

測試報告 Test Report

號碼(No.) : CE/2013/22160

日期(Date) : 2013/02/23

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昇貿科技股份有限公司

SHENMAO TECHNOLOGY INC.

桃園縣觀音工業區工業二路12-1號

NO. 12-1, GONGYE 2ND RD., GUANYIN INDUSTRIAL AREA, TAOYUAN COUNTY 328, TAIWAN



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as):

樣品名稱(Sample Description) : LEAD-FREE SOLDER
樣品型號(Style/Item No.) : PF804
收件日期(Sample Receiving Date) : 2013/02/19
測試期間(Testing Period) : 2013/02/19 TO 2013/02/23

=====
測試需求(Test Requested) : 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.)

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).


Troy Chang, Asst. Manager
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 (SILVER COLORED METAL)

| 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) |
|-------------------------------------|--------------|---|----------------------|----------------|
| | | | | No.1 |
| 鎘 / Cadmium (Cd) | mg/kg | 參考IEC 62321: 2008 - Clause 9方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 - Clause 9 and performed by ICP-AES. | 2 | n.d. |
| 鉛 / Lead (Pb) | mg/kg | 參考IEC 62321: 2008 - Clause 9方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 - Clause 9 and performed by ICP-AES. | 2 | 191 |
| 汞 / Mercury (Hg) | mg/kg | 參考IEC 62321: 2008 - Clause 7方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 - Clause 7 and performed by ICP-AES. | 2 | n.d. |
| 六價鉻 / Hexavalent Chromium Cr(VI) | ** | 參考IEC 62321: 2008 - Annex B方法, 以沸水萃取法檢測. / With reference to IEC 62321: 2008 - Annex B and performed by Boiling water extraction Method.# | # | Negative |
| 多溴聯苯總和 / Sum of PBBs | mg/kg | 參考IEC 62321: 2008 - Annex A方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 - Annex A and performed by GC/MS. | - | 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 | 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. |

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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) |
|----------------------------------|--------------|---|----------------------|----------------|
| | | | | No.1 |
| 多溴聯苯醚總和 / Sum of PBDEs | mg/kg | 參考IEC 62321: 2008 - Annex A方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 - Annex A and performed by GC/MS. | - | 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. | |

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. ** = Qualitative analysis (No Unit) 定性分析(無單位)
6. # =
 - 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)

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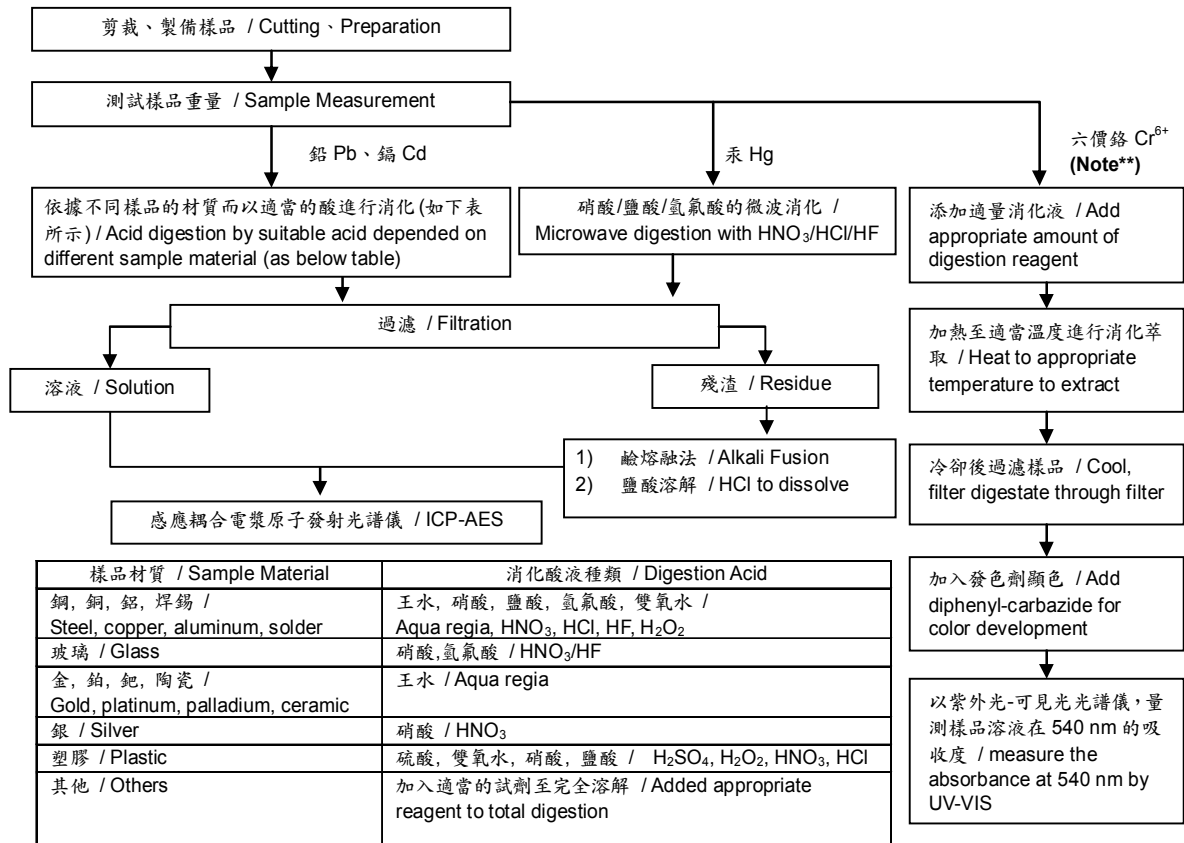
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



Note:** (1) 針對非金屬材料加入鹼性消化液, 加熱至 90~95°C 萃取. / For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
 (2) 針對金屬材料加入純水, 加熱至沸騰萃取. / For metallic material, add pure water and heat to boiling.

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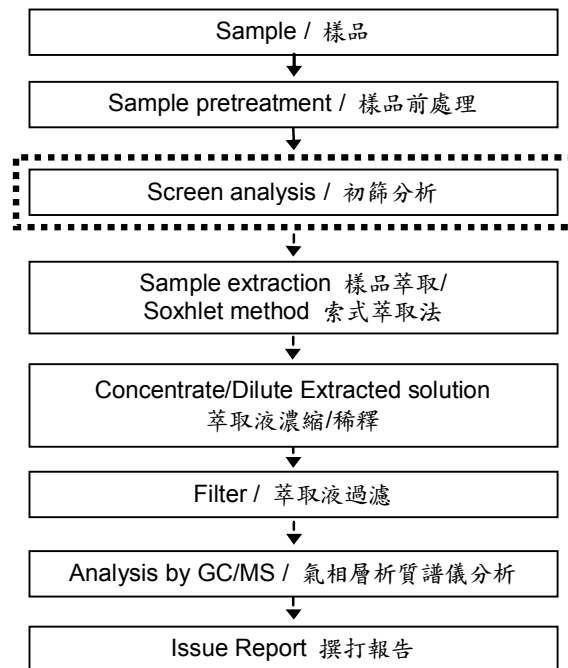
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多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 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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* 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) **

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