

測試報告

Test Report

號碼(No.): ETR22201163

日期(Date): 15-Feb-2022

頁數(Page): 1 of 8

PANASONIC CORPORATION
111, ISHIZUKA, KORIYAMA, FUKUSHIMA 963-8556

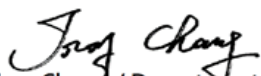
以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by the applicant as) :

樣品名稱(Sample Name) : COPPER FOIL
樣品型號(Style/Item No.) : COPPER FOIL M-002

=====
收件日(Sample Receiving Date) : 09-Feb-2022
測試期間(Testing Period) : 09-Feb-2022 to 15-Feb-2022

測試需求(Test Requested) : 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).)

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



PIN CODE: C5386E00

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測試部位敘述 (Test Part Description)

No.1 : 銅箔 (COPPER FOIL)

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 |
| 鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440-43-9) | 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)) (CAS No.: 7439-92-1) | | mg/kg | 2 | n.d. |
| 汞 (Hg) (Mercury (Hg)) (CAS No.: 7439-97-6) | 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 (Hexavalent Chromium) Cr(VI) (CAS No.: 18540-29-9) (#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/cm ² | 0.1 | n.d. |
| 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. | |

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| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) |
|---|--|--------------|-----|----------------|
| | | | | No.1 |
| 一溴聯苯醚 (Monobromodiphenyl ether) | 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)) (CAS No.: 85-68-7) | 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)) (CAS No.: 84-74-2) | | mg/kg | 50 | n.d. |
| 鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP)) (CAS No.: 84-69-5) | | mg/kg | 50 | n.d. |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP)) (CAS No.: 117-81-7) | | mg/kg | 50 | n.d. |

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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. (#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.)

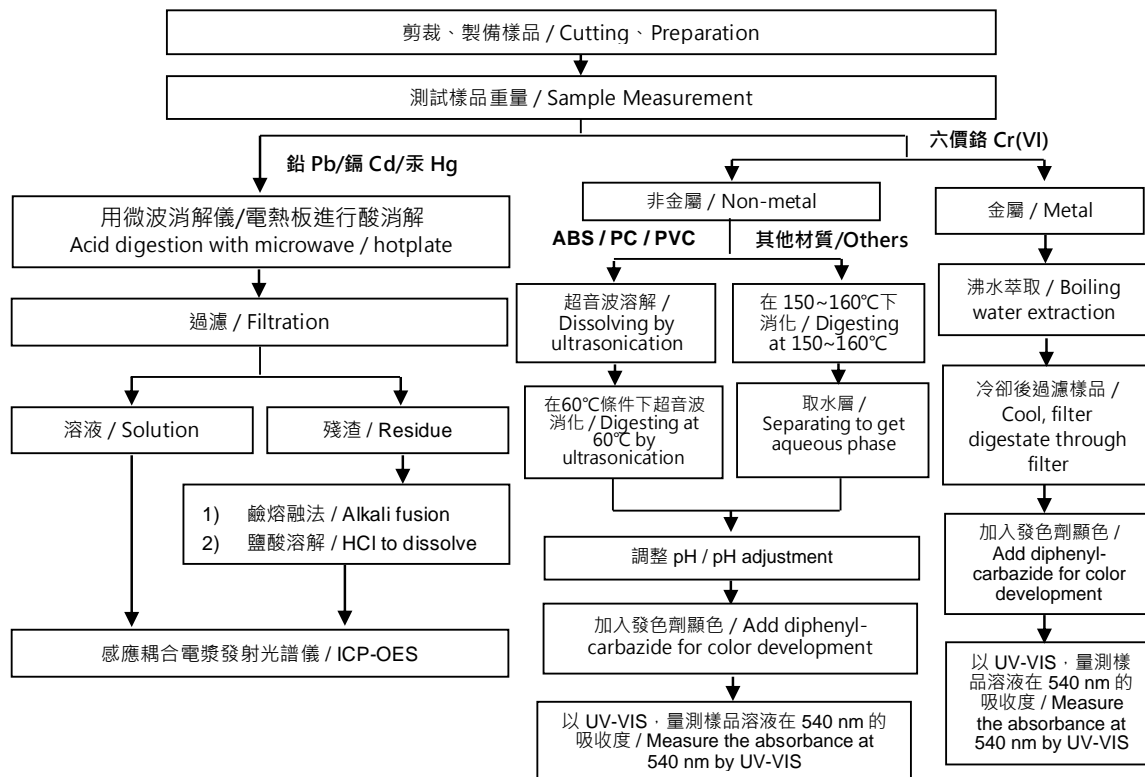
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重金屬流程圖 / Analytical flow chart of Heavy Metal

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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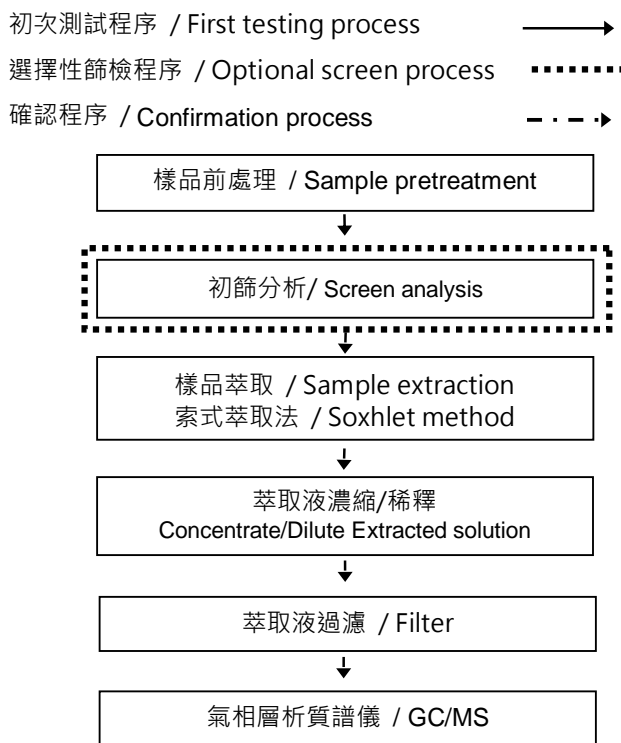
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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs



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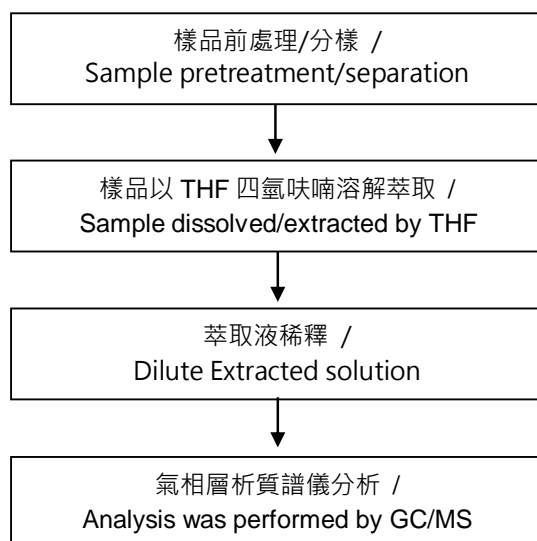
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可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



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* 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.)

ETR22201163



** 報告結尾 (End of Report) **

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