

測試報告

Test Report

號碼(No.): ETR21504304

日期(Date): 28-May-2021

頁數(Page): 1 of 26

台灣銅箔股份有限公司 (TAIWAN COPPER FOIL CO., LTD.)

南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

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) : 台灣銅箔股份有限公司 (TAIWAN COPPER FOIL CO., LTD.)
樣品名稱(Sample Name) : COPPER FOIL (銅箔)
樣品型號(Style/Item No.) : MW-G SERIES :MW-G((R),-A1,-B,-HP,-LP,-NP,-S),-G3,OG

收件日(Sample Receiving Date) : 21-May-2021
測試期間(Testing Period) : 21-May-2021 to 28-May-2021

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 PAHs 及其他測項。(As specified by client, to test PAHs and other item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following 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 2011/65/EU Annex II暨其修訂指令(EU) 2015/863之限值要求。(Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)
(2) 根據客戶所提供的樣品，多環芳香烴測試結果符合德國產品安全委員會(AfPS) GS PAHs第3類「其它產品」之限值要求。(Based upon the performed tests on the submitted sample(s), the test results of PAHs (15 items) comply with the limits of PAHs requirement (Category 3)「Other consumer products」 as set by German Committee on Product Safety (AfPS) GS PAHs.)


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



PIN CODE: 95D7AAEE

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測試部位敘述 (Test Part Description)

No.1 : 淡棕色/銅色片狀 (LT. BROWN/COPPER COLORED SHEET)

測試結果 (Test Results)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|---|--|--------------------|------|----------------|---------------|
| | | | | 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. | 100 |
| 鉛 (Pb) (Lead (Pb)) (CAS No.: 7439-92-1) | 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. | 1000 |
| 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. | 1000 |
| 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. | 1000 | |

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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|--|--|--------------|-----|----------------|---------------|
| | | | | 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. | 1000 |
| 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. | 1000 |
| 鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP)) (CAS No.: 84-74-2) | 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. | 1000 |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP)) (CAS No.: 117-81-7) | 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. | 1000 |
| 鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP)) (CAS No.: 84-69-5) | 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. | 1000 |
| 鄰苯二甲酸二異癸酯 (DIDP) (Diisodecyl phthalate (DIDP)) (CAS No.: 26761-40-0, 68515-49-1) | 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. | - |

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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|---|--|--------------|-----|----------------|---------------|
| | | | | No.1 | |
| 鄰苯二甲酸二異壬酯 (DINP) (Diisononyl phthalate (DINP)) (CAS No.: 28553-12-0, 68515-48-0) | 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. | - |
| 鄰苯二甲酸二正辛酯 (DNOP) (Di-n-octyl phthalate (DNOP)) (CAS No.: 117-84-0) | 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. | - |
| 鄰苯二甲酸二正己酯 (DNHP) (Di-n-hexyl phthalate (DNHP)) (CAS No.: 84-75-3) | 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. | - |
| 鄰苯二甲酸雙(2-甲氧基乙基)酯 (DMEP) (Bis(2-methoxyethyl) phthalate (DMEP)) (CAS No.: 117-82-8) | 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. | - |
| 鄰苯二甲酸二異戊酯 (DIPP) (Diisopentyl phthalate (DIPP)) (CAS No.: 605-50-5) | 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(C7-11支鏈與直鏈)烷基酯 (DHNUP) (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)) (CAS No.: 68515-42-4) | 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(C6-8支鏈)烷基酯 · 富C7 (DIHP) (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)) (CAS No.: 71888-89-6) | 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. | - |
| 鄰苯二甲酸二乙酯 (DEP) (Di-ethyl phthalate (DEP)) (CAS No.: 84-66-2) | 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. | - |

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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|--|--|--------------|-----|----------------|---------------|
| | | | | No.1 | |
| 鄰苯二甲酸二甲酯 (DMP) (Dimethyl phthalate (DMP)) (CAS No.: 131-11-3) | 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. | - |
| 鄰苯二甲酸二正戊酯 (DNPP) (Di-n-pentyl phthalate (DNPP)) (CAS No.: 131-18-0) | 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. | - |
| 六溴環十二烷及所有主要被辨別出的異構物(HBCDD) (α- HBCDD, β- HBCDD, γ- HBCDD) (Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α- HBCDD, β- HBCDD, γ- HBCDD)) (CAS No.: 25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8)) | 參考IEC 62321: 2008 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321: 2008, analysis was performed by GC/MS.) | mg/kg | 5 | n.d. | - |
| 滅蟻靈 (Mirex) (CAS No.: 2385-85-5) | 參考US EPA 3550C: 2007 · 以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.) | mg/kg | 5 | n.d. | - |
| 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) | 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. | - |
| 溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2) | 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. | - |
| 碘 (I) (Iodine (I)) (CAS No.: 14362-44-8) | 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. | - |

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| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|--|---|--------------|------|----------------|---------------|
| | | | | No.1 | |
| 全氟辛烷磺酸及其鹽類 (PFOS and its salts) (CAS No.: 1763-23-1 and its salts) | 參考CEN/TS 15968: 2010 · 以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.) | mg/kg | 0.01 | n.d. | - |
| 全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and its salts) | 參考CEN/TS 15968: 2010 · 以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.) | mg/kg | 0.01 | n.d. | - |
| 多氯聯苯 (PCBs) (Polychlorinated biphenyls (PCBs)) | 參考US EPA 3550C: 2007 · 以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.) | mg/kg | 0.5 | n.d. | - |
| 多氯萘 (PCNs) (Polychlorinated naphthalene (PCNs)) | 參考US EPA 3550C: 2007 · 以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.) | mg/kg | 5 | n.d. | - |
| 多氯三聯苯 (PCTs) (Polychlorinated terphenyls (PCTs)) | 參考US EPA 3550C: 2007 · 以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.) | mg/kg | 0.5 | n.d. | - |
| 短鏈氯化石蠟(C10-C13) (SCCP) (Short Chain Chlorinated Paraffins(C10-C13) (SCCP)) (CAS No.: 85535-84-8) | 參考ISO 18219: 2015 · 以氣相層析儀/質譜儀分析。(With reference to ISO 18219: 2015, analysis was performed by GC/MS.) | mg/kg | 50 | n.d. | - |
| 雙酚A (Bisphenol A) (CAS No.: 80-05-7) | 參考RSTS-CHEM-239-1 · 以液相層析串聯質譜儀分析。(With reference to RSTS-CHEM-239-1, analysis was performed by LC/MS/MS.) | mg/kg | 1 | n.d. | - |

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台灣銅箔股份有限公司 (TAIWAN COPPER FOIL CO., LTD.)

南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|---|---|--------------|-------|----------------|---------------|
| | | | | No.1 | |
| 富馬酸二甲酯 (DMFu) (Dimethyl fumarate (DMFu)) (CAS No.: 624-49-7) | 參考US EPA 3550C: 2007 · 以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.) | mg/kg | 0.1 | n.d. | - |
| 三丁基錫 (TBT) (Tributyl tin (TBT)) | 參考ISO 17353: 2004 · 以氣相層析儀/火焰光度偵測器分析。(With reference to ISO 17353: 2004, analysis was performed by GC/FPD.) | mg/kg | 0.03 | n.d. | - |
| 氧化雙三丁基錫 (TBTO) (Bis(tributyltin) oxide (TBTO)) (CAS No.: 56-35-9) | 由三丁基錫測試結果計算得之。(Calculated from the result of Tributyl Tin (TBT).) | mg/kg | 0.03▲ | n.d. | - |
| 三苯基錫 (TPhT) (Triphenyl tin (TPhT)) | 參考ISO 17353: 2004 · 以氣相層析儀/火焰光度偵測器分析。(With reference to ISO 17353: 2004, analysis was performed by GC/FPD.) | mg/kg | 0.03 | n.d. | - |
| 二丁基錫 (DBT) (Dibutyl tin (DBT)) | 參考ISO 17353: 2004 · 以氣相層析儀/火焰光度偵測器分析。(With reference to ISO 17353: 2004, analysis was performed by GC/FPD.) | mg/kg | 0.03 | n.d. | - |
| 二辛基錫 (DOT) (Diocetyl tin (DOT)) | 參考ISO 17353: 2004 · 以氣相層析儀/火焰光度偵測器分析。(With reference to ISO 17353: 2004, analysis was performed by GC/FPD.) | mg/kg | 0.03 | n.d. | - |
| 二丁基錫氫硼烷 (Dibutyltin hydrogen borate) (CAS No.: 75113-37-0) | 由二丁基錫測試結果計算得之。(Calculated from the result of Dibutyl Tin (DBT).) | mg/kg | 0.03▲ | n.d. | - |
| 聚氯乙烯 (Polyvinyl chloride) (PVC) | 參考ASTM E1252: 2013 · 以傅立葉轉換紅外線光譜儀及焰色法分析。(With reference to ASTM E1252: 2013, analysis was performed by FT-IR and Flame Test.) | ** | - | Negative | - |

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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|--|--|--------------|-----|----------------|---------------|
| | | | | No.1 | |
| 多環芳香烴 (Polycyclic Aromatic Hydrocarbons) (PAHs) | | | | | |
| 苯駢(a)芘 (Benzo[a]pyrene) (CAS No.: 50-32-8) | 參考AfPS GS 2019:01 PAK · 以氣相層析儀/質譜儀分析。(With reference to AfPS GS 2019:01 PAK, analysis was performed by GC/MS.) | mg/kg | 0.2 | n.d. | Δ |
| 苯駢(e)芘 (Benzo[e]pyrene) (CAS No.: 192-97-2) | | mg/kg | 0.2 | n.d. | Δ |
| 苯駢蒽 (Benzo[a]anthracene) (CAS No.: 56-55-3) | | mg/kg | 0.2 | n.d. | Δ |
| 苯(b)苯駢芴 (Benzo[b]fluoranthene) (CAS No.: 205-99-2) | | mg/kg | 0.2 | n.d. | Δ |
| 苯(j)苯駢芴 (Benzo[j]fluoranthene) (CAS No.: 205-82-3) | | mg/kg | 0.2 | n.d. | Δ |
| 苯(k)苯駢芴 (Benzo[k]fluoranthene) (CAS No.: 207-08-9) | | mg/kg | 0.2 | n.d. | Δ |
| 蒽 (Chrysene) (CAS No.: 218-01-9) | | mg/kg | 0.2 | n.d. | Δ |
| 二苯駢蒽 (Dibenzo[a,h]anthracene) (CAS No.: 53-70-3) | | mg/kg | 0.2 | n.d. | Δ |
| 苯駢芘 (Benzo[g,h,i]perylene) (CAS No.: 191-24-2) | | mg/kg | 0.2 | n.d. | Δ |
| 茚酮芘 (Indeno[1,2,3-c,d]pyrene) (CAS No.: 193-39-5) | | mg/kg | 0.2 | n.d. | Δ |
| 蒽 (Anthracene) (CAS No.: 120-12-7) | | mg/kg | 0.2 | n.d. | Δ |
| 苯駢芴 (Fluoranthene) (CAS No.: 206-44-0) | | mg/kg | 0.2 | n.d. | Δ |
| 菲 (Phenanthrene) (CAS No.: 85-01-8) | | mg/kg | 0.2 | n.d. | Δ |
| 芘 (Pyrene) (CAS No.: 129-00-0) | | mg/kg | 0.2 | n.d. | Δ |
| 萘 (Naphthalene) (CAS No.: 91-20-3) | | mg/kg | 0.2 | n.d. | Δ |
| 多環芳香烴15項總和 (Sum of 15 PAHs) | | mg/kg | - | n.d. | Δ |
| 紅磷 (Red Phosphorus) | 以熱裂解-氣相層析儀/質譜儀分析。(Analysis was performed by Pyrolyzer-GC/MS.) | ** | - | Negative | - |
| 砷 (As) (Arsenic (As)) (CAS No.: 7440-38-2) | 參考US EPA 3052: 1996 · 以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.) | mg/kg | 2 | n.d. | - |

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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) | 限值 (Limit) |
|--|--|--------------|-----|----------------|---------------|
| | | | | No.1 | |
| 鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-41-7) | 參考US EPA 3052: 1996 · 以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.) | mg/kg | 2 | n.d. | - |
| 鉻 (Cr) (Chromium (Cr)) (CAS No.: 7440-47-3) | 參考US EPA 3052: 1996 · 以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.) | mg/kg | 2 | 18.9 | - |
| 銻 (Sb) (Antimony (Sb)) (CAS No.: 7440-36-0) | 參考US EPA 3052: 1996 · 以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.) | mg/kg | 2 | n.d. | - |

備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 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. ** = Qualitative analysis (No Unit) 定性分析(無單位)
6. Negative = Undetectable 陰性(未偵測到); Positive = Detectable 陽性(已偵測到)
7. 全氟辛烷磺酸及其鹽類包含 (PFOS and its salts including) :
CAS No.: 29081-56-9, 2795-39-3, 29457-72-5, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7.
8. 全氟辛酸及其鹽類包含 (PFOA and its salts including) :
CAS No.: 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0.
9. (#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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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

10. ▲ : MDL是針對元素/測試化合物之評估。(The MDL was evaluated for element / tested substance.)

換算公式 (Conversion Formula) : $AX = A \times F$

| AX | A | F |
|---|---------------------------|-------|
| 氧化雙三丁基錫 (Bis(tributyltin)oxide) (TBTO) | 三丁基錫 (Tributyl Tin) (TBT) | 1.024 |

參數換算表 (Parameter Conversion Table) :

https://eecloud.sgs.com/Region_TW/DocDownload.aspx#otherDoc

11. 符合性結果之判定係以測試結果與限值做比較。(The statement of compliance conformity is based on comparison of testing results and limits.)

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台灣銅箔股份有限公司 (TAIWAN COPPER FOIL CO., LTD.)

南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

Remark :

△ 德國產品安全委員會(AfPS): GS PAHs 要求

AfPS (German commission for Product Safety): GS PAHs requirements

| 項目 (Parameter) | 第 1 類(Category 1) | 第 2 類(Category 2) | | 第 3 類(Category 3) | |
|------------------------------|--|--|----------------------------------|---|----------------------------------|
| | 意圖放入口中的材料或者長時間接觸皮膚(超過 30 秒)的 2009/48/EC 定義的玩具材料和 3 歲以下兒童使用的產品(Materials intended to be placed in the mouth, or materials in toys (Directive 2009/48/EC) or articles for children up to 3 years of age with intended long-term skin contact (> 30 seconds)) | 不屬於第 1 類的材料·並意圖或可預見與皮膚接觸逾 30 秒(長期皮膚接觸)或重複的短時間接觸(Materials that are not in Category 1, with intended or foreseeable long-term skin contact (> 30 seconds) or short-term repetitive contact with the skin) | | 不屬於第 1 類或第 2 類的材料·並意圖或可預見與皮膚接觸不超過 30 秒(短期皮膚接觸)(Materials not covered by Category 1 or 2, with intended or foreseeable short-term skin contact (≤ 30 seconds)) | |
| | | a. 供 14 歲以下兒童使用的產品(Use by children under 14) | b. 其它產品(Other consumer products) | a. 供 14 歲以下兒童使用的產品(Use by children under 14) | b. 其它產品(Other consumer products) |
| Naphthalene | < 1 | < 2 | | < 10 | |
| Phenanthrene | < 1 Sum | < 5 Sum | < 10 Sum | < 20 Sum | < 50 Sum |
| Anthracene | | | | | |
| Fluoranthene | | | | | |
| Pyrene | | | | | |
| Benzo[a]anthracene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Chrysene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Benzo[b]fluoranthene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Benzo[j]fluoranthene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Benzo[k]fluoranthene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Benzo[a]pyrene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Benzo[e]pyrene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Indeno[1,2,3-c,d] pyrene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Dibenzo[a,h]anthracene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| Benzo[g,h,i]perylene | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 1 |
| 15 項 PAH 總濃度 (Sum of 15 PAH) | < 1 | < 5 | < 10 | < 20 | < 50 |

單位(Unit) : mg/kg

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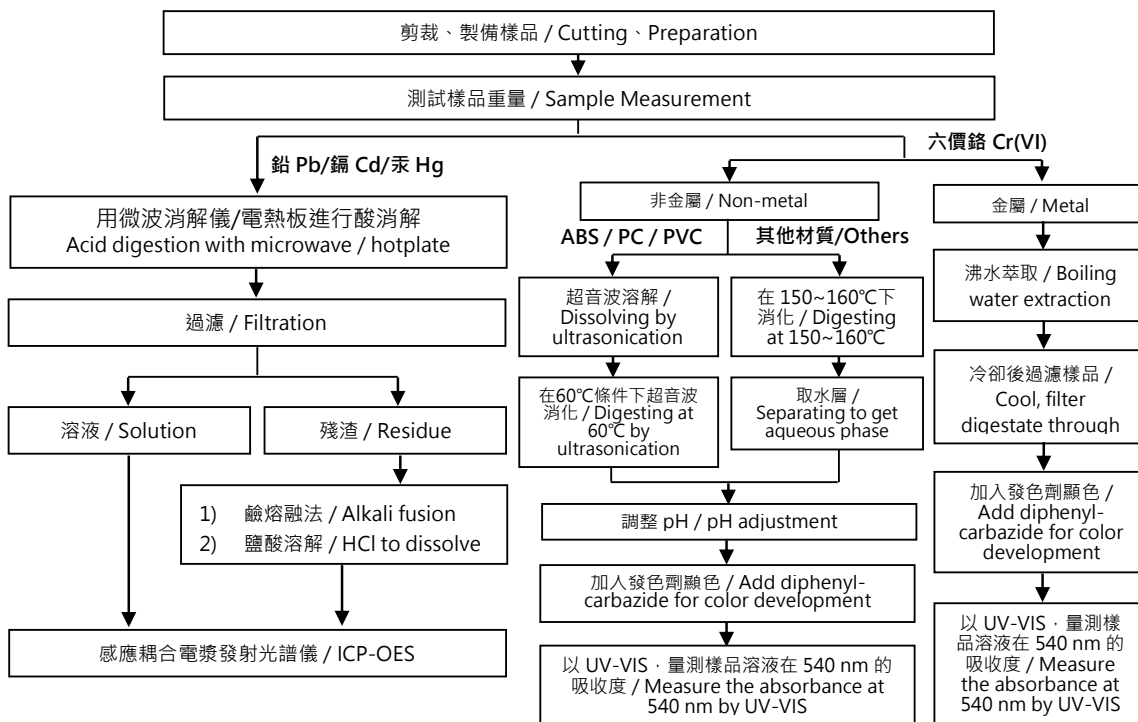
南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

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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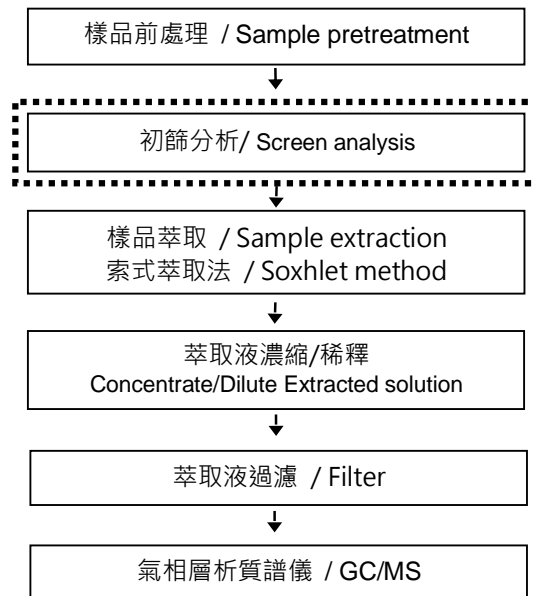
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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

多溴聯苯/多溴聯苯醚分析流程圖 / 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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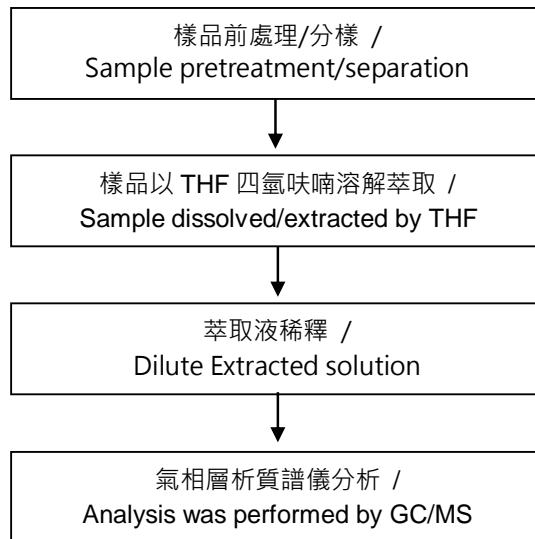
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可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



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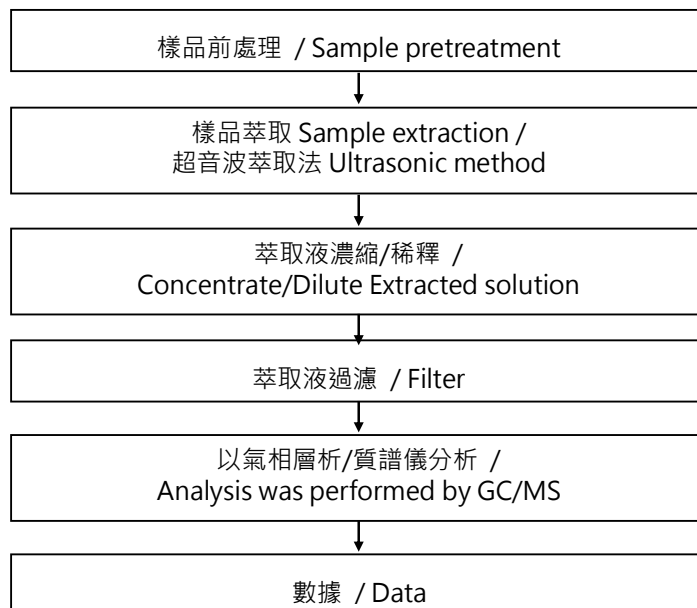
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台灣銅箔股份有限公司 (TAIWAN COPPER FOIL CO., LTD.)

南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



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測試報告

Test Report

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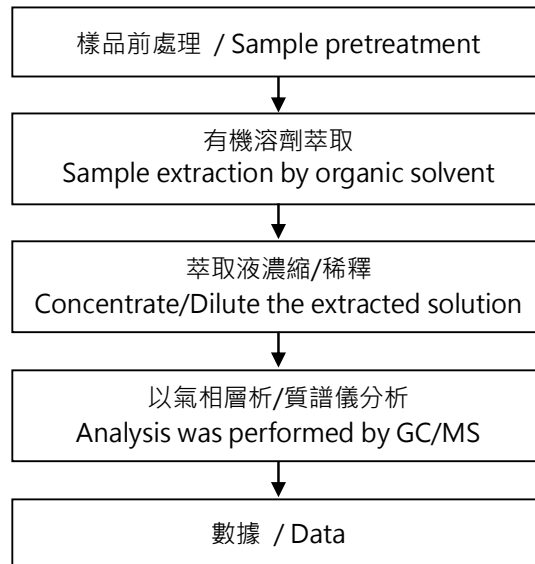
台灣銅箔股份有限公司 (TAIWAN COPPER FOIL CO., LTD.)

南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

分析流程圖 / Analytical flow chart

【適用於：多氯聯苯、多氯奈、多氯三聯苯、滅蟻靈、氯化石蠟、DBBT】

*Apply to: PCBs, PCNs, PCTs, Mirex, Chlorinated Paraffins, DBBT



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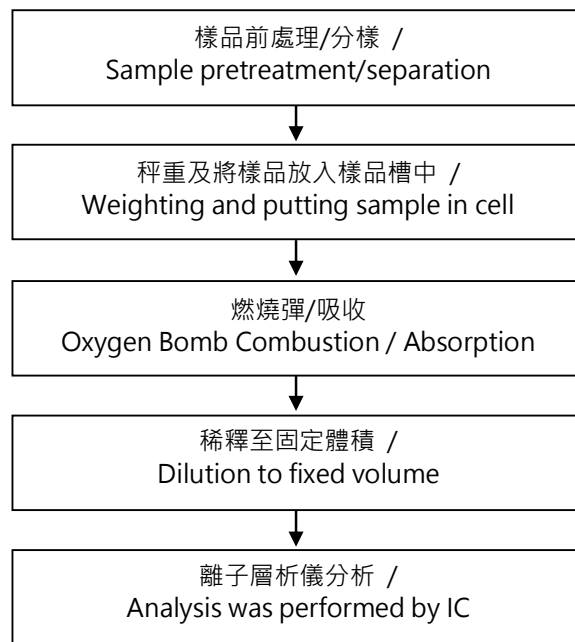
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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

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



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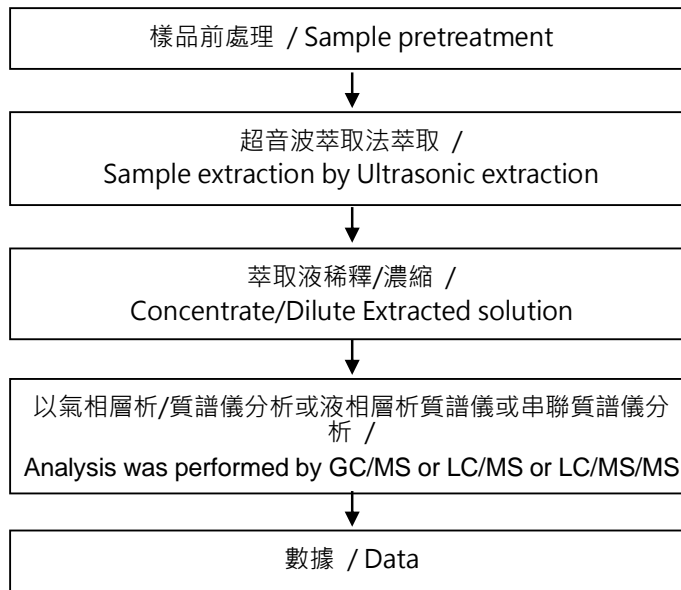
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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



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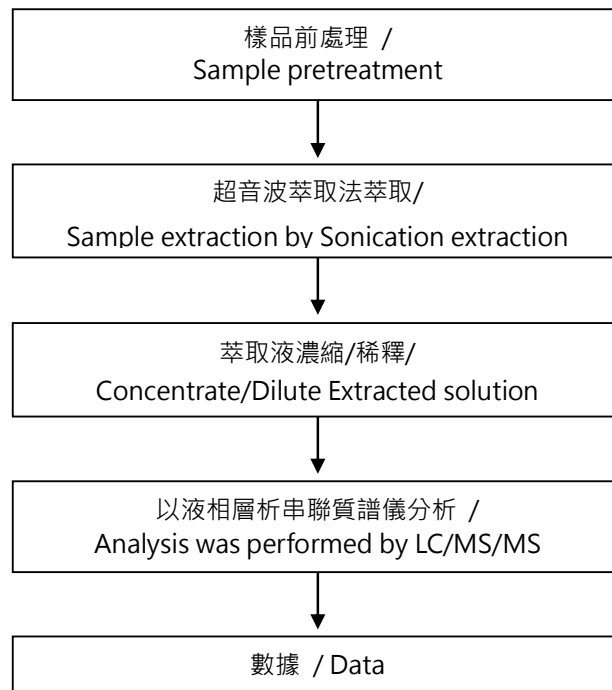
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雙酚A分析流程圖 / Analytical flow chart - Bisphenol A



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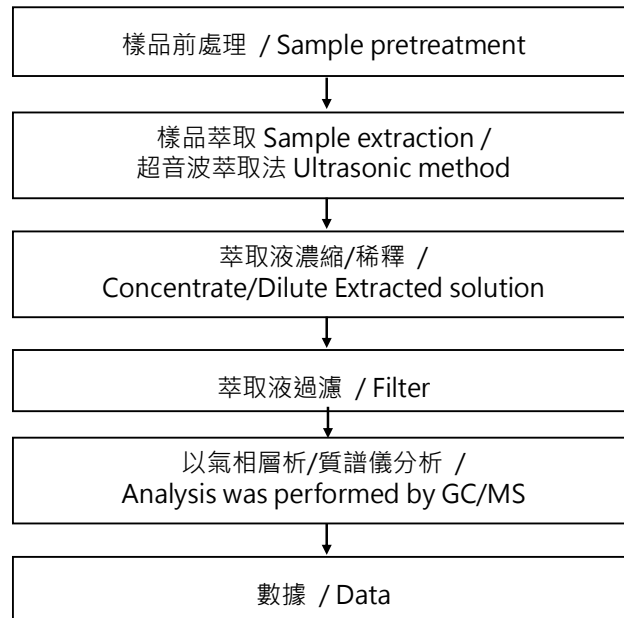
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南投縣南投市成功三路150號 (NO. 150 CHENG KUNG 3 ROAD, NANTOU CITY, NANTOU HSIEN, TAIWAN, R.O.C.)

富馬酸二甲酯分析流程圖 / Analytical flow chart - Dimethyl Fumarate



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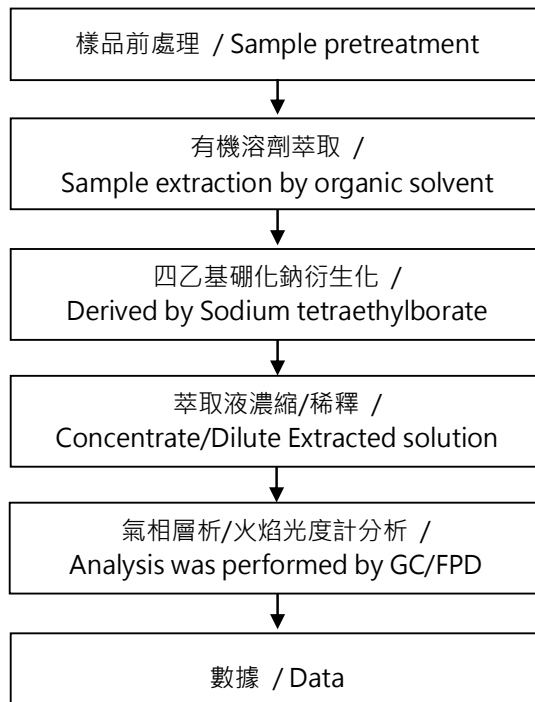
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有機錫分析流程圖 / Analytical flow chart - Organic-Tin



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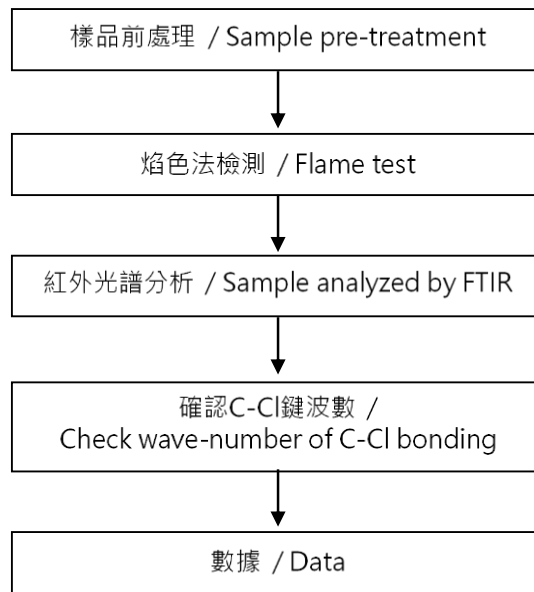
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聚氯乙烯物質判定分析流程圖 / Analysis flow chart - PVC



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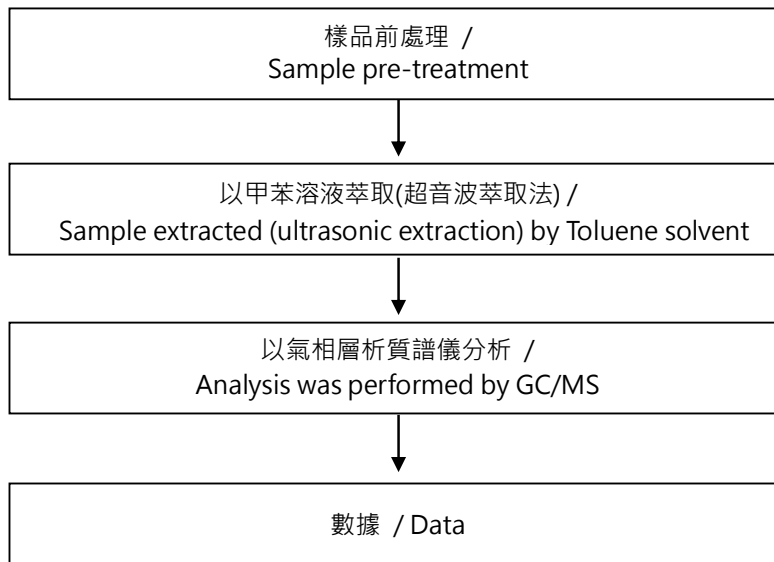
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多環芳香烴分析流程圖 /

Analytical flow chart - PAHs (Polycyclic Aromatic Hydrocarbons)



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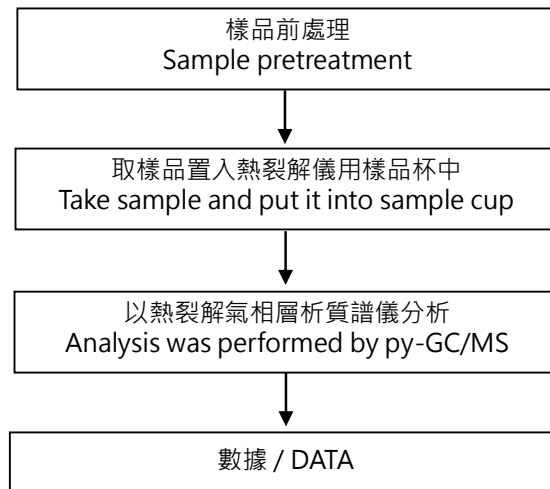
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紅磷分析流程 / Analytical flow chart - Red phosphorus



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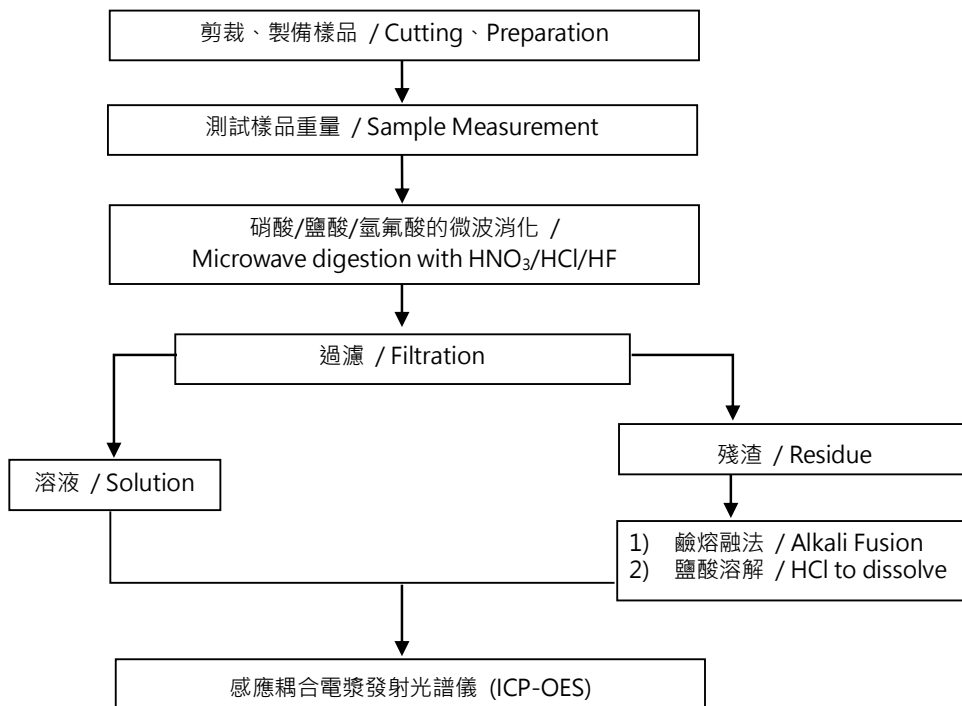
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重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。

These samples were dissolved totally by pre-conditioning method according to below flow chart.

【參考方法/Reference method : US EPA 3051A、US EPA 3052】



* US EPA 3051A 方法未添加氫氟酸 / US EPA 3051A method does not add HF.

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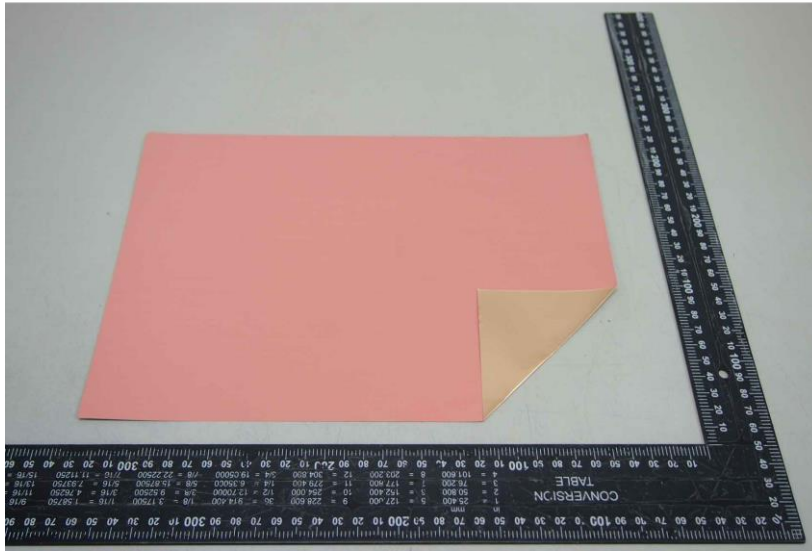
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* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*

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

ETR21504304



** 報告結尾 (End of Report) **

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