

測試報告 Test Report

號碼(No.) : CE/2015/C2368 日期(Date) : 2015/12/18

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GABRIEL BENMAYOR S.A. GB AISMALIBAR

POLIGONO INDUSTRIAL FOINVASA. C/BACH, 2-B 08110-MONTCADA I REIXAC. BARCELONA (SPAIN)



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) : GABRIEL BENMAYOR S.A. GB AISMALIBAR
樣品名稱(Sample Description) : FLEXTHERM
收件日期(Sample Receiving Date) : 2015/12/11
測試期間(Testing Period) : 2015/12/11 TO 2015/12/18

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.)
- (2) 依據客戶指定, 進行鹵素-氟、氯、溴、碘測試. (As specified by client, to test Halogen-Fluorine, Chlorine, Bromine, Iodine contents in the submitted sample.)

測試結果(Test Results) : 請見下一頁 (Please refer to next 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指令暨(EU) 2015/863之限值要求. (Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS and amending Directive (EU) 2015/863.)



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 : 銅色/銀色金屬片 (COPPER COLORED/SILVER COLORED METAL SHEET)

| 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) | 限值 (Limit) |
|--|--------------------|--|----------------------|----------------|---------------|
| | | | | No. 1 | |
| 鎘 / Cadmium (Cd) | mg/kg | 參考 IEC 62321-5: 2013 方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES. | 2 | n. d. | 100 |
| 鉛 / Lead (Pb) | mg/kg | 參考 IEC 62321-5: 2013 方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES. | 2 | n. d. | 1000 |
| 汞 / Mercury (Hg) | mg/kg | 參考 IEC 62321-4: 2013 方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4: 2013 and performed by ICP-AES. | 2 | n. d. | 1000 |
| 六價鉻 / Hexavalent Chromium Cr(VI)(#2) | µg/cm ² | 參考 IEC 62321-7-1:2015, 以 UV-VIS 檢測. / With reference to IEC 62321-7-1:2015 and performed by UV-VIS. | 0.10 | n. d. | - |
| 鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7) | mg/kg | 參考 IEC 62321-8 (111/321/CD), 以氣相層析儀/質譜儀檢測之. / With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS. | 50 | n. d. | 1000 |
| 鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2) | mg/kg | | 50 | n. d. | 1000 |
| 鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 117-81-7) | mg/kg | | 50 | n. d. | 1000 |
| 鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5) | mg/kg | | 50 | n. d. | 1000 |

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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 | 限值 (Limit) | |
|----------------------------------|--------------|---|----------------------|-------------------------|---------------|------|
| | | | | | | |
| 多溴聯苯總和 / Sum of PBBs | mg/kg | 參考 IEC 62321-6: 2015 方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6: 2015 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) No. 1 | 限值 (Limit) |
|---|--------------|---|----------------------|-------------------------|---------------|
| | | | | | |
| 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. (#2) =
 - a. 當六價鉻結果大於0.13 $\mu\text{g}/\text{cm}^2$, 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 $\mu\text{g}/\text{cm}^2$. 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 $\mu\text{g}/\text{cm}^2$) , 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 $\mu\text{g}/\text{cm}^2$). The coating is considered a non-Cr(VI) based coating
 - c. 當六價鉻結果介於 0.10 及 0.13 $\mu\text{g}/\text{cm}^2$ 時, 無法確定塗層是否含有六價鉻. / The result between 0.10 $\mu\text{g}/\text{cm}^2$ and 0.13 $\mu\text{g}/\text{cm}^2$ is considered to be inconclusive - unavoidable coating variations may influence the determination.

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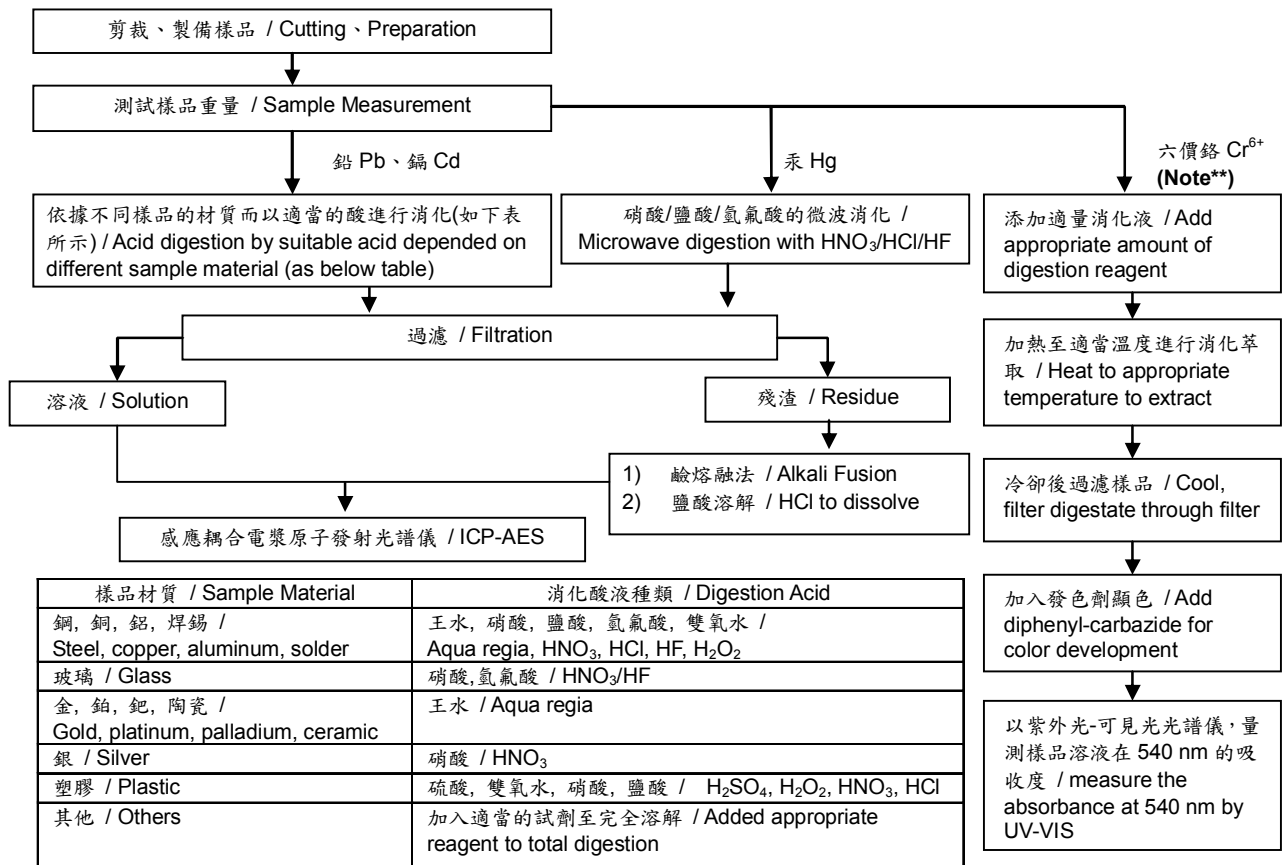
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張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



Note (For IEC 62321)**

- (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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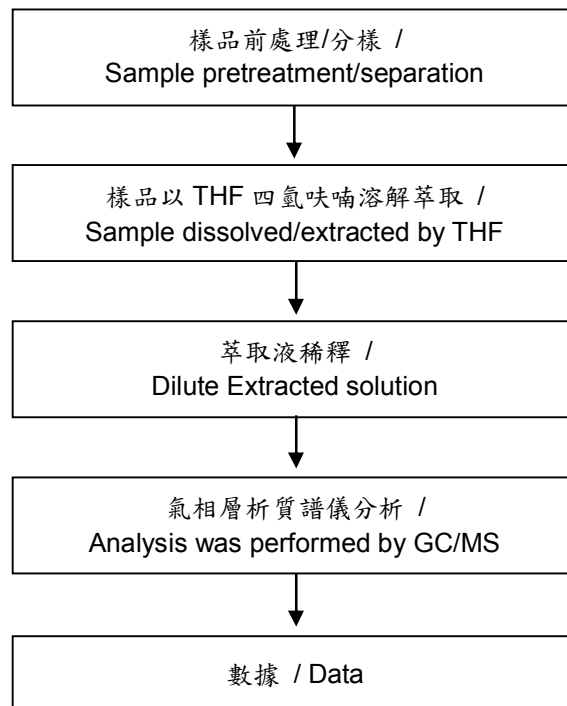
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員：徐毓明 / Name of the person who made measurement: Andy Shu
- 測試負責人：張啟興 / Name of the person in charge of measurement: Troy Chang

【測試方法/Test method: IEC 62321-8】



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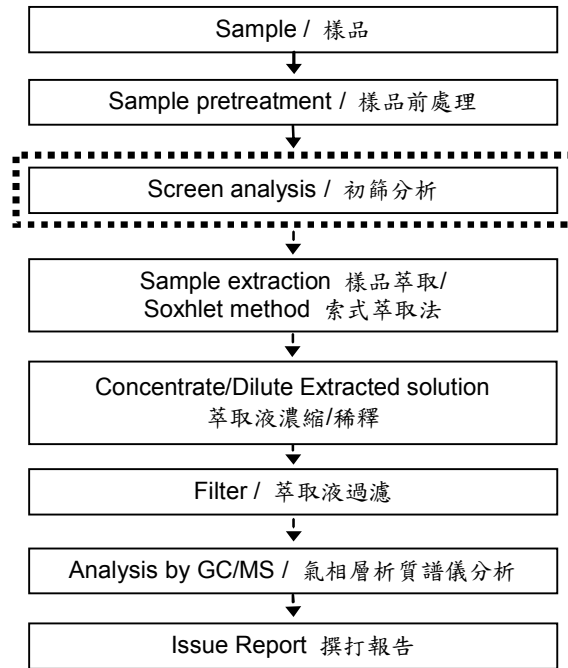
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啟興 / 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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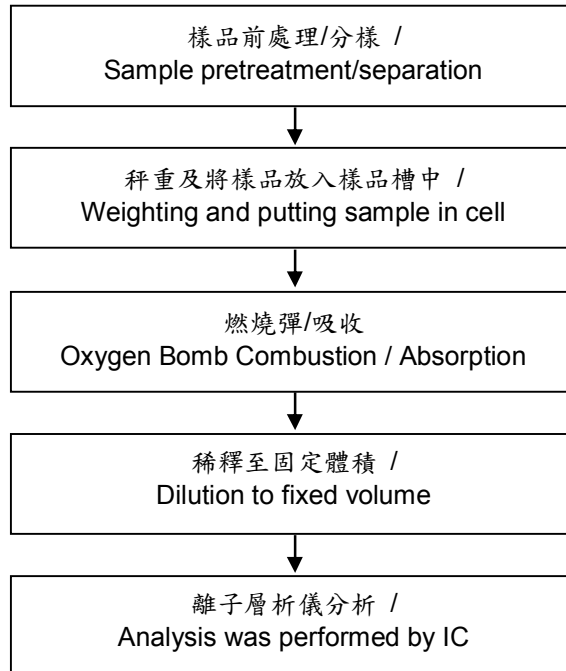
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鹵素分析流程圖 / Analytical flow chart of halogen content

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



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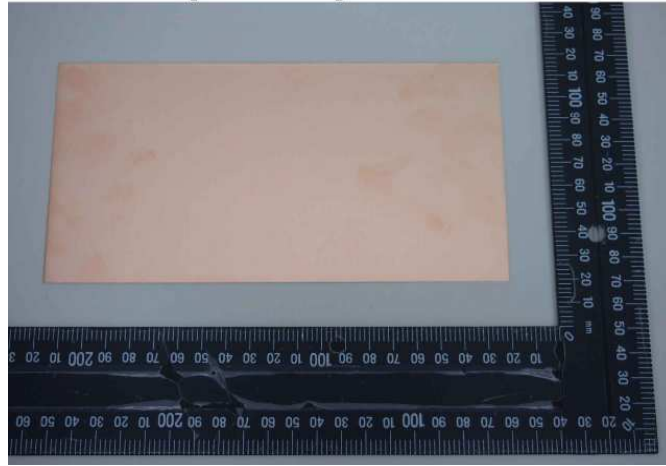
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* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 *
(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2015/C2368



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** 報告結尾 (End of Report) **

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