



測試報告

Test Report

號碼(No.): ETA23A00041

日期(Date): 17-Oct-2023

頁數(Page): 1 of 12

ISOLA GROUP

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) : PREPREG

樣品型號(Style/Item No.) : FR408HR

收件日(Sample Receiving Date) : 03-Oct-2023

測試期間(Testing Period) : 03-Oct-2023 to 17-Oct-2023

測試需求(Test Requested) : 依據客戶要求進行測試 · 測試項目請參閱測試結果表格。(Testing item(s) is/are specified by client. Please refer to result table for testing item(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: 3774125B

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測試部位敘述 (Test Part Description)

No.1 : 黃色片狀 (YELLOW 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) |
|--|---|--------------|-------|----------------|
| | | | | No.1 |
| 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 | 748 |
| 氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1) | | mg/kg | 50 | 294 |
| 溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2) | | mg/kg | 50 | 97300 |
| 碘 (I) (Iodine (I)) (CAS No.: 14362-44-8) | | mg/kg | 50 | n.d. |
| 全氟辛烷磺酸及其鹽類 (PFOS and its salts) (CAS No.: 1763-23-1 and its salts) | 參考US EPA 3550C: 2007 · 以液相層析串聯質譜儀分析。 (With reference to US EPA 3550C: 2007, analysis was performed by LC/MS/MS.) | mg/kg | 10 | n.d. |
| 全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and its salts) | | mg/kg | 10 | 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. |
| 有機錫 (Organic-tin compounds) | | | | |
| 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. |
| 三苯基錫 (TPT) (Triphenyl tin (TPT)) | | mg/kg | 0.03 | n.d. |
| 二丁基錫 (DBT) (Dibutyl tin (DBT)) | | mg/kg | 0.03 | n.d. |
| 二辛基錫 (DOT) (Diocetyl tin (DOT)) | | 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. |
| 聚氯乙烯 (Polyvinyl chloride) (PVC) | 參考ASTM E1252: 2021 · 以傅立葉轉換紅外線光譜儀及焰色法分析。 (With reference to ASTM E1252: 2021, analysis was performed by FT-IR and Flame Test.) | ** | - | Negative |

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| 測試項目 (Test Items) | 測試方法 (Method) | 單位 (Unit) | MDL | 結果 (Result) |
|--|--|--------------|-----|----------------|
| | | | | No.1 |
| 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. |
| 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. |
| 鎳 (Ni) (Nickel (Ni)) (CAS No.: 7440-02-0) | 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 | 3.57 |
| 磷 (P) (Phosphorus (P)) (CAS No.: 7723-14-0) | 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 | 98.2 |
| 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. |
| 錫 (Sn) (Tin (Sn)) (CAS No.: 7440-31-5) | 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% = 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. ** = 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. ▲ : 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) | 1.0276 |

參數換算表 (Parameter Conversion Table) :

https://eecloud.sgs.com/Region_TW/DocDownload.aspx?name=Others

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PFAS Remark :

現有PFAS定量技術是分析PFAS物質的特定結構，但同碳數族群之PFAS酸及鹽類物質，其可被辨識的特定結構相同，因此無法區別所分析的特定結構是來自酸或者鹽類，故測試結果為同碳數族群之PFAS之酸及鹽類物質的濃度總合。下表PFAS物質濃度皆已包含在測試結果中，相關資訊請參見下表：(下表列舉PFAS物質僅為範例，並不包含所有同碳數族群之PFAS鹽類。)

(The quantitative technology of PFAS is to analyze the specific structure of PFAS substances. However, PFAS acid and its salts with the same carbon number group have the same specific structure that can be identified. The tested results of the analyzed specific structure cannot be distinguished to identify the contribution from PFAS acid or its salts. Therefore, the tested results display the sum of concentrations of PFAS acids and its salts with the same carbon number group. The concentration of PFAS substances in the below table have been included in the tested results, please refer to the table for relevant information: (The listed PFAS substances are examples only, it do not include all PFAS salts with the same carbon number group.))

| 物質濃度分類 (Classification of Substance Concentration) | 物質名稱 (Substance Name) | CAS No. |
|---|---|-------------|
| 全氟辛烷磺酸及其鹽類 Perfluorooctane sulfonates and its salts (PFOS and its salts) (CAS No.: 1763-23-1 and its salts) | 全氟辛基磺酸鉀 (PFOS-K) Potassium perfluorooctanesulfonate (PFOS-K) | 2795-39-3 |
| | 全氟辛基磺酸鋰 (PFOS-Li) Perfluorooctanesulfonic acid, lithium salt (PFOS-Li) | 29457-72-5 |
| | 全氟辛基磺酸銨 (PFOS-NH ₄) Perfluorooctanesulfonic acid, ammonium salt (PFOS-NH ₄) | 29081-56-9 |
| | 全氟辛基磺酸二乙醇銨 (PFOS-NH(OH) ₂) Perfluorooctane sulfonate diethanolamine salt (PFOS-NH(OH) ₂) | 70225-14-8 |
| | 全氟辛基磺酸四乙基銨 (PFOS-N(C ₂ H ₅) ₄) Perfluorooctanesulfonic acid, tetraethylammonium salt (PFOS-N(C ₂ H ₅) ₄) | 56773-42-3 |
| | 全氟辛基磺酸二癸二甲基銨 (PFOS-DDA) N-decyl-N,N-dimethyldecane-1-aminium 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptafluorooctane-1-sulfonate (PFOS-DDA) | 251099-16-8 |
| | 全氟辛基磺酰氟 (POSF) Perfluorooctane sulfonyl fluoride (POSF) | 307-35-7 |
| | 全氟辛基磺酸鎂 (PFOS-Mg) Perfluorooctanesulfonic acid, magnesium salt (PFOS-Mg) | 91036-71-4 |
| | 全氟辛基磺酸鈉 (PFOS-Na) Perfluorooctanesulfonic acid, sodium salt (PFOS-Na) | 4021-47-0 |

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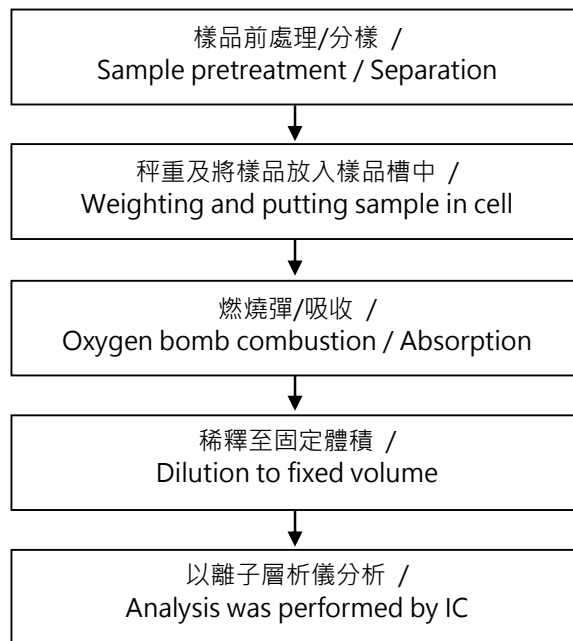
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| 物質濃度分類 (Classification of Substance Concentration) | 物質名稱 (Substance Name) | CAS No. |
|---|--|------------|
| 全氟辛酸及其鹽類 Perfluorooctanoic acid and its salts (PFOA and its salts) (CAS No.: 335-67-1 and its salts) | 全氟辛酸鈉 (PFOA-Na) Sodium perfluorooctanoate (PFOA-Na) | 335-95-5 |
| | 全氟辛酸鉀 (PFOA-K) Potassium perfluorooctanoate (PFOA-K) | 2395-00-8 |
| | 全氟辛酸銀 (PFOA-Ag) Silver perfluorooctanoate (PFOA-Ag) | 335-93-3 |
| | 全氟辛氟 (PFOA-F) Perfluorooctanoyl fluoride (PFOA-F) | 335-66-0 |
| | 全氟辛酸銨 (APFO) Ammonium pentadecafluorooctanoate (APFO) | 3825-26-1 |
| | 全氟辛酸鋰 (PFOA-Li) Lithium perfluorooctanoate (PFOA-Li) | 17125-58-5 |

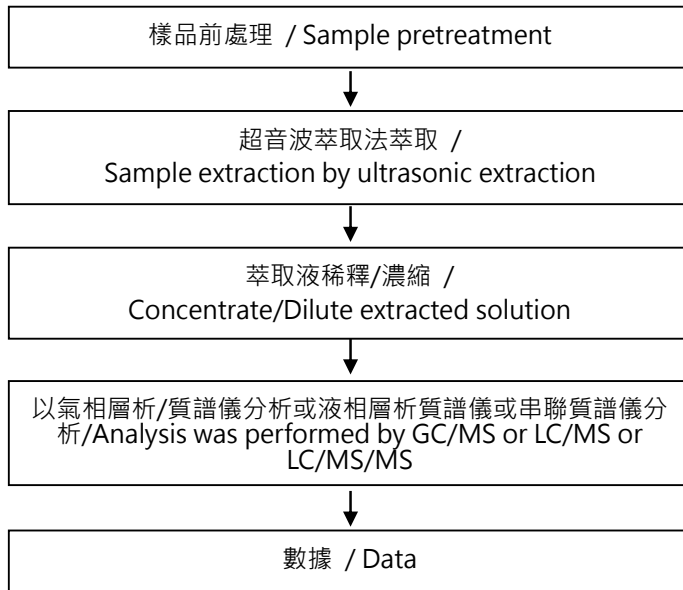
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鹵素分析流程圖 / Analytical flow chart - Halogen



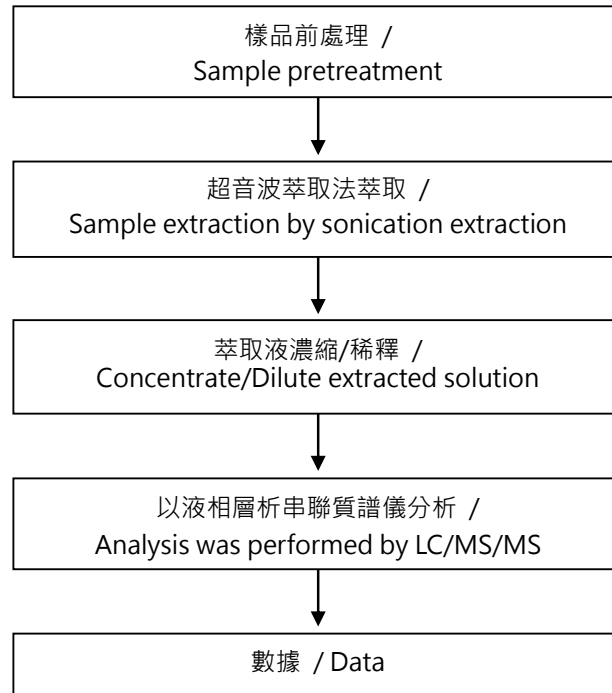
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全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



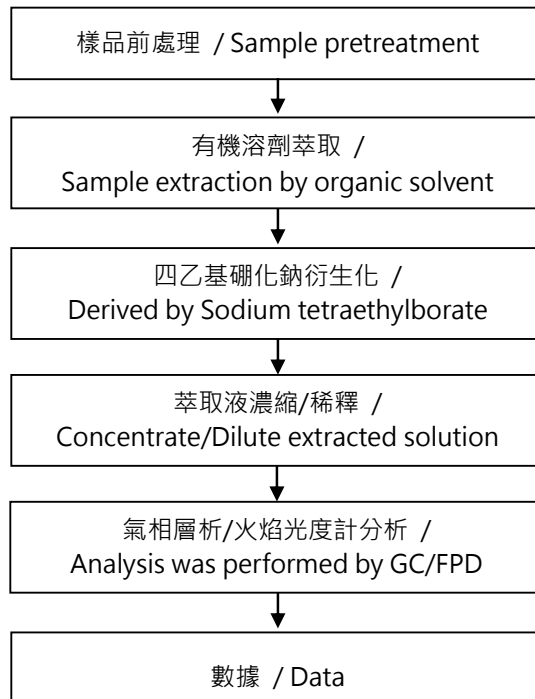
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雙酚A分析流程圖 / Analytical flow chart - Bisphenol A



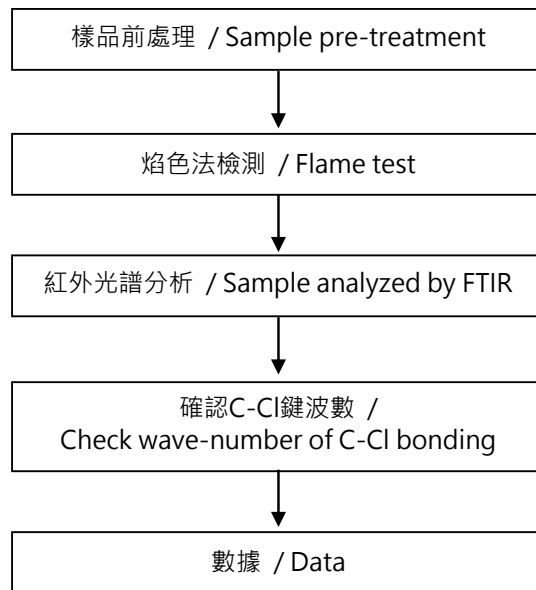
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有機錫分析流程圖 / Analytical flow chart - Organic-Tin



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



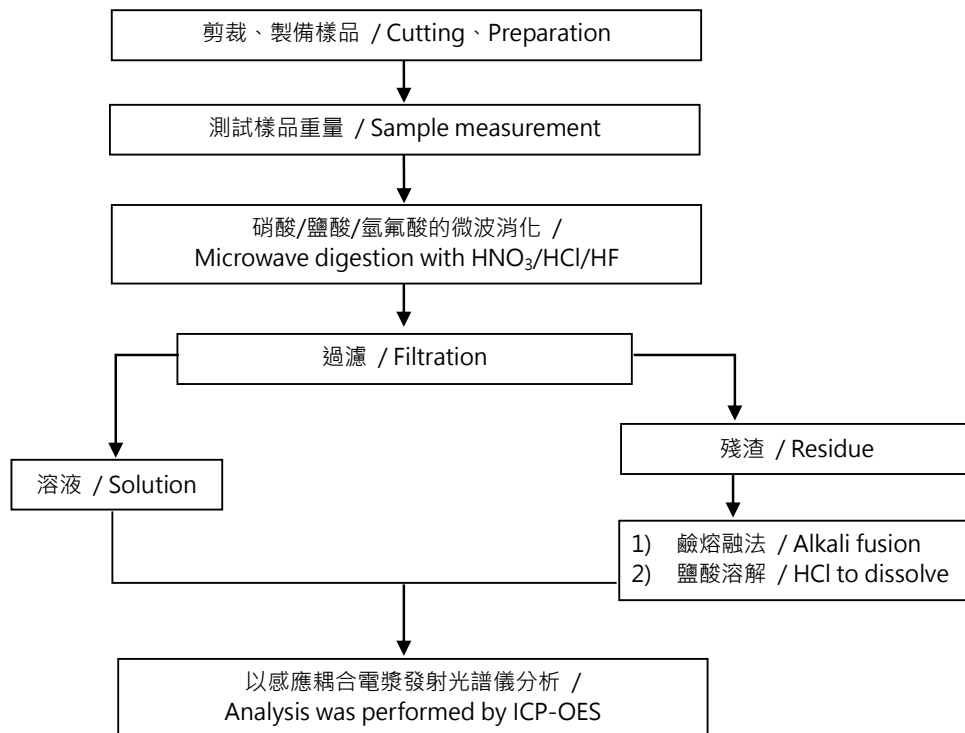
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元素(含重金屬)分析流程圖 / Analytical flow chart of elements (Heavy metal included)

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】

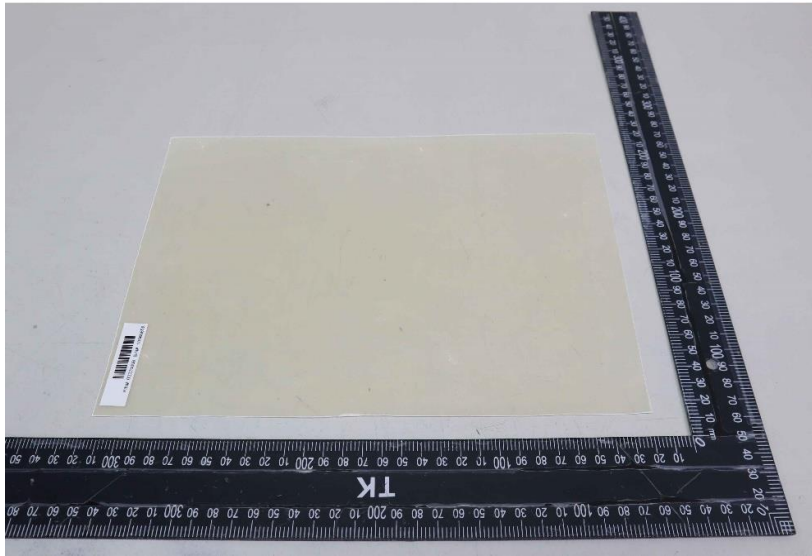


* US EPA 3051A 方法未添加氫氟酸 / US EPA 3051A method does not add HF.

* 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.)

ETA23A00041



** 報告結尾 (End of Report) **

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