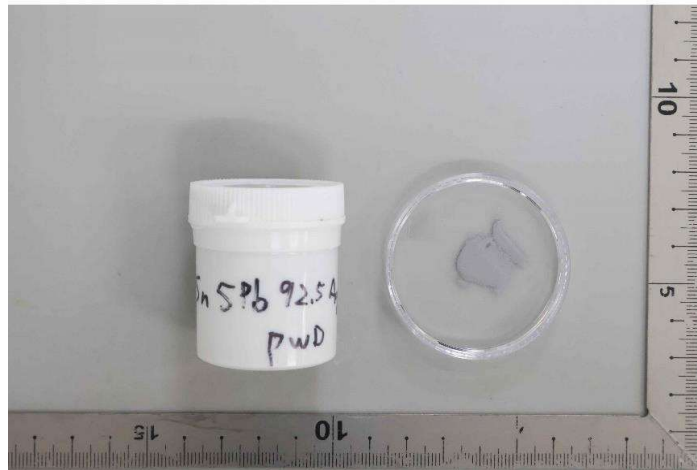
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* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。
(The tested sample / part is marked by an arrow if it's shown on the photo.)

ETR24102270 NO.1



ETR24102270 NO.2



** 報告結尾 (End of Report) **

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